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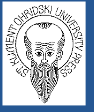
Plamen Milchev Chernopolski
Nelya Lukpanovna Shapekova
Bilal Ak

Academic Researches in Health Sciences



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Preface

This book consists of 36 chapters and 7 sections. Each chapter is written by academicians who are experts in their field. The first section covers studies in the field of medicine and includes 4 chapters here. The topics covered in this section consist of: Approach to patients with thoracic trauma, the use of tranexamic acid in orthopaedic surgery, ethic rules and bariatric surgery, structuring recommendations guided by Somalia basic health indicators and current analysis of health organization.

Section two contains six chapters on Midwifery. A new service model in promoting health in pregnant women, birth preparation philosophies birth awareness program is based on prenatal training, using the hypnosis method in birth, pharmacological and non-pharmacological methods of overcoming labor pain, psychology and midwifery approaches in pregnancy are topics in this section.

Section three deals with the topics on nutrition and dietetics. this section includes following topics. correlation between food intake and single nucleotide gene polymorphism in taste receptors, effect of quercetin on obesity and evaluation of the association between polycystic ovary syndrome and vitamin D,

Section four has topics on breastfeeding practices of mothers with babies, patterns of attachment between pairs family counseling practices, supporting children with autism spectrum disorders, the digital identity of the z generation, inclusive education, the healing power of therapy with stories, pediatric diseases and covid-19 pandemic and children.

Section five focuses on subjects in nursing including hospital infections and control methods, central venous catheters use in hemodialysis, total hip prosthesis surgery and nursing care, benefits of breastfeeding for infant and maternal health and persuasive communication.

The Section six includes five chapters on health management. These chapters related to the themes on health services and hospitals in north macedonia and romania during the ottoman empire, the relationship between organizational culture and employee's job satisfaction, disaster management in hospitals and future trends in financial management of healthcare institutions.

Notch signalling and cancer, the importance of laboratory technicians in health, etiology of hyperacusis: a short review of the literature and the need of medical English for medical students are the topics in the section seven.

The book covers research in many areas of health sciences. Each study is original and written by researchers working in different universities and health institutions. We hope that this comprehensive study will be useful to specialists in the field of health and other interested parties.
We would like to thank the chapter authors who contributed to the publication process and cooperated well with us.
We particularly wish to express our thanks to the valuable team at St. Kliment Ohridski University, Publishing House for preparing the book for publication.

December, 2021

----------The Editors

Section 1: MEDICINE

Chapter 1

Approach to Patients with Thoracic Trauma in the Emergency Medicine Department

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Introduction

Trauma-related deaths are the third leading cause of adult death worldwide. Thoracic traumas constitute 20-25% of the causes of death due to trauma in the first 40 years of age. In thoracic trauma, the chest and lungs are affected, as well as the esophagus, trachea, heart, diaphragm, and great vessels. It can even be life-threatening (Dongel et al., 2013). Thoracic trauma is seen as a result of severe damage to the rib cage or due to pleural or parenchymal damage. Among all trauma injuries, hemopneumothorax (52.3%) is the most common, followed by hemothorax (23.4%) and pneumothorax 20.7% (Abdoulhamidou et al., 2021).

As severe thoracic injuries affect respiratory mechanics, it increases the work of breathing and makes it difficult for patients to ventilate effectively. Therefore, thoracic traumas are clinically important for multiple trauma patients. Thoracic trauma is one of the leading causes of trauma-related death in children and young adults (Abdoulhamidou et al., 2021). The initial evaluation of the traumatized patient should be done quickly and systematically. Thoracic injuries are common after blunt and penetrating traumas. Therefore, all patients admitted to the emergency department due to trauma should be evaluated for thoracic injury (Schellenberg &Inaba, 2018).

Thoracic traumas affect respiration and hemodynamic functions. The most common effects are hemorrhage, pulmonary collapse, pulmonary contusion, respiratory and heart failure, and hypoxia due to intrathoracic pressure changes (Greaves et al., 2001).

Acute hypoxia will cause confusion and confusion will cause further deterioration of ventilation. Hypercarbia develops as a result of confusion

and inadequate ventilation. As a result, metabolic acidosis develops with respiratory acidosis and hypoperfusion. If early and effective intervention is not performed, this process may enter a vicious circle and result in death (Şahbazet al., 2012).

General Approach in the Emergency Medicine Department

A multidisciplinary approach is required in patients with thoracic trauma. It can be treated with rapid resuscitation, effective diagnostic tests, and simple applications. In the first evaluation, opening the airway, breathing, and providing circulation are the basic procedures that should be done. Major surgical interventions are required for 10-30% of thoracic traumas, while emergency thoracotomy is only required in 1-2% (Deslauriers et al., 2005).

In the emergency room approach to the patient, the sequencing should include primary assessment, resuscitation of vital functions, detailed secondary assessment, and primary treatment. In the primary assessment respiratory and circulatory findings should be evaluated by keeping the airway open.

ABCDE mnemonic can be used in the primary assessment of trauma patients (Ipekci et al., 2005). In this mnemonic, it means A “Airway”, B “Breathing”, C “Circulation”, D “Disability”, E “Exposure and Environmental Control”. During the primary assessment, the fatal condition is identified and treated, and then the next step is required. Since thoracic trauma can often be associated with other system trauma (Table 1), a multidisciplinary approach to the patient in the emergency department is vital (Onat et al., 2015).

Table 1. The other injuries associated with thoracic trauma (Onat et al., 2015)

Limb fractures	54%
Head trauma	44%
Abdominal trauma	21%
Pelvic trauma	12%
Vertebral injury	6%

Primary Assessment

I. Airway Control

1. The patient's airway patency should be evaluated by mouth and nose inspection. It must be ensured that the airway is safe.
2. Chest wall movements should be evaluated.

3. Foreign body obstruction should always be kept in mind in unconscious patients and the upper respiratory tract should be evaluated. Simple interventions such as aspiration if there are secretions in the mouth and nose, and removal if there is a dental prosthesis, and preventing the tongue from obstructing the nasopharynx can be life-saving steps for the patient.

II. Breathing Control

1. All clothes must be completely removed from patients for inspection.
2. The presence of tachypnea or tachypnea, which is a guide for hypoxia, should be evaluated.
3. Cyanosis may be a late marker of hypoxic state in trauma patients, but absence of cyanosis does not indicate adequate perfusion. Emergency intubation may be required when respiratory distress is present, hemodynamics is unstable, and the Glasgow Coma Scale (GCS) is below 9 (Table 2) (Özgüç et al., 2005).

Table 2. Glasgow Coma Scale (Özgüç et al., 2005)

Glasgow Coma Scale
Eye Opening Response Spontaneous--open with blinking at baseline **4 points** To verbal stimuli, command, speech **3 points** To pain only (not applied to face) **2 points** No response **1 point**
Verbal Response Oriented **5 points** Confused conversation, but able to answer questions **4 points** Inappropriate words **3 points** Incomprehensible speech **2 points** No response **1 point**
Motor Response Obeys commands for movement **6 points** Purposeful movement to painful stimulus **5 points** Withdraws in response to pain **4 points** Flexion in response to pain (decorticate posturing) **3 points** Extension response in response to pain (decerebrate posturing) **2 points** No response **1 point**

III. Circulation Control

1. First, the patient is provided with cardiac monitoring and the pulse rate and cardiac rhythm are evaluated.

2. Arterial pressure is measured, heart sounds are listened to.
3. It is checked whether there is neck venous fullness.
4. By looking at the skin color, it is evaluated whether the peripheral blood circulation is sufficient.

Fatal Injuries to Be Kept in Mind When Performing the Primary Assessment

1. While performing airway control
   a. Airway Obstruction
2. While performing breathing control
   a. Tension pneumothorax
   b. Open pneumothorax
   c. Sail chest
   d. Hemothorax
3. While performing circulation control
   a. Pericardial tamponade

Possible Fatal Injuries to Be Kept in Mind When Performing the Secondary Assessment

1. Pulmonary contusion and lacerations
2. Aortic injury
3. Trachea and bronchial injury
4. Esophagus and diaphragm rupture
5. Fractures in the thoracic wall

Tension Pneumothorax

Tension pneumothorax occurs due to flap-shaped laceration in the thoracic wall or visceral pleura. While air enters the thorax from the flap in inspiration, it causes air trapping in the thorax by closing with the valve mechanism in expiration. The mediastinum is pushed to the opposite side with the air pressure inside the thorax and causes compression of the opposite lung. Venous return is impaired due to compression of the inferior vena cava by pressure. In the physical examination of the patient, neck venous fullness, trachea being pushed to the opposite side, absent or decreased breath sounds are detected. In the treatment, first air decompression with a needle from the anterior/midaxillary line, 4th-5th intercostal space, and then tube thoracostomy is applied (Waydhas et al., 2007).

Open Pneumothorax

Open pneumothorax occurs after injury to the thoracic wall. Wound

width is 2/3 of the trachea. After inspiration, the air entering through this defect goes out in expiration. It has a risk of tension pneumothorax. In the treatment, 3/4 of the injury area is dressed so that it is closed, and then tube thoracostomy is applied.

Flail Chest

The flail chest is formed if there is a free-moving segment in the chest wall is formed as a result of breakage from two or more regions of three or more ribs unilaterally after trauma. The continuity of this region with the thorax is disrupted and paradoxical respiratory movement is observed (Soysal et al., 2001). It is accompanied by pulmonary contusion. Respiratory failure may not be present in the early period, but the patient should be followed closely because the risk of respiratory failure increases due to paradoxical movements and contusion in the following hours.

Reservoir oxygen support therapy and analgesia are used in the treatment, excess fluid should be avoided except for the fluid replacement required for resuscitation. Intubation should be avoided as much as possible if there are no clear signs of respiratory failure (Simon et al, 2012).

Hemothorax

Hemothorax is the condition of blood collection in the pleural space after blunt and penetrating thoracic trauma. It may occur due to pleural injuries, often parenchymal injuries, rib fractures, vascular injuries in the thoracic region.

Tube thoracostomy is applied primarily in the treatment. In a patient with hemothorax, emergency thoracotomy is indicated in the presence of the following conditions (Table 3).

Table 3. Indications for Emergency Thoracotomy

Indications for Emergency Thoracotomy
1500 cc or 20 cc/kg drainage when the thorax tube is applied
A total drainage of 1500 cc in the first 24 hours after the thorax tube is applied
200cc/hr or 2cc/kg/hr drainage in two to four hours after the thorax tube application
Drainage of 100cc/hr or 1cc/kg/hr in six to eight hours after thorax tube application
Need for continuous blood transfusion

Cardiac Tamponade

Cardiac tamponade is bleeding in the pericardial space due to myocardial injury. It is frequently seen after stab wounds and gunshot wounds. The mortality rate of cardiac tamponade in the emergency department is high. The clinical signs of the patient with cardiac tamponade is shown in Table 4. If the patient with suspected cardiac tamponade is stable, diagnostic echocardiography can be performed in the emergency department. If the patient has shock, emergency pericardiocentesis should be performed.

Table 4. Cardiac Tamponade Clinical Signs

Hypotension
Jugular Venous Distension
Muffled Heart Sounds
Pulsus Paradoxus
Tachycardia
Right Upper Quadrant Tenderness

Pulmonary Contusion and Lacerations

Lung contusion is frequently seen in thoracic traumas. Lung contusion is often seen after blunt traumas, while laceration is seen as disruption of the integrity of the lung parenchyma after penetrating injuries. Due to the ventilation problem, hypoxia and severe pain occur in the patients. The close follow-up, oxygen therapy and supportive medical treatments are usually required as treatment in contusion. Tube thoracostomy may be required as hemo/pneumothorax may be seen in laceration (Soysal et al., 2001).

Aortic Dissection and Rupture

Aortic dissection is seen in approximately 2-10% of patients with multiple trauma. It is frequently seen in high-energy mechanism traumas (Erbel et al., 2014). Clinical signs include back and chest pain, decreased pulse and paralysis in the lower extremities, and hypovolemic shock. The diagnosis is made by computed tomography. If the patient will not be able to go to the radiology unit, lung X-ray may help in the diagnosis (Table 5). Treatment is in the form of medical and surgical treatment. In the emergency room treatment approach, blood pressure and heart rate should be kept at normal levels first, and then directed for surgical intervention

should be made.

Table 5. Aortic Dissection X-Ray Signs
Wide mediastinum >6 cm
Obliteration of the aortic knob
Displacement of the left paraspinous line
Calcium sign
Double density sign
Deviation of the trachea and nasogastric tube, if any, to the right
Left hemithorax
Pressure on the left main bronchus

Tracheobronchial injuries, rupture of the diaphragm and esophagus

Bronchial injuries are more common than tracheal injuries. It is rarely symptomatic. In the clinic of the patient, respiratory distress and pleuritic chest pain are observed. If there is continuous air coming from the chest tube, it should be considered. Diagnosis is made by bronchoscopy. Treatment is surgery (Özyurtkan et al., 2013). If there is a blunt trauma in the rupture of the diaphragm, it can be ruptured due to increased thoracic pressure, but it is damaged due to incisions in penetrating injuries. Rupture due to blunt trauma is also less common on the right because of the liver. The incidence is same in penetrating injuries. Lung and abdominal radiography and computed tomography are used for diagnosis. The treatment is surgery (Shar et al., 1995).

Fractures in the Thoracic Wall

Fractures in the chest wall can cause life-threatening problems. Rib fractures are the most common fractures. Fractures are most common in ribs between the 4th and 9th. Pneumo/hemothorax may be observed after rib fractures. After the first 3 rib fractures, the suspicion of great vessel injury or airway injury should be considered. Upper extremity pulse must be checked for vascular injury. In fractures between the 9-12 ribs, the suspicion of intra-abdominal organ injury should be considered. The suspicion of cardiac contusion in sternum fractures, and the suspicion of tracheobronchial system and great vessel injuries in scapula and clavicle fractures should not be forgotten (Hatipoğlu et al., 2007).

Conclusion

Since thoracic trauma can be a life-threatening condition, it should be identified and treated immediately. Mortality rate in thoracic traumas may vary according to etiological factors, additional systemic pathologies, diagnosis, and treatment possibilities in emergency services. A multidisciplinary approach is required for patients with thoracic trauma in the emergency department. It is recommended that the use of rapid and bedside diagnosis and treatment methods become widespread. Thus, a significant reduction in morbidity and mortality rates due to thoracic trauma can be observed. It should not be forgotten that non-fatal traumas such as simple pneumothorax or rib fractures may cause mortality and morbidity in the elderly or patients with comorbidities.

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Chapter 2

The Use of Tranexamic Acid in Orthopaedic Surgery: Arthroplasty and Arthroscopy

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INTRODUCTION

Orthopaedic surgery is generally associated with high intraoperative and/or postoperative blood loss. Currently, pharmacological agents have become more popular to decrease blood loss in orthopaedic surgery. One of the pharmacological agents is tranexamic acid (TXA) which has been well established in a variety of surgical procedures in the whole world (George, 2015; Békássy, 1990). The trauma of surgery results in the release of tissue plasminogen activator and activates fibrinolysis process (Murphy, 1993). TXA is the most effective synthetic derivative of the amino acid lysine and anti-fibrinolytic agent that acts by competitively blocking the plasminogen lysine-binding site, thereby inhibiting fibrinolysis in an earlier stage (Békássy, 1990). Therefore, TXA effectively decreases the duration and quantity of blood loss by inhibiting fibrinolysis (Haratian, 2021). Moreover, TXA promotes the stability and deposition of blood clots in the tissue space (Hamed, 2020). In the field of orthopaedic surgery, TXA has been widely applied to orthopaedic surgery to decrease postoperative blood loss and the amount of blood transfusion necessary in arthroplasty surgery and to increase visual clarity during arthroscopic surgery (Poeran, 2014; Montroy, 2018; Belk, 2020).

The efficacy of TXA in arthroplasty surgery has been well understood in the literature, including a large of systemic review and randomised controlled studies (Xu, 2019; Patel, 2014; Morrison, 2017). However, the optimal administration route of TXA in surgical orthopaedic practice remains controversial (Xu, 2019). Multiple routes of TXA administration have been utilized in the literature such as intravenous (IV), intra-articular (IA), peri-articular (PA), and oral

administration (Haratian, 2021). The use of TXA administered IV in orthopaedic surgery is well accepted to be effective and safe in decreasing the amount of bleeding during various orthopaedic interventions without increasing the risk of deep vein thrombosis (DVT), pulmonary embolism (PE), or other thromboembolic complications (Alvarez, 2019; Yu, 2017). Moreover, numerous dosing regimens have also been applied in current surgical practice, including bolus, single, and multiple doses (George, 2015; Xu, 2019).

ARTHROPLASTY SURGERY

Total hip arthroplasty (THA) and total knee arthroplasty (TKA) is the most successful surgical intervention for the treatment of end-stage osteoarthritis of hip and knee (George, 2015; Poeran, 2014; Xu, 2019). However, significant blood loss can be seen due to hyper-fibrinolysis induced by surgical trauma after arthroplasty surgery (Murphy, 1993). While TKA is commonly performed with a pneumatic tourniquet to gain a bloodless surgical field, this can cause local fibrinolysis and increased postoperative blood loss, especially in the first six hours after release of the tourniquet (McCormack, 2012). Previous studies have indicated that the estimated blood loss ranges from 500 to 2000 ml in THA and 500 ml to1500 ml in TKA; the percentage of patients requiring postoperative allogeneic blood transfusion is estimated to be about 11% for TKA and 18% for THA (Chen, 2016; Gwam, 2018; Zhang, 2017; Xu, 2019). Moreover, blood loss may lead to complications and decrease the success of the surgery (Sizer, 2015; Frisch, 2014). Substantial blood loss due to arthroplasty surgery is associated with allogenic blood transfusion which has some potential adverse effects on body of patients, including transmission of infectious diseases, immunologic reaction, transfusion-related acute lung injury, mistransfusion, and febrile reactions (Gwam, 2018; Frisch, 2014; Goodnough, 2005). To avoid excessive blood loss and transfusion-related complications, multiple methods have been suggested including spinal anesthesia, hypotensive anesthesia, careful surgical electrocautery, intraoperative blood saving, intraoperative autologous blood transfusion, antifibrinolytic therapy reinfusion drains, drain clamping, pharmacologic agents such as erythropoietin, shorter operative times, and TXA (Sandri, 2019; Sharrock, 1993; Lu, 2018; Kopanidis, 2016).

One of the most common problem associated with TKA and THA is intraoperative and/or postoperative blood loss which may result in

decreased patient's satisfaction (Huang, 2014; Morrison, 2017). In orthopaedic surgery, TXA has been widely administered to TKA and THA to reduce postoperative blood loss and blood transfusions (Xu, 2019). Sukeik et al. (2020) performed a meta-analysis in 2019 and showed that TXA decreased intraoperative blood loss and transfusion rates after primary THA as well as wound complication rates. Systemic review and randomized controlled studies indicated that IV, intra-articular, oral, and any combination of these decreased blood loss and blood transfusion rates after arthroplasty surgery (Patel, 2014; Xu, 2019; Morrison, 2017). Hypothetically, the administration IV TXA can increase the risk of thromboembolic events. Thus, some authors focused on the use of IA TXA and its effect on thrombotic events. Some systematic reviews showed that topical administration (IA) of TXA is effective and safe and better than the use of IV TXA (Patel, 2014; Xu, 2019; Montroy, 2018). Patel et al. found that the administration of 10 mg/kg IV TXA and 2000 mg IA TXA were equally effective in reducing blood loss after unilateral primary TKA (Patel, 2014). In a recent randomized controlled trial, their results suggested that there was no difference between IA alone and combined IA plus IV regimen of TXA administration (Meshram, 2020). In addition, to avoid potential complications related to systemic administration, they suggested that IA alone is sufficient to decrease blood loss and blood transfusion rates for routine TKA. On the other hand, Mao et al. proposed that the volume of IA TXA solution can be insufficient to reach the anterior soft tissues of the knee joint when the patient is in a supine position until they walk (Mao, 2016). They conducted a comparative, retrospective study of PA and IA injection of 2000 mg TXA with a control group. They revealed that PA injection of TXA is as effective as IA injection in decreasing postoperative blood loss during TKA (Mao, 2016). Furthermore, Benoni et al. found that local fibrinolysis in the wound contributed to postoperative bleeding and that the positive effect of tranexamic acid on blood loss in TKA was exerted mainly by inhibition of the fibrinolytic activity locally in the surgical field (Benoni, 1997). Currently, to avoid potential thromboembolic events after giving high dose of TXA, combined IV and topical is an emerging method for promoting the haemostasis effects of TXA in the literature (Zhang, 2017; Montroy, 2018; Xu, 2019). Yoon et al. performed a meta-analysis and revealed that combined administration of TXA (IV and topical) decreased the transfusion rate after THA compared to IV or

topical alone (Yoon, 2018).

Operation time defined as a vital independent factor may lead to an adverse effect on the clinical results of THA (Bredow, 2018). Duration of the surgical procedure might be modified to decrease complications after total joint arthroplasty (Bohl, 2018). Sandri et al. performed a comparative retrospective study in which 40 patients were given 1 g of IV TXA before surgery, followed by 1 g of IV TXA after surgery. The study results demonstrated that the mean operation time in the TXA group was significantly less than the control group (115.25±22.8 min and 96.05±5.9 min, respectively) (Sandri, 2019). Remérand et al. (2013) found that the use of 15 mg/kg IV TXA, before incision and again at skin closure, decreased total blood loss (Remérand, 2013). Furthermore, although TXA can decrease total blood loss and transfusion rates after total joint arthroplasty, intraoperative blood loss is still controversial in the literature. Claeys et al. and Johansson et al. conducted a randomized controlled double-blinded study assessing the effect of IV-TXA on THA (Claeys, 2007; Johansson; 2005). They showed that TXA was indicated non-significant reduction in intraoperative bleeding and duration of surgery compared with the control group. On the other hand, Ekbäck et al. revealed that TXA significantly decreased intraoperative blood loss in the TXA group compared to the control group (Ekbäck, 2000). Arthroplasty surgery is associated with a considerable amount of blood loss requiring blood transfusions (Bohl, 2018). A prolonged operation time in THA might cause bleeding from bony and soft-tissue surfaces (Bohl, 2018). Bohl et al. performed a study in which there were 165,474 patients and suggested a strong relationship between operation time and anaemia requiring blood transfusion (Bohl, 2018). Konig et al administered topical TXA to decrease blood loss in 91 patients and compared to 40 patients who were not administered TXA (Konig, 2013). They demonstrated that postoperative transfusions were decreased significantly with TXA, dropping from 15% to 1% in THA. When we searched the literature, the administration of TXA effectively reduced the need for blood transfusion in the patients underwent TKA (Mao, 2016). Mao et al. indicated that 8 of 49 (% 16) patients received a blood transfusion in the TXA group, whereas 16 of 42 (% 38.1) patients received a transfusion in the control group (Mao, 2016). Bohl et al. evaluated a total of 165.474 knees and hips and showed that an increase in duration of surgery of 15 minutes was related to an increase in the risk of anaemia requiring transfusion by 9%

and the risk of extended hospital length of stay by 9% (Bohl, 2018). Moreover, a study by Konig et al. reported that the length of hospital stay was 2.7±0.7 days in the TXA group, which was significantly less than 3.3±2.0 days in the control group (Konig, 2013). In contrast, Zeng et al. compared two groups (the TXA and the control group) and found that intraoperative blood loss, total blood loss, and transfusion rates were significantly less in the TXA group compared to the control group; nevertheless, length of stay after arthroplasty surgery did not show any significant difference (Zeng, 2017). In the literature, the length of hospital stay was higher in patients who did not receive TXA (Huang, 2014; Morrison, 2017). The feasible reason for this phenomenon is that the patients received blood transfusion required to stay more days at the hospital.

Huang et al. (2014) showed that the most important outcomes of their study were significant decreased postoperative knee pain, severity of knee swelling, and improved short term patients 'satisfaction by combining a total dose of 3000 mg intravenous and topical administration of TXA compared to a total of 3000 mg IV TXA (Huang, 2014). Moreover, Ishida et al. reported that 2000 mg/20 mL IA administration of TXA reduced blood loss and knee swelling after TKA as well as decreased VAS pain score (Ishida, 2011).

In addition to knee and hip arthroplasty, a few studies have focused on the use of TXA in shoulder arthroplasty (Haratian, 2021; Kirsch, 2017). Rojas et al. indicated that although TXA decreased total blood loss and hemoglobin reduction without increased risk of complications after surgery. However, TXA did not reduce the risk of blood transfusions (Rojas, 2021).

ARTHROSCOPIC SURGERY

The development of arthroscopic intervention in advanced surgical tools and adequate experience of orthopaedic surgeons has promoted significant advantage of treating shoulder and knee injury and disorders (Millstein, 2003). To do an arthroscopic procedure safely and successfully, sufficient visual clarity is one of the most crucial factors for making an accurate diagnosis and performing the optimal treatment (Van, 2016; Kuo, 2018). In arthroscopic surgery, the main concern is uncontrolled bleeding during surgery, which is one of the most common effecting factors on the visual clarity to assess anatomic structure (Tuijthof, 2007). Multiple methods have been utilized to improve

visualization of arthroscopy during operation such as controlled hypotension, pump irrigation system, thermal coagulation, and adding epinephrine in the irrigation fluid (Olszewski, 1999; Hsiao, 2016). Therefore, the methods of controlling bleeding during procedure play a crucial role in successful arthroscopic surgery. Moreover, although arthroscopic surgery has many advantages including low-morbidity and rapid recovery, there have been many preventable or unpreventable complications such as postoperative intraarticular bleeding after arthroscopic surgery (Reigstad, 2006; Salzler, 2014). Hemarthrosis can cause susceptibility to infection, articular cartilage disruption, synovitis, pain, and delayed satisfaction (Belk, 2021). Many methods have been proposed to decrease postoperative hemarthrosis including a drain, compressive bandages, and knee arthrocentesis (Belk, 2021).

Arthroscopic knee surgery might be done to treat meniscal tear and anterior cruciate ligament (ACL) reconstruction (Rodriguez-Merchan, 2021). More reports showed that hemarthrosis is related to a toxic effect on articular cartilage and increases swelling and pain, which leads to patient's dissatisfaction and more analgesic requirements. TXA decreases intra-articular bleeding during arthroscopic knee procedures, post-operative pain, and knee joint swelling after procedure (Karaaslan, 2015; Felli, 2018). Hence, administration of TXA to decrease postoperative swelling has been obtained popularity in arthroscopic surgery (Karaaslan, 2015; Felli, 2018; Chiang, 2019; Nugent, 2019). We searched the literature with regard to the use of TXA in arthroscopic knee surgery. Karaaslan et al. evaluated the effects of IV administration of TXA in patients undergoing ACL reconstruction. The study revealed that the use of TXA given IV before tourniquet inflation and continued for 3 hours after completion of the operation reduced hemarthrosis and postoperative pain, and improved knee function in the early postoperative period without side effects such as deep vein thrombosis or infection (Karaaslan, 2015). In recent one systematic review, Felli et al. found that the use of TXA decreased hemarthrosis and the amount of suction drainage blood volume, enhanced range of motion and quadriceps strength in the early postoperative period after ACL reconstruction (Felli, 2018). Chiang et al. revealed that IA TXA could significantly reduce postoperative intraarticular bleeding, postoperative pain, and the grade of hemarthrosis in patients undergoing arthroscopic ACL reconstruction in the early postoperative period without increasing the risk of side effects (Chiang,

2019). Nugent et al. reported that the administration of 1 g of IV TXA with a tourniquet in routine arthroscopic meniscectomy can promote early functional recovery without increased risk of thromboembolic complications (Nugent, 2019). However, there was a nonsignificant enhancement in ROM (P=0,056) and swelling (P=0,384) at 14 days in their study.

Only two reports have been found in the literature concerning the use of TXA in the arthroscopic shoulder surgery. In a prospective, double-blind, and randomized controlled trial done by Liu et al. (2020) who demonstrated that administration of IV TXA is an alternative route to enhance visual clarity and decrease subjective pain and analgesic consumption in the early postoperative period without increasing the risk of thromboembolic complications (Liu, 2020). They reported that no significant differences were observed in duration of surgery, the number of time fluid pressure increase, and the volume of irrigation fluid between the TXA and placebo group. In a recent a double-blind, randomize-controlled study, Bayram et al. showed that the administration of TXA through IA way enhanced surgical clarity of view (Bayram, 2021). They compared the use of TXA and epinephrine and found that there were no significant differences between both methods (Bayram, 2021).

Although the use of IV TXA in patients undergoing shoulder arthroscopic surgery, ACL reconstruction, and arthroscopic partial meniscectomy can provide some advantages including increased visual clarity, decreased articular postoperative bleeding, and pain, TXA can has the potential to be cytotic to cartilage, tendon and synovium, especially in an enclosed joint space (Belk, 2021; Rodriguez-Merchan, 2021). Surgeons should be aware of this side effect of TXA.

THE OPTIMAL ADMINISTRATION ROUTE, TIMING AND DOSAGE OF TXA

The optimal administration route of TXA in surgical orthopaedic practice remains controversial in the literature (Xu, 2019). TXA might be administered intravenously and topically to the surgical field or orally (Haratian, 2021). Benoni et al. conducted a randomized double-blinded study in which TXA was administered at the end of the operation and three hours later in 20 hips (Benoni, 2000). The results indicated that TXA did not significantly decrease intra- or post-operative blood loss. Therefore, TXA must be administered at early phase of hip surgery to obtain therapeutic blood concentration (Rajesparan, 2009). The use of IV

TXA is the most common route in surgical orthopaedic practice. In the literature, most of the reports proposed that the use of IV TXA is effective in decreasing postoperative blood loss and the necessity of allogenic blood transfusions without without increasing the risk of side effects such as DVT and PE (George, 2015; Xu, 2019). Hypothetically, the administration of IV TXA can lead to thromboembolic complications. Therefore, some authors suggested the administration of IA TXA in orthopaedic surgery (Huang, 2014; Patel, 2014; Meshram, 2020). The administration of IA TXA has been well-established in many studies, which TXA is effective and safe for reducing blood loss after arthroplasty and bleeding during arthroscopic surgery (Ishida, 2011). Patel et al. applied 10 mg/kg IV TXA (Patel, 2014). A therapeutic blood concentration of 10 mg/kg IV TXA maintains plasma concentration for only three hours (Benoni, 1997). This may be insufficient to prevent postoperative bleeding after THP. Combined IV and IA is an emerging method for enhancing the haemostasis effects of TXA (Zhang, 2017; Xu, 2019; Zeng, 2017). On the other hand, in a recent randomized controlled trial conducted by Meshram et al. who showed that there was no difference between IA alone and combined IA plus IV regimen of TXA administration (Meshram, 2020). Furthermore, they suggested that IA alone is adequate to decrease blood loss and blood transfusions for routine TKA. However, Mao et al. proposed that the volume of IA TXA can be inadequate to reach the anterior soft tissues of the knee joint when the patient is in a supine position until they walk (Mao, 2016). Hence, this method might have some disadvantages such as TXA leakage due to soft tissue release (Mao, 2016).

When TXA is received orally 10-20 mg/kg can be utilized 3-4 times daily. Oral dose should be used two hours before the procedure (Tengborn, 2015).

COMPLICATIONS

In surgical orthopaedic practice, many authors concern themselves with patients who have several comorbidities such as a history of thrombosis, myocardial infarction, and severe renal dysfunction, which may lead to thromboembolic events as the result of major surgery and the use of TXA (Tengborn, 2015; Murphy, 1993). However, in a recent report, the main finding was that TXA did not increase the risk of thromboembolic complications including DVT and PE in patients undergoing lower limb orthopaedic surgery (Reale. 2021). This result was

consistent with the literature in which patients experienced both THA and TKA and other lower limb surgical intervention regardless of TXA administration routes (Reale, 2021). Astedt et al. (1978) reported that tranexamic acid did not suppress the fibrinolytic activity in the vessel walls. In addition, Benoni et al. revealed that the administration of TXA intravenously did not decrease fibrinolysis in peripheral venous blood (Benoni, 1997), which may explain why previous reports did not have a higher incidence of thromboembolic complications in patients received TXA.

Although TXA provides a significant reduction of blood loss in total joint arthroplasty, one of the major concerns about the use of IA TXA is that TXA can have the potential to be cytotic to cartilage, tendon, and synovium (Tuttle, 2015; Çıraklı, 2018; McLean, 2019). In the literature, effective doses for the IA TXA ranging from 250 mg to 3 g have been used by most surgeons. Tuttle et al. indicated that 50 mg/ml TXA resulted in cytotoxic effects on cartilage, while 25 mg/ml did not lead to cytotoxic effect on chondrocytes (Tuttle, 2015). Çıraklı et al. (2018) assessed the effects of 50 mg/ml TXA injected into soft tissue around Achilles tenotomy surgical sites in rats. They revealed that topical TXA caused a long-term adverse effect on tendon healing. Moreover, Mc Lean et al. investigated the interaction between human periarticular tissues and TXA and showed that 50 mg/ml or 100 mg/ml of topical TXA led to significant periarticular tissue toxicity (McLean, 2019). In a recent report, they suggested the concentrations of 20 mg/ml or less, which might not cause increased chondrocyte death (Bolam, 2020; Ambra, 2019).

IV administration of TXA should be performed by slow infusion to prevent hypotension that can be seen with rapid infusion (McCormack, 2012). The dosage of TXA should be decreased in line with increased serum creatinine levels in patients with renal impairment (McCormack, 2012).

CONCLUSION

While TXA is commonly used for joint replacement to reduce postoperative blood loss and the amount of blood transfusion necessary in arthroplasty surgery, it can be used in other types of orthopaedic surgery such as shoulder arthroscopic surgery and arthroscopic knee surgery to increase visual clarity during arthroscopic surgery and to decrease intra-articular bleeding, post-operative pain, and knee joint swelling from hemarthrosis after arthroscopic surgery without increasing the risk of side

effects. However, surgeons should be aware of the side effect of TXA that has the potential to be cytotic to cartilage, tendon and synovium.

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Chapter 3

Ethic Rules and Bariatric Surgery

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INTRODUCTION

Ethics is demonstrated on supportable standards of correct or incorrect which instruct what people ought to make or do, generally in terms of responsibility, obligations, benefits to society, fairness, or particular virtues (Giorgini, 2015). Also, ethics is a philosophical discipline. Generally, deals with concepts such of benefit- harm, good-bad, right-wrong. This is declared system of moral principles, values and standards. Ethic rules goes the practical field of morals the subject of theoretical study or considerations. In this area ıt wıll be clarified with law and morals. The terms ethics and morality are in common with related. Moral or morality is the codes, the programming, the human software of whatever evolutionarily prevails at any point (Were, 2011). It is the huge unfinished user's manual that provides the conductors or codes for human-to-human and human-to-pre-human behaviour. Ethic is more conventional or regular to refer to ethical judgments or to ethical principles where it once would have been more exact to speak of moral judgments (Kodish, 2013). These applications are an addition of the meaning of ethics. In this context, ethics is equivalent to moral philosophy. Therefore, the discipline concerned with what is morally good and bad or right and wrong (Köhler, 2021). The term is also applied to any system or theory of moral values or principles ethical is also not the same as following the law. The law often incorporates ethical standards to which most citizens subscribe (Çulhaoğlu & Carter, 2011). The rules of demonstrated recognized in respect to a particular class of human actions or a particular group. Ethics are dependent on others for definition or senses (Pesut, 2020 & Raus, 2018). It is everything that, based on the experience of the past, we have collectively agreed to be ruled by. It is the norms, the rules, the customs, the laws, the

commandments whereby out of the power of caring, the power of reflection, the power of language, and the power of habit, we establish social expectancies for moral sensitivity, moral intelligence, and moral agency (Mashayekhi & Ferretti, 2021). Ethics is then all the sub-booklets in mind, the sub-routines or more finely tuned differentiations, of how these codes are to be applied in specific situations. The highest overall values of a society, norms, rules and standards of professional individuals, business and organizations, independent of their role in living in a society that is valid for every time and place, may vary from society to society as local norms, the question arises as to rules and standards. Deontology is found in all fields/professions in health sciences (Hamzaoğlu, 2011). Deontology appears as a normative knowledge of the rules, attitudes and behaviors that it has to comply with and apply to itself, the individual it serves, close to the individual, colleagues, institutions and society during its professional activities (Ives, 2018). In line with ethical values, health sciences draw a bridge link with medical ethics. This association is supported by some basic concepts. Such concepts as scientific usefulness, objectivity, equality of opportunity, originality, efficiency and social responsibility come to the fore (Sim, 2019 & Wangmo, 2017). In health sciences, ethics comes to the fore with some basic concepts under the roof. The approval of the ethics review board is examined under the concepts of social value, risks and benefits, non-harm, informed consent, confidentiality of personal information, honesty, openness and responsible scientific communication (Hoffman, 2018). Within the framework of health sciences, unethical situations exist. If we examine them, in general, activities such as irresponsible writing, inability to comply with scientific concepts and literature, writing biased or self-interested articles are evaluated within the framework of an unethical situation. Ethics has a well-connected in the concept of bariatric surgery procedures. In particular, before touching on the topic, it is necessary to mention in detail the concept of professional ethics. It can be defined as the sum of ethical principles, rules and standards that guide and guide behavior in professional life (Grundy, 2001). When the concept of professional ethics in terms of health and medical sciences is studied, the creation and provision of corporate, organizational, cognitive ethics review and evaluation committees/boards comes to the fore. In particular, in this context, mechanisms should be established to increase ethical awareness through regular and continuous communication on ethical

issues, to report and monitor violations of ethical rules, and ethical committees/institutions should perform their duties (Yardım, 2010).

Health Equity

The conception of health equality might be determined like an admittance all of human populations to health care as much as human need (Wilkinson, 2005). In a way, it is the provision of equal health care to a person for the same or equal health needs as another expression The concept of inequality that will arise in the health sector greatly affects public health with the inadequacies of social factors that affect health on the health system. This situation may also bring about inadequacy in health policies and unsolvable system problems (Navarro, 2007 & WHO, 2008). Essentially these factors affiliated with social items and the social factors associated with the health system cannot be well defined on the health of society subsequently leads to inequality and the emergence of a regular structure in the health system (Master, 2018).

In the group called social variables, many variables such as class, education, financial opportunities, cultural factors, unemployment rate are correlation to the approach of inequality in the healthcare system (Berry, 2018).

When we explain the parameters in my health system, basic concepts such as management and physical conditions or infrastructure come to mind (George, 2018). The result of the continuation of these two variables with inequalities, the concept of inequality in the health system can be observed. In particular, it is bottom-line to analyze a very necessary section in this regard (Figure 1.)

The concept of inequality is not a correct approach to define only as inequalities in health care or only as inequalities with social variables. The concept defined as inequality in health is an important consideration that these two variables are a whole (Pratt, 2018)). Qualified on this topic, especially the work to be done between the provision of Health Services, individual/community to the health protection, to give impetus to improving service policies, the basic level as described by strengthening the health services public health, health inequalities will establish the importance of a holistic public health system healthcare will be in front of (Kohrt, 2018).

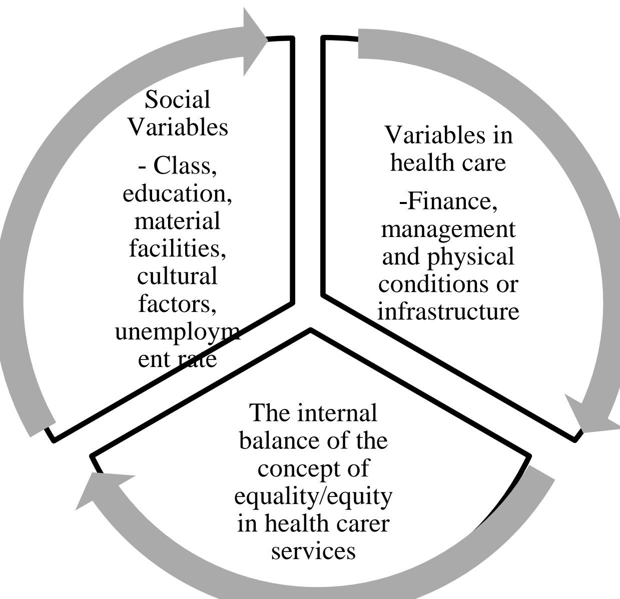

Figure 1. Parameters of Health Equiety (Wilkinson, 2005)

Medical Ethics

Throughout almost all of the written history and almost everywhere in the world, being a part of the health care system, especially being a doctor, has demonstrated the concept of working diligently and being in the highest segment of responsibility (Bioethic & Science). However, some situations that arise in the concept of medical ethics; the supervision of health services passes from physicians to professional managers and bureaucrats, and managers may see physicians as an obstacle to health reforms. The patient and doctors' affinity is the key element of medical care practice and therefore medical ethics. In the Declaration of Geneva, it is stated that the priority of the physician should always be the health of his patient, and in the International Code of Medical Ethics, the physician is obliged to provide his patient with all the scientific information he has with full loyalty (UNESCO, 2012). Examples of other dimensions that pose equal problems in the patient-physician relationship include the obligation to ensure the confidentiality of medical records in an age when data is stored and transmitted on computers, the duty to protect life in the face of a death request. Particularly troubling is the subject of six physicians during daily practice: exhibiting the behavior is respectful and

equitable service provision, communication and consent, competence, non-professional secrecy for the patients he or she in the determination process the beginning of life and is associated with problems in associated with last period of their life (Kaebnick, 2018). Informed consent is one of the central concepts of medical ethics today. The right of patients to decide on the medical service to be provided to them hold a position a significant point in most of the relevant legal regulations and rules on professional ethics in the world. The application of informed consent or accord a reflection of the need to receive information and consent in the field of medicine (Eckles, 2005). In this application, the patient is asked to make a choice after being informed about what his disease is, what treatment options are available, and what these options may be. The decision of the patient who can understand the information provided to him, the meaning of the choice he will make and express it, that is, a patient with competence, is respected and treated accordingly. There are some concepts that are important in consent forms (Parker, 1997). They must be qualified to give patient consent. The consent given must be explicit and the consent must be given independently and prepared or voluntarily. Deciphering is one of the important features that applies only to the treatment or procedure recommended for the subject being informed about. This part is an essential part for the physicians to keep the patient's information confidential. In the Hippocratic Oath, “If I see or hear things about people's lives that should not spread outside during treatment or even outside of treatment, I will keep them to myself “It is not against professional ethics to disclose patient information in certain circumstances” and I will consider it a shame to mention it." the expression takes place in (Musick, 1999). The oath and its more recent adaptations do not give any privileges in the task of keeping information confidential. However, other texts of professional ethics reject this absolutist understanding. For example, the International Code of Medical Ethics states that “Professional confidentiality may be violated if the patient gives his consent or if there is a real and imminent threat to the patient or others, if this threat can only be eliminated by disclosure.” The fact that the principle of professional confidentiality can be violated on such grounds required the clarification of the principle of professional confidentiality (Putman, 1988). Clinical evaluation plays an important role in the concept of medical ethics. Medical determinants, patient's wishes and preferences before surgery, external and internal elements are

defined as important parameters. The points examined as medical determinants; the patient's medical condition (which is available), the risks of pre-seen supported treatment, the stages of treatment, the risks and possibilities of the emergency, chronic, reversible state of the patient's medical condition should be evaluated (Feudtner, 1994). The patient's preferences, recommendations, the immediate environment of the patient, possible side effects of treatment (physical, mental and social) should be very well categorized. The process of informed consent occurs when communication between a patient and doctors results in the patient’s authorization to encounter a exact medical care. In looking for giving patients informed consent physician should be

Assessment the patient’s cognition status to understand and comprehend medical procedures information. Patient have opinions and thinking about specific medical procedures or remedies alternatives and available to make an independent and automatically decision. Additionally, the burdens or loads, risks, and forgone key benefits/ opportunities of all alternatives, including new treatment. Ethic forms include informed consent conversation and the patient’s choices in the medical care record in manners (Self, 1993). This should be noted that ethical evaluation is important to ensure insight and dominance, to assist in detection and detection. The concept of medical ethics and bioethics can be considered as a whole intertwined. Bioethics; medical ethics focuses on the concepts of ethics in nursing, health, clinical and biomedical research (Akabayashi, 2004). The last of the most important points on this issue can be defined as the availability status of ethics committees. At this point, ethics committees are a very important lens for protecting the rights of physicians, individuals and organizations, as can be seen in the table below. It is based on the requirement for the achievement and continuity of standardization (Figure 2).

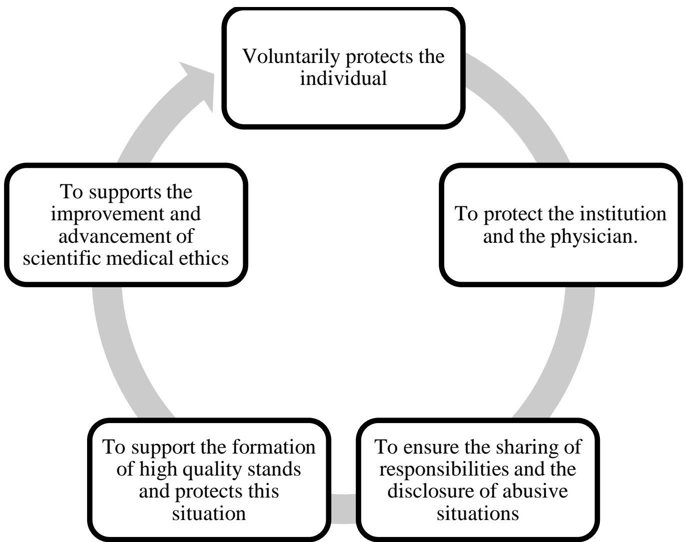

Figure 2. The benefits of ethics committees (Parker, 1997)

Principles of Medical Ethic Rules

In order to make any ethical decision, an individual needs a number of basic principles. In ethics, which is a normative work, as in law, it takes a deductive point of view to reach a special judgment from general rules (Self, 1993). Considering the general principles of medical ethics (Figure 3); The principle of honesty should be open and honest to its patient both in its contract with its patient and in the diagnosis and treatment it will apply. Ethics have first of the essential principles at the beginning of the application (Tysinger, 1997). Decency is significant practice attribute in ethical rules. Another rule is that the existence of vitality comes across as a principle of respect for one's life. When creating ethical theories, it is necessary to respect all forms of life, especially human ones. In particular, the principle of respect for life is also in cornerstone the "Helsinki Declaration", also known as the convention of ethical theories (Savulescu, 1999). A third principle, the decisiveness of probability and risk factors, is well-defined and the development of appropriate methods is among the basic principles. The principle of autonomy is again an important step (National Board of MD, Examiners, 2005). In accordance with this principle, it is important to prioritize patient rights and provide the patient with the ability to make free decisions. Another concept comes across as justice. It is an important

point to ensure that an equal health care service is provided to every patient without any social, economic, cultural dec between patients. The basic concept at the top of all this is to comply with the provisions legally, that is, the concept of legitimacy is a basic principle (Hattab, 2004). These principles are of great importance for supporting the part of ethical rules from the frame of reference medicine to protect the rights both of physicians and patients in health care, developing and assuming the necessary responsibilities. The improvement of medical ethical principles in the health system can be prevented, it is necessary to support them in terms of preventive health services and in terms of improving public health (Goldie, 2004).

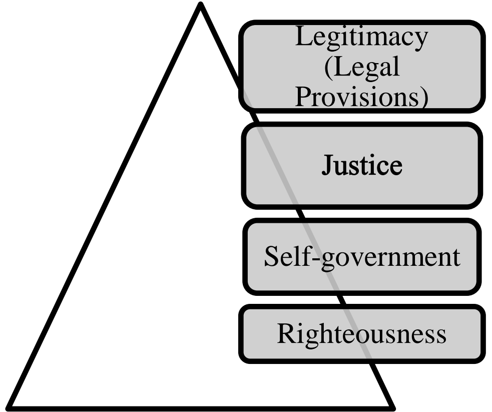

Figure 3. Principles of Medical Ethic Rules (National Board of Medical Examiner, 2005)

The existence of a disciplinary education system with respect to medical ethics is one of the essential principles. In this context, the importance of an important need to significantly increase the duration of the pre-medical ethics education and to integrate it both horizontally and vertically into the education of students before and during the clinic will benefit to many extent (Gross, 1999; Ali, 2020; Eysanbach, 2011 & Lizbon, 1981). The points in the goals and learning objectives of educational programs should be well defined and transferred effectively. The most important point in educational programs is that the goals and learning objectives are defined; all educational content should be structured according to these goals and objectives (Helsinki, 1975).

Ethics Model of Bariatric Surgery

Obesity is increasing in prevalence throughout the worldwide and with this change, there is a major increase in associated metabolic, cardiac, liver, stomach and other noncommunicable diseases. This increase is particularly significant in countries in which there has not previously been an overweight and obesity problem, but it is also an event in countries in which obesity has been present for decades (Chisholm, 2015). One of the major problems for rising and spreading obesity levels around the world is the increase in technological power result. This increase has caused by the increase in body weight as a result of inactivity, excessive food consumption and psychological changes related to the emotional state in humans (Citrome, 2015). There are three different ways to solve obesity: dietary, medical and surgical methods. In particular, the increase in the body mass index ratios , which is manifested by the ratio of weight in m^2 of height, to excessive sizes, complicates dietary and medical treatment. Obesity surgery has become a frequently preferred method of surgery in both healthy and individual size with the sudden rising in the level of obesity prevalence over the last 10-year period (Willinsky, 2006 & Eye-Walker, 2013). When evaluated within the scope of ethical problems, important factors such as determining the appropriate surgical method, processing the original procedure such as selecting an individual-specific surgery as a result of detailed examination from obese patients, and the adequacy of these procedures come to the fore (Syamili, 2017). In addition, it is important that the patient and this situation are categorized within the ethical framework when choosing the surgical method, and that procedures with or without a return are discussed in detail. Obesity surgery is an exceptional condition that is distinguished from many other diseases by the fact that it is a condition that affects the social and consciousness structure of a person, as a result of which a person decides, according to his own will, together with his physician, to explain the benefits and harms of the procedure in detail (Benli, 2020). It is the main principles to understand obesity surgery with its basic concepts and to evaluate ethical problems that may be encountered together with solutions. Bariatric surgery should be defined from a multidisciplinary perspective. Although the head of the basic chain in the bariatric surgery team is the general surgeon who is an expert in his field, team discipline is very important (Figure 4.). The holistic approach of the expert nurse, coordinator,

dietitian, psychologist and exercise coach within the team is a basic management system in order to raise the multi-disciplinary concept of health (Jian, 2018).

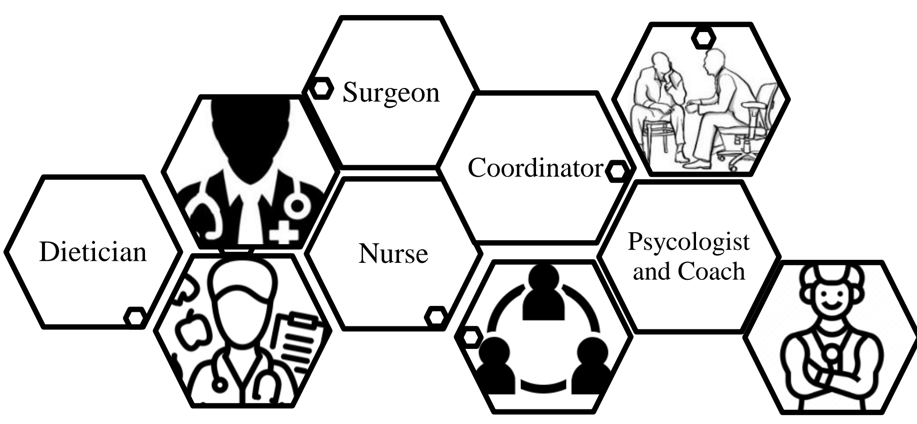

Figure 4. Multidisciplinary Team Plan in Bariatric Surgery (Syamili, 2017)

The whole team should work meticulously on this system at every point and all interventions to be made by the team should be taken responsibility and the situations that may pose possibilities and risks should be well categorized (Yan, 2017). Considering the basis of the most common problems encountered in surgical intervention, it is important to clarify the patient's and physician's expectations from surgical intervention, the main intended goals, the patient's views on obesity surgery, to make the definition of obesity clear to the patient and the situations that may occur after it (Wenbo, 2009). As explained in the ethical principles section, information is a very important aspect in evaluating people as adequate (Türk Tabipler Birliği, 2009). It should also be noted that this issue is also legally protected. All patients have the right to live to protect and develop his material and spiritual essences. The integrity of the person's body cannot be touched, except in cases of medical necessity and as written in the law; he cannot be subjected to

scientific and medical experiments without his consent'. Within the framework of the rules of Turkish Medical Association-Medicine and Professional Ethics; 'This justices or rights information, the right to informed consent, the right to accept or reject treatment, etc., when the physician makes a decision about the patient's health. the patient has to respect his rights has been defined as. In this context, autonomy and legitimacy of patients are among the important points in this context (Chew, 2020). Another important issue is the indication for surgery. It is a very wrong attitude for the doctor to force the patient to have an operation (surgery, gastric balloon, botox) to determine the type of surgery. This is also symptoms of the result of going beyond ethical values to find more patients. Bariatric surgery is a team effort. In particular, situations such as the bariatric coordinator making a negative comment about another team, not coordinating the team well, and not complying with the principles of the relationship between the patient and the physician, lead to decoupling from the ethical value line. Another important issue is the task, that is, the separation of missions should be done very carefully. The bariatric coordinator should not act as a surgeon, psychiatrist or dietitian in the follow-up of patients after surgery to prevent disruption of the order in the team (Wenbo, 2020). The most common ethical problems in the field of bariatric surgery are on the island; With the large number of patients, the growing desire to be popular by the developing team has increased. In consequence of the press/advertising /social media specific to this field has a lot of interest in this field, the ego-raising attitude of the team leads to the exclusion of ethical values (The Gurian, 2020). The formation of a competitive environment, especially in the sector, is among the factors that cause ethical values to be decimated. Uncontrolled and unsupervised behavior, followed by disinformation, that is, information pollution, can then lead to a path away from ethical values. Therefore, it should be continued with much more attention (Ives, 2018).

CONCLUSIONS and RECOMMENDATIONS

The Regulation of Obesity Treatment Centers in Turkey should be prepared, standards should be determined and existing centers should be restructured according to these standards. Multi-disciplinary work should be adopted in these centers; people should be given detailed training on life changes after surgery. Educational programs should tell about the anatomical and physiological consequences of surgery in the best way. Also, it should be protect and preserve that the patient adopts the rules of

nutrition and exercise that they must follow throughout their lives (Carter, 2011). The number of obesity centers in our country is not enough. The activities of these centers are bounded because they are not managed by specialized people, there are not enough specialized staff, personalized programs are not provided. It is necessary to support these centers with a sufficient number of competent officials. In order to maintain permanent results regardless of the method of bariatric surgery, a change in behavior should be at the forefront of adhering to the recommended physical activity and nutrition program, especially at the points that need to be focused on.It is very important to respect the patient's personal rights and autonomy and not to leave the light of the principle of not harming the patient/ patient. Ethical values should be ensured on the patient by adapting to the principle of usefulness in every medical attempt. Responsibility, such as respect for justice and the protection of justice, should proceed effectively at all stages.

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Chapter 4

Structuring Recommendations Guided by Somalia Basic Health Indicators and Current Analysis of Health Organization

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Introduction

Somalia has suffered from a complex humanitarian emergency for over two decades. It has been dealing with conflicts between Somaliland and Puntland, with constant attacks by Ashabab militants, with repeated prolonged cycles of drought, floods and hurricanes. In this context, inadequate health services and Internally Displaced Persons Camps (IDPS) with limited infrastructure such as limited food supply, shelter, drinking water leading to widespread malnutrition are the main factors responsible. These conditions create favorable conditions for the spread of infectious diseases such as cholera, measles, whooping cough and malaria. An estimated 5.4 million people are in urgent need of humanitarian assistance. 2.6 million people, including refugees, have been internally displaced (1).

In addition, the sparse distribution of the Somalia population of 16,359,500 over a wide geographical area of 637,657 km^2 is the biggest obstacle for individuals to access health services. In fact, all these reasons make it a priority for the national health structure of Somalia to originate from the periphery.

From another point of view, the absence of a central government has led to the expansion of private sector health services, and out-of-pocket expenditures for health services have pushed the generally poor people into poverty. States are trying to implement existing strategic health plans with Ministries of Health, which have functional but limited capacity. For this reason, they can operate mainly through the aid inputs provided by international organizations and non-governmental organizations. The

local monopolization of services leaves the people with vital needs in the field of health at the mercy of the private sector, where there is almost no control in the field of health. The private sector, with poor planning and infrastructure, is unfortunately an important provider of service delivery. It is estimated that at least 60 percent of health services are provided by the private sector.

The analyzes show that the public's perception of health service quality is higher in the private sector than in public facilities. It is estimated that around 80% of drugs are imported and distributed by the private sector through retail stores and pharmacies nationwide. Due to the lack of regulation and supervision in Somalia, there is no structure that will limit the potential of the private sector, increase or replace the quality, and determine the quality standards for pharmaceuticals. (2).

A health system without a project, organizational plan and capability for its structure is like an unregulated transportation system. The number of accidents and deaths would increase rapidly without the proper floor of the highway, separators from other roads, warning signs, lighting, traffic lights, speed, driving rules, education of drivers and pedestrians and financing of all these components. The healthcare system is the same. Appropriate physical structure and conditions, personnel employment and training and financial resources, and more importantly, there must be an organizational structure that will coordinate and supervise all these. In this way, all support and financial resources can be gathered under a single stable organization and targeted success can be achieved. The first organization for the national health structure of a country, which is the source of the problem in Somalia and the first thing to be solved, should be the primary health care organization.

The Importance of Primary Health Care Services

All of the measures to be taken for the person and the environment in order to protect and improve the health of the person and the society are within the scope of preventive health services. Preventive health services are a form of struggle against the danger itself (3). Activities such as vaccination, inspection of drinking water and food, mother-child health, disease screening programs, communicable disease measures, control of waste, control of animal diseases, control of environmental conditions like air and water pollution with disease risk are in the field of preventive health services. Today, the scope of preventive services has expanded further and has begun to cover basically the health services of the entire

population, such as the provision of healthy water reserves, public health protection measures, as well as nutrition, family planning, prevention and early diagnosis of chronic diseases. (4).

Primary Care Treatment Services, on the other hand, are systems that can reach individuals and families in the community as a whole, solve the health problems of the community, protect health, and provide home and outpatient treatment services to patients (5). At this level, holding the door of the next step, having the first contact with the patient, providing continuity, comprehensive and coordinated service shows how indispensable it is in the scope of general health care.

Preventive health services and primary care services include pre-hospital health services that will minimize or prevent the risk, severity and duration of possible future disease and disability, diagnose the disease before the symptoms of which the patient is unaware, and provide treatment in the early stages of the disease. It is a known fact today that in cases where the "Primary Health Services" are structured correctly and adequate quality is provided, nearly 90% of the health problems can be resolved in the primary care before the disease occurs" (6). This situation also minimizes individual health expenses.

Structure of Primary Health Care Services in the World

Health policies in both European Community countries and non-Community European countries are shaped according to the characteristics of the countries and are mostly based on their own resources. Therefore, there are great differences between European countries in terms of the provision of health services, manpower practices and health financing policies (7).

England

Established in 1948, the National Health System is a system financed by general taxes, and health service delivery is provided by general practitioners and community health workers in primary care. In order to benefit from the health services offered in this context, people must first apply to their general practitioner (8). 85% of all disease cases in the UK are cured by self-care, 90% of the rest are treated by family physicians and only 10% are seen by hospital professionals. Preventive health services do not have to be provided by family physicians. Because local health administrations have undertaken preventive health services (occupational and environmental health).

Sweden

In the 1980s, all responsibilities related to the delivery of health services were left to local governments. Municipalities in Sweden carry out various preventive health services. These include the prevention of infectious diseases, food and water control, and school health services. In addition, municipalities are also responsible for the social assistance services envisaged in the event of a decrease in income and the patients for whom primary health care services envisage home care (9).

Germany

In Germany, the entire population is under the social security umbrella. Among the Primary Health Care Services, preventive medicine services such as follow-up for more than four years in children and early diagnosis are the most emphasized services. In addition, practitioners carry out community health services such as emergency diagnosis-treatment, occupational health and counseling.

Finland

Local governments in Finland are responsible for all types of health services. They establish and run health centers, and receive hospital services from regional hospitals. The participation of the private sector in the field of health is very limited (10).

Denmark

Individuals have two options for purchasing services in Denmark. Group 1: Has to choose a Family Doctor within a 10 km radius (5 km for Copenhagen), also applies to children independently and is paid through tax. Group 2: They can go to any doctor or hospital they want (1.7% of the population) making their payments out of pocket, and the inpatient service is free.

United States of America

Private health insurances occupy 70% of the health system and it is the country where private health insurances find the most common living area all over the world. Preventive services are provided by public health institutions in the states and mostly for the poor who do not have insurance. There is no regular chain of cascading and referral due to the freedom it gives to patients within the uniquely complex structure of the US healthcare system. Primary health services other than curative

services are provided through separate organizations and under the name "Public Health Services". Therefore, the structure that we can call primary care for the USA consists of private physician practices and hospitals where people can go when they get sick. Patients can be referred to a higher level by the physicians they are examined, or they may apply to another doctor or a higher level. However, this practice is limited to the insurance policy of the patient and the list of contracted physicians (11).

Cuba

The local level provides primary care in rural health homes, hospitals and urban polyclinics. In rural areas, 76 people work in a polyclinic, services are provided in all basic specialties, and the care of chronic patients and the elderly is carried out by family physicians at their homes.

Turkey

Preventive health services and primary treatment services are generally provided by a single structure called "Primary Health Services". First, the primary health care services, which were given with a single structure called health centers, were then started to be provided through the Family Medicine System and the Community Health Centers to which it was affiliated. What is meant by family medicine is the practice of medicine that is close to the residence of individuals and family members or in a place where they can easily reach, to which they will first apply and receive health care. These doctors undertake the majority of outpatient diagnosis and treatment procedures and mobile health services as well as preventive medicine practices (13). Community health centers, on the other hand, are defined as health centers that carry out health education and inspection activities providing administrative services that organize the health services of the people living in the region and the society. They also provide environmental health services, collective living spaces and school health services, preventive medicine services of the society, and coordination between the institutions providing primary health care services and among other institutions. (14).

Current Situation: Somalia Healthcare Construction and Analysis of Basic Health Indicators

Analysis of Basic Health Structuring

Somalia has the world's 3rd highest infant mortality rate (76.6/1000 live births), 6th highest maternal mortality (829/100000 live births) and

6th lowest life expectancy at birth (25 years). Somalia is considered one of the least developed countries with a Gross Domestic Product (GDP) of 7.3 billion USD (15). The GDP per capita in 2017 is USD 499 and the rate of the number of people working below the poverty line is over 51% in 2016 (15). In Somalia, the government's per capita annual health and nutrition expenditure (official development aid) was around US$11.2 in 2019 (16). The population overall lives on less than US$1 a day, and 73% live on less than US$2 a day (17). Communities have little or no income to use as disposable out-of-pocket payments. The cost of healthcare services is a major barrier to healthcare in Somalia.

Only 22% of the Somalia population has access to basic services. For this reason, the Somalia Ministry of Health tries to demonstrate a strong political commitment within the scope of the Somalia Health Sector Strategic Plan (HSSP) and the Roadmap to Achieve Universal Health Coverage (UHC) (15). The current Essential Package of Health Services (EPHS) revision process is guided by key objectives, principles, and EPHS Somalia 2020 update (Somalia Roadmap to Achieve UHC 2019-2030) aims to optimize the balance between UHC's three dimensions:

Scope of service

Population coverage

Financial protection

The Ministry of Health could not be active in Somalia, since there has not been a strong government since 2002 (18). Due to poverty, internal conflict, environmental degradation and weak health system in the country, the level of maternal health remained in a very poor state until this period (19). For this reason, the most important health problem is pregnancy follow-up, maternal and child health. 2010-2015 Reproductive Health National Strategy and Action Plan was made in Somalia. This plan focuses on three priority issues: appropriate spacing, safe delivery, and female genital mutilation. Midwife training was one of the key elements of the plan (19). A new health system was established in 2015 (18). The current health structure in Somalia is shown in Figure 1.

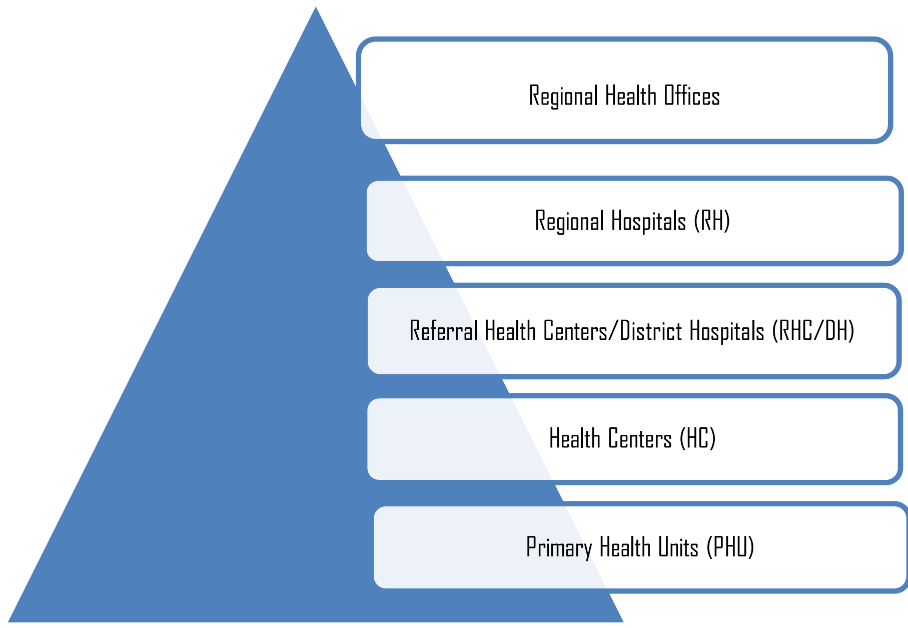


Figure 1. Organizational Structure of Somalia Health Services

Table 1. Statistics of Existing Health Institutions in Somalia

HEALTH UNIT TYPE	NUMBER
Primary Health Units (PHU)	359
Health Centers (HC)	680
Referral Health Centers/District Hospitals (RHC/DH)	40
Regional Hospitals (RH)	18
Regional Health Offices	18

The scope of health services provided in Somalia is shown in Figure 2. (20).

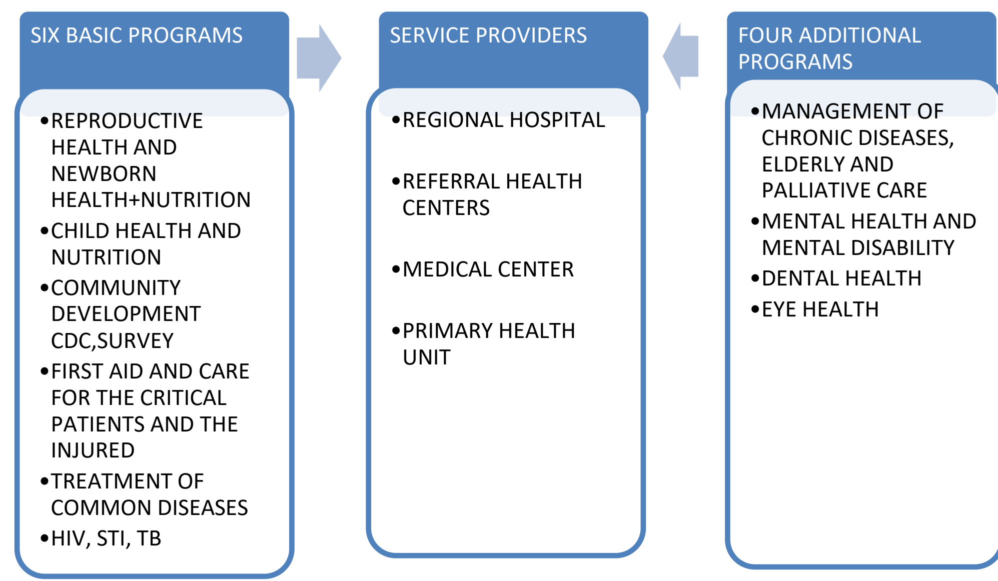


Figure 2. The scope of Somalia Health Services

Health Services Finance and Personnel Structure

Total health sector financing in Somalia consists of out-of-pocket health expenditures with a high rate of approximately 45%. Average annual household expenditure on health is estimated at $110 (2017) and ranges from $11 to $200 depending on ability to pay (2). Due to this structure, households' access to services based on their ability to pay causes inequalities in people's access to social services and pushes the already most disadvantaged groups in this country to live in much more difficult conditions. There are almost no formal risk protection mechanisms in the country: health insurance is limited to private planning and funding by international companies and NGOs and they are estimated to make up only 1% of health insurance.

Public Health expenditure is approximately US$33 per capita per year, well below Sub-Saharan Africa's average of US$98. Government spending on health accounts for 6.9% of total government spending, well below the Abuja target of 15%. Donation financing is an important source of health expenditures, accounting for 45% of total health expenditures, most of which is non-treasury (2).

The density of 4.9 private health workers per 10,000 inhabitants and

the density of 4.3 public health workers per 10,000 inhabitants are both significantly lower than the WHO's “Critical” Human Resources scarcity threshold of 2.28 per 1000 inhabitants. Availability of qualified health personnel is predictably very difficult due to financial and retention difficulties in rural areas. It is also believed that there are a large number of unqualified and not adequately trained health workers. (2).

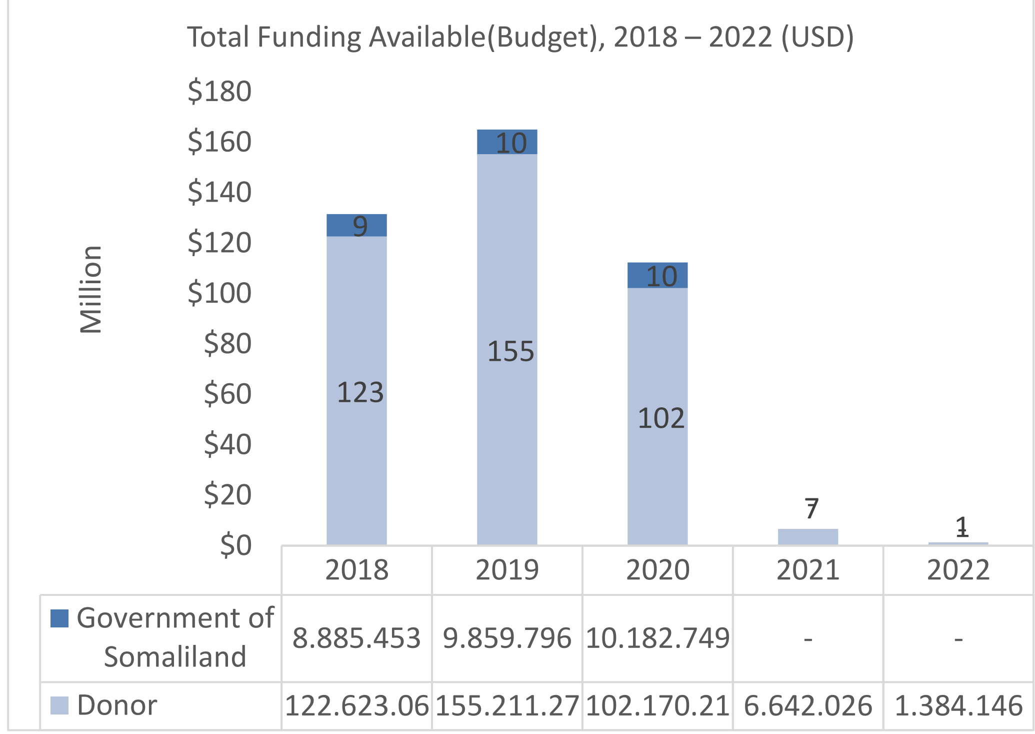
The capacity of the Somalia Federal and State Ministries of Health to manage health services is very weak throughout Somalia. Ministries of Health in Somaliland and Puntland in the rest of the country are just beginning to form. Key health personnel in most MoH units are either non-governmental organizations or volunteers from other development partners. Planning units such as health economics are also lacking in the planning units of the Ministry of Health. Existing service delivery financing is provided by international donation organization projects, but very limited coordination among these financial actors has been achieved. This situation prevents the unification of the transferred financial resources and achieving a target-oriented success (2). Somalia's Joint Health and Nutrition Program (JHNP), which was formed with the coordination of multiple donations and closed in 2016, has led to the adoption of similar policies and strategies. More importantly, it allowed the pooling of donation funding to jointly support Somalia's Primary Health Care Package (EPHS) (12).

EPHS in Somalia does not reach the entire population. EPHS was developed in 2009 and started in 2013, with support from UNICEF, from similar work in the European Commission and other FCV (Fragile, Conflict and Violence) countries. However, after funding ended and JHNP was shut down, EPHS implementation turned into bad practice that was not coordinated with the package and could reach a very restricted geography (2).

Table 2. Somalia financial situation in 2018 (1)

	Finance name	Fund required	Funded
WHO	Emergency Medical Assistance Plan	17 million USD	2.6 million USD
Health Cluster	Humanitarian Plan	124 million USD	54 million USD

The estimated financing of the Somalia health sector for 2018-2020 is more than $400 million, mostly from donor financing (figure 4) (34);



	2018	2019	2020	2021	2022
Government of Somaliland	8.885.453	9.859.796	10.182.749	-	-
Donor	122.623.06	155.211.27	102.170.21	6.642.026	1.384.146

Figure 3. 2018 - 2020 Estimated Financial Status of the Somalia Health Sector

The 'service delivery' priority accounts for 69% of total funding; EPHS accounts for almost half of all funds (34).

Analysis of Basic Health Indicators

About 46% of the Somalia population is under the age of 15. 70% of the population is under the age of 30 and the average life expectancy is 53 years (21). (Figure 3).

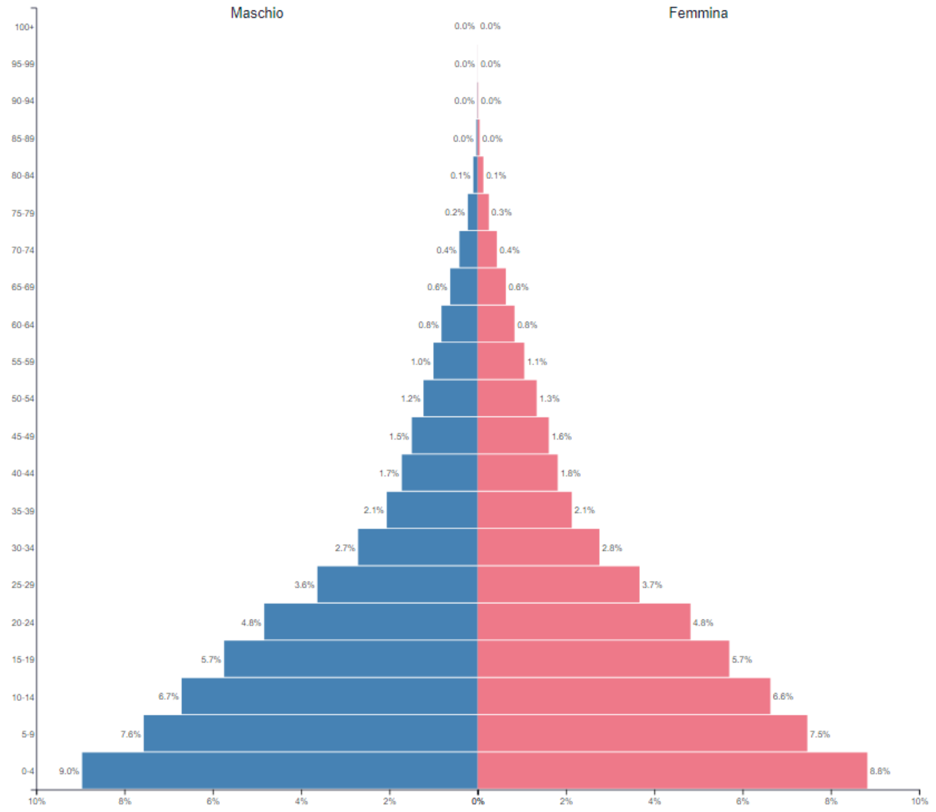


Figure 4. Somalia Population Pyramid

Of the Somalia population, 42% is urban, 23% is rural, 26% is nomadic, and 9% is internally displaced. The population density is low, only 25 people live per square kilometer. This makes it difficult to provide health services. Generally, access to health services is very limited in rural areas and especially for the nomadic population. It is estimated that less than 15% of the rural population has access to any health service (22).

The rate of modern contraception use is the lowest in the world. Especially in rural areas, the rate of effective family planning (FP) method use by married women is 0.0%. Also, the fertility rate is high, a woman can expect to have at least ten pregnancies and give 5-6 live births. Because of this high fertility rate, one out of 15-20 women is at risk of losing their life (18-25). Only a quarter of women receive antenatal care and a third give birth with the help of a qualified health personnel.

All these situations and the inadequacy of health institutions for emergency care cause a high maternal mortality rate.

The total fertility rate in Somalia is 6.6. This rate is the third highest in fertility in the world. While the maternal mortality rate was 1210 per 100,000 live births in 1990, it was reported as 732 in 2016. In 2020, this figure decreased to 692. This rate, combined with a high fertility rate, puts one in 10 women at risk of dying. The prevalence of adolescent marriage and early pregnancy in Somalia causes a higher mortality risk for both mother and baby (18). The causes of maternal mortality in Somalia are 25% bleeding, 16% hypertension, 29% anemia, malaria and infections, 10% induced abortion and 10% sepsis (18).

The most common causes of maternal morbidity are: Obstetric fistula, chronic infection, urinary system diseases, chronic anemia and post-traumatic psychiatric disorders (18).

Prenatal Care (PC) (Antenatal Care):

Antenatal care is given to only one in four pregnant women in Somalia and the quality of care provided is low (26). Only a small proportion of women know the importance of PC or what it is. The general perception is that antenatal visits are unnecessary if they have not had any problems in their previous pregnancies. (18)

Antenatal services are provided by the Mother-Child Health Center, some public hospitals and private hospitals in city centres. High-risk pregnancies (Sexually Transmitted Infections, previous pregnancy complications, preeclampsia, severe anemia, etc.) are detected with PC (26).

Antenatal services provided in Somalia include physical examination, abdominal examination, tetanus immunization (TT), vitamin A, iron and folate supplementation, intermittent malaria prophylaxis in endemic areas, HIV screening, health education and nutritional counseling (26).

In areas with a high prevalence of malaria, pregnant women are four times more likely to contract malaria and are twice as likely to die from malaria. When pregnant women have malaria, there is an increased risk of anaemia, preterm birth, and maternal death. Intermittent malaria prophylaxis is used to protect pregnant women from malaria. Only 6% of women receiving PC was performed intermittent malaria prophylaxis. According to the UNICEF 2009 report, TT was performed on a quarter of pregnant women (Table 2) (18).

Table 3. TT immunization and vitamin A administration status to pregnant women (18)

	%	Source
PC (once only)	%26	MICS* 2006
Women who received at least two doses of TT during pregnancy	%26.3	MICS 2006
Pregnant women given vitamin A	%4-25	UNICEF 2008

* MICS: Multiple Indicator Cluster Survey

Birth Services:

More than 90% of women give birth at home, and more than half of the deliveries are assisted by women who have had traditional deliveries (24). Births have revealed the necessity of being done in primary health care institutions due to the difficulties of transportation to health units and even if they can reach them, due to both health centers and hospital capacities and financial impossibilities. The poor structure and limited facilities of primary health care units cause many intra and postpartum complications.

Postpartum Care Services (PCS):

Somali women's awareness of the importance of PCS is low, with only 10-12% receiving PCS. In PCS physical examination, screening and treatment of anemia, HIV screening, vitamin A support and FP counseling are provided. 49% of the women who received PCS, received the vitamin A method and 24% of them received the AP method. (25) People giving PCS may also vary according to regions and settlements. (26).

Use of Family Planning Method:

As a result of early marriage and high fertility rates, half of Somali women aged 15-49 are either pregnant or breastfeeding (18). The use of FP method in Somalia is a sensitive issue, often not discussed between husband and wife. Children are considered a gift from God. Many religious scholars and a significant part of the Somali population are against the use of FP methods. Little is known about the use, safety, and efficacy of modern contraceptive methods, and false beliefs are common. The use of FP methods can significantly reduce maternal mortality and

increase the chances of survival of children (20). 26% of women want to use an FP method, but they cannot reach it because modern methods are not available in the country (27). Only 1% of Somali women use the modern FP method (26).

Table 4. Fertility Rates and Contraceptive Prevalence Rates by Multiple Indicator Cluster Survey Study (26)

Total Fertility Rate	6.2-6.7
Age Specific Fertility Rate (15-19 Ages)	123/1000
Crude Birth Rate	% 43.2-45
Contraceptive Prevalence Rate (15-49 Years)	%15
Modern Contraceptive Prevalence Rate (15-49 Years)	%1
Who need but cannot reach contraception	%26.2

UNFPA has established seven midwifery schools for FP services, from which 125 community midwives have graduated. Population Services International (PSI) and other non-governmental organizations have trained more than 500 health care workers, such as obstetricians and doctors at Public Health Centers, to provide FP training. PSI has also spearheaded the distribution of modern FP methods in more than 300 Somaliland pharmacies and provided consultancy training to pharmacy staff (19).

Infant-Child Health Indicators

Clean and safe birth and cord cleaning, protection from hypothermia, resuscitation, early and especially breast feeding, prevention and management of Ophthalmia neonatorum, immunization, management of neonatal diseases and protection of preterm and/or low birth weight babies are provided in baby follow-up (24). Infant mortality rate in Somalia is 85 per 1000 live births. Neonatal deaths are estimated at 40 per 1000 live births since 2016. The under-five mortality rate is 137 per 1000 live births, making it the third country with the highest rate in the world after Angola and Chad (18). The causes of death in children under the age of five are neonatal problems, acute respiratory diseases, diarrhea, vaccine-preventable diseases, malnutrition, and malaria (18).

Immunization

In the Somalia immunization program, routine vaccines are OPV, BCG, DBT, Hep B, Hib and Measles (28). Due to the poor health system, inadequate immunization services, and vaccine refusal, overall immunization rates are low in Somalia. Only 12% of 12-23 month old children had all necessary vaccinations before 12 months, 36% were never vaccinated. According to WHO data, in 2011, 46% of children were vaccinated against measles and 41% of them were given DBT (29). In Somalia, infants are given vitamin A at the 9th month (18).

Nutrition in Children

Children's nutritional status reflects their general health and the health of society in general. Malnutrition is thought to be the cause of one-third of deaths in children under the age of five (10). Children's nutrition in Somalia over the past three decades has been the worst in the world. Childhood malnutrition remains a major public health problem. In 2016, a total of 1 million children's height and weight were measured. Severe or moderate malnutrition was detected in 23% of them (30). Globally, in children under five years of age, acute malnutrition exceeding 15% is considered critical. Acute malnutrition is high in Somali children and its prevalence is usually above this critical level (18).

The causes of global acute malnutrition are the impact of droughts, basic inadequacies caused by years of conflict, the collapse of basic social services and the weakening of coping mechanisms. In 2011, when the drought was most severe in Somalia, the drought occurred in the southern and central regions. In these regions, the level of acute malnutrition is consistently above the critical level (18).

The prevalence of anemia is high in children aged 6-59 months in Somalia. About three-quarters of children under the age of two have anemia. The rate of Vitamin A deficiency in all regions of Somalia is above the WHO's severely accepted 20 percent threshold (18).

Common diseases in children (27.31)

pneumonia

diarrhea

tuberculosis (TB)

In Somalia, the TB program is supported by the Ministry of Health and the Global Fund (World Vision) working with 23 local and international implementation partners. TB data is reported with a separate

mechanism that is not included in the Routine Health Management Information System.

HIV

Malaria: 39% of Malaria cases reported in 2016 were seen in children under the age of 5 (27).

As a result, the resources used in Somalia health services have been limited due to the institutional health data of the country and the limited number of studies. According to the sources reached, there is a high level of lack of information, logistics and service about preventive health services in Somalia. Parallel to this, maternal and child health levels are in poor condition.

Somalia Health Sector Strategic Plan by WHO and Other Donors:

The World Health Organization (WHO) works with international Non-Governmental Organizations, the United Nations Population Fund (UNFPA) and the United Nations Children's Fund (UNICEF) to support health services such as vaccination, nutritional support, and midwife training in Somalia. In 2012, WHO trained 200 obstetricians, mostly midwives, by providing training on clean and safe birth, early referral, and Basic and Comprehensive Emergency Obstetric Care in Somalia (19).

WHO has created a Standard Treatment Guideline for Primary Healthcare Units (November 2015) in line with the Primary Health Care Package. This guide includes pregnant, maternal and child follow-ups, nutritional support and plan, drug administration protocols, referral protocols, family planning guide, immunization guide, infectious disease control and guide in Primary Health Units. (32). In this guide, it is stated that primary health care units, health centers, referral health centers and hospitals should be a part of the curriculum of educational institutions. Also,

• The quality and safety of services and the irrational use of drugs and especially the growing and low-quality private sector continue to be a major concern.

• Lack of a strategic approach to address growing numbers

• Prevention and control programs of non-infectious diseases such as cardiovascular diseases, cancer and mental illness are not particularly at the level of Primary Health Care.

• Where possible, it was emphasized that the layout of Primary Health Care should be designed to be connected to the main system (32).

Overview and Comparison of Somalia Key Health Indicators:

Table 5. Turkey-Somalia Health Data Comparison Table (33):

	Somalia	**Turkey**
Number of Nurses/Midwives (Per Thousand)	0.078 (2017)	2.57 (2017)
Number of Physicians Per Capita (Per Thousand People)	0.029 (2017)	1.81(2017)
Annual Population Growth Rate (%)	2.9 (2017)	1.24 (2017)
Total Fertility Rate	6.3 (2017)	2.1 (2017)
National Income per Capita (Usd)	499.8 (2017)	9.632 (2017)
Life Expectancy at Birth (Overall)	55.4 (2017)	78.0 (2017)
Maternal Mortality Rate (Per Hundred Thousand)	732 (2016)	14.6 (2017)
Neonatal Mortality Rate (Per Thousand)	38.5 (2017)	5.8 (2017)
Infant Mortality Rate (per Thousand)	79.7 (2017)	10.9 (2017)
Mortality Rate for Children Under 5 (per Thousand)	127.2 (2017)	10.9 (2017)

Table 6. Turkey-Somalia Top Ten Causes of Death Data Comparison Table (33):

Somalia (2012)		**Turkey (2016)**	
Cause of death	**%**	**Cause of death**	**%**
1. Lower respiratory tract infections	18.7	1. Diseases of the circulatory system	39.7
2. Diarrhea	15.6	2.Neoplasms	19.6
3. Measles	8.7	3.Respiratory system diseases	12.0
4. Neonatal asphyxia and trauma	7.0	4. Diseases of the nervous system and sense organs	4.9
5. Protein energy malnutrition	7.0	5. Endocrine, nutrition and metabolism diseases	4.8
6. Complications of preterm birth	6.7	6. Injury, poisoning and external causes	4.5
7. Tuberculosis	6.5	7. Genitourinary diseases	3.7
8. Conflict	5.8	8. Digestive system diseases	2.4
9. Meningitis	5.0	9. Some infectious and parasitic diseases	2.4
10. Maternal causes	4.0	10. Conditions arising from the perinatal period	1.9

Top three causes of death in children under 5 years old			
Somalia (2012)		**Turkey (2016)**	
Cause of death	**%**	**Cause of death**	**%**
1.Acute respiratory infections	19	1.Neonatal disorders	45.5
2. Diarrhea	13	2.Congenital disorder and chromosomal abnormalities	28
3. Birth asphyxia	11	3. LRTI	3.7

Table 7. Turkey-Somalia Burden of Disease Data Comparison Table (33):

Somalia (2016)	**Turkey (2017)**
1. Diarrhea, respiratory system and other common infectious diseases	1. Cardiovascular diseases
1. Neonatal diseases	1. Neoplasms
2. HIV/AIDS and Tubeculosis	2. Diseases of the musculoskeletal system
2. Nutritional disorders	2. Mental disorders
3. Cardiovascular diseases	3. Other non-infectious diseases
3. Malaria and neglected tropical diseases	3. Neurological diseases
4. Infectious diseases, other	4. Diabetes and kidney diseases

Table 8. Turkey-Somalia Infectious Diseases Incidence Data Comparison Table (33):

Somalia		**Turkey**	
Measles incidence (per thousand wool)	-	Measles incidence (per thousand wool)	0.09
Tuberculosis incidence (per hundred thousand)	274	Tuberculosis incidence (per hundred thousand)	14.6
Malaria incidence (per thousand)	85	Malaria incidence (per thousand)	0.26
HIV incidence in 15-49 years (per thousand)	0.48	HIV incidence in 15-49 years (per thousand)	-
AIDS incidence (per hundred thousand)	-	AIDS incidence (per hundred thousand)	0.10

Primary health care should be the starting point for the general health structure of Somalia. Because basic health indicators such as maternal mortality, child mortality, etc. are in poor condition and thousands of

children, mothers and people die every year from preventable diseases (simple, low-cost medical intervention, treatment and nutritional support can't be supported) in this country. That's the fundamental problem. Etiological factors causing diseases cannot be determined, and even if detected, they cannot be eliminated. At this level, the costs of the measures to eliminate the etiological factors and the preventive treatments to be applied are actually very, very low compared to the costs of the 2nd and 3rd step treatment. Even after the diseases occur, insufficient 2nd and 3rd level treatment institutions cannot cure the situation. Even if the 2nd and 3rd level treatment institutions are at a sufficient level and effective treatment methods are applied, the diseases cannot be treated and they cannot be successful. Disease and patient treatment costs are also very high. Most of the Somali people, who are already living in financial difficulties, cannot even apply to a health institution because they cannot afford the treatment costs.

For these reasons, it is necessary to produce cost-effective restructuring policies that will basically solve the problem for the Somalia health structuring. In this context, most of the financial resources transferred by the current government, international countries and aid organizations should be used for the primary health care structuring, which is the main need of the people of the country, the main source of the problem and the first structuring. In this way, the number of people lost from preventable diseases is reduced to a minimum with simpler application and much lower cost structuring models. At the same time, the burden of 2nd and 3rd level health services can be reduced and their structuring can be made healthier. Developing a healthy person and a healthy society can only be achieved by this method.

Recommendations For Somalia Health Construction

According to local characteristics, differences and needs, a combined system called "Primary Health Services", which covers the most appropriate, preventive and primary care services and nutrition services, should be designed and piloted and then nationally implemented. In fact, many countries, international institutions, organizations and aid organizations such as WHO, UNICEF, SHINE, UNFPA provide financial and in-kind aid to Somalia in terms of health care and nutritional support services. Since all these resources could not be presented within a solid and correctly designed structure, the main goal could not be achieved. The main purpose is to gather health services, medical and nutritional

support operations financed with all these resources under one organization. It should be harmonized with the existing political administrative structure, combined, potentialized and made effective. In this way, success can be achieved through an organized structure and a system.

With this system, in order to protect and improve the health of those registered with it, to provide personalized preventive health services, primary diagnosis and treatment services, and nutritional support services, the "Primary Health Care Services System", which considers social and cultural factors while treating diseases and considers people as a part of the family, must be installed. Thus, it can be aimed to solve most of the health problems and nutritional deficiencies before the disease occurs in the primary care level and to ensure that the people have access to health units and services, which is the top priority problem in Somalia. System design should target the underserved vulnerable population group, namely mothers, children and specifically women of reproductive age, which is the most important target component of healthcare delivery in Somalia.

Establishing a Country Platform where non-governmental organizations (NGOs), UN agencies, private sector, intergovernmental participation and an effective health sector coordination mechanism are re-established, resources are aligned around government priorities, humanitarian aid flow is presented with an effective and targeted organization, represents the design. With this system, it can be aimed to produce permanent solutions with the physical structures of health units, personnel employment, personnel training, logistics and finance structure and sustainable systems.

This proposed structuring design will also have an important mission to provide a visible government role in the management of service delivery, strengthen state legitimacy and thus help Somalia emerge quickly from the post-conflict era, and improve government-citizen relations. In addition, the health services management and organization skills of the Somalia Ministry of Health can be improved.

The current financial capacity created by the Somali government and donor financing also does not allow for a total health service structuring in which the 2nd and 3rd level healthcare services are added. Even if it does, it cannot create a sustainable and solid structuring with the current capacity. With the completion of the primary health care services, the 2nd and 3rd level national health services structuring becomes healthier, less

costly and robustly designed. Considering the population structure, geographical distribution and current health services delivery conditions, the priority in Somalia health services structuring and thus the transfer of financial resources has to be Primary Health Care Services.

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Section 2: MIDWIFERY

Chapter 5

The Effect of Globalization on Mother-Child Health

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1. MOTHER-CHILD HEALTH

Biological factors arising from the gestation period and growth and development processes for children affect the disease and mortality processes of mothers and children. In addition, a healthy growth and development process is important because it determines the physical and mental health in adulthood. For this reason, even when mothers and children are healthy, they are considered as a risk group within the scope of health services (Mayda 2012). Maternal and child health, which is most affected during pregnancy, childbirth and puerperium, does not progress as it should in most countries. The reasons for this vary from country to country and are generally affected by economic inequality, poverty (births and abortions in unhealthy conditions), war, serious diseases such as HIV-AIDS, inadequate care and an unsafe environment. While the health of mothers and children was a purely public health priority in the 20th century, the Millennium Development Goals in the early 21st century placed it at the core of tackling poverty and inequality as a human rights issue (WHO, 2015). Parameters such as infant mortality rate, child mortality rate under 5 years old, maternal mortality rate, births in health personnel and health institutions, antenatal care and average number of follow-ups per pregnant are maternal-child health indicators (Demirtaş and Metintaş 2017).

2. THE EFFECT OF GLOBALIZATION ON MOTHER-CHILD HEALTH

Globalization means the unlimited circulation and diffusion of goods, information, people and capital (Lee 2004). Along with globalization, the world is experiencing the process where inequality increases the most with the development of health services, global communication networks and technology capacity. As a result of globalization, on the one hand,

goods and people circulate without borders, on the other hand, the borders between information, values and thoughts have begun to disappear (Yıldız 2008; Bülbül 2006). Globalization; the development of fast transportation vehicles has removed the concept of distance, increased human mobility, and consequently changed our concept of space. With globalization, communication technologies have accelerated the flow of life and changed our concept of time. In addition, as a result of the increase in the intensity of human relations, it has become easier to be affected by the culture, new thoughts and values in any place, and our culture, values, life and way of thinking have changed. It is inevitable that such a phenomenon will have effects on health (Lee 2004; Baykal and Baykal 2008; Bülbül, 2006). Globalization in the field of health is not a new concept, and the creation of the World Health Organization (WHO) is one of the most important steps taken in the field of health on the way to globalization (Yıldız and Turan 2010; Baykal and Baykal 2008; Bülbül, 2006). The effects of globalization on health; It is discussed from different perspectives such as the increase in the spread of communicable diseases, the increase in non-communicable diseases, the pollution of the environment, food and water security, developments in medical technology and medical information, globalization of health policies and services, globalization in the economy and inequalities and armed conflicts, violence (Hayran 2007; Baykal and Baykal 2008; Bülbül, 2006).

2.1. Effect of Spread of Infectious Diseases on Mother-Child Health

As a result of globalization, infectious diseases are carried from one hemisphere to the other. Many infectious diseases such as tuberculosis, polio, malaria, influenza, yellow fever, SARS, HIV, and Ebola have been on the WHO agenda (Arata 2005). In addition, today, COVID-19 is effective around the world. Infectious diseases have wide-ranging effects. Fear and panic experienced during the epidemic can cause sudden population movements. Immigrants in this situation may face health risks arising from health problems, malnutrition and other stress factors. More importantly, migration carries the risk of spreading the epidemic to other regions (Turkish Academy of Sciences 2020). Infectious diseases also pose risks to maternal and child health. It has been stated that COVID-19, which is seen worldwide today, may cause an increase in maternal and child deaths and adversely affect maternal and newborn health. In

addition, due to the pandemic, there are disruptions in prenatal care and prenatal follow-ups are less than recommended (Menendez *et al.* 2020). In a study conducted by UNICEF in 77 countries, it was determined that approximately 68 percent of the countries experienced disruptions in children's health checks and childhood vaccinations due to COVID-19. According to the results of the research, it is seen that 63 percent of these countries experience problems in prenatal examination and 59 percent in postnatal care. In the study that WHO followed 105 countries, it was stated that in half of the countries, sick children could not benefit from health services adequately, and that there were problems in the services provided to prevent unbalanced and malnutrition in half (UNICEF 2020). In a study conducted to determine the effect of maternal HIV infection on pregnancy outcomes, it was found that HIV-infected women have a high risk of experiencing adverse pregnancy outcomes (Yang *et al.* 2019). In the study conducted to determine the maternal and fetal outcomes of pregnant women with human monkeypox infection, it was determined that 1 out of 4 pregnant women had a healthy baby, 2 had miscarriage in the first trimester and 1 still gave birth (Mbala *et al.* 2017). In the study conducted to determine the maternal and fetal outcomes of the Ebola virus, it was determined that pregnancy increases the risk of serious illness and death, and the virus can be transmitted from mother to baby in utero, during delivery or through contact with maternal body fluids, including breast milk (Bebell *et al.* 2017).

2.2. The Effect of Increase in Non-Communicable Diseases on Mother and Child Health

Affected by their way of life, their non-communicable diseases have spread from northern countries to the south. This situation had negative effects on mother-child health as well as in the whole society. 32.6% reported negative obstetric results in pregnant women with congenital heart disease. Early labor and postpartum hemorrhage are the most common complications. In addition, the risk of preeclampsia, cardiac decompensation and death was found to be higher in these pregnant women (Romano Zelekha *et al.* 2001; Ouyang *et al.* 2010). The child of a mother with a congenital heart defect has a higher risk of congenital heart defect. The overall risk of offspring inheriting polygenic heart disease is 3-5%, compared to a 1% risk in the general population. (Romano Zelekha *et al.* 2001). The presence of maternal heart disease affects the fetus in

various ways. First, there is an increased risk of spontaneous abortion and therapeutic abortion rates in women with heart disease. The rate of neonatal complications increases significantly in women with heart disease. In a study conducted to determine long-term pregnancy outcomes in women with heart disease, neonatal complications were observed in 18% of pregnancies; The rate of preterm delivery was 15%, fetal growth retardation was 4%, and neonatal deaths were 3% (Siu *et al.* 2002). In a study conducted to determine the effect of congenital heart disease on child development, it was found that children with congenital heart disease had a delay in development compared to healthy children (Mari *et al.* 2016).

2.3. The Effect of Environmental Pollution on Mother-Child Health

Rapidly advancing industrialization, dwindling natural resources and rapid population growth cause environmental concerns. In addition, the seasons change, the seas are polluted, the air we breathe is loaded with poison. The main environmental problems that emerged in the twentieth century and continue in the twenty-first century; climate change, water and air pollution, chemical accidents, transportation of hazardous wastes (Baykal and Baykal 2008). The developing fetus is thought to be particularly susceptible to environmental pollution. Studies show that air pollution can have adverse effects on maternal health and pregnancy outcomes, including preterm birth, low birth weight, intrauterine growth restriction, and congenital anomalies. Pregnancy loss, including miscarriage and stillbirth, is the most serious adverse pregnancy outcome, but understanding the cause of fetal death is also limited. In a study, it was determined that exposure to air pollution throughout pregnancy increases the risk of spontaneous abortion, and exposure to environmental pollution in the third trimester increases the risk of stillbirth (Grippo *et al.* 2018; Mobasher *et al.* 2013). It has also been reported that exposure to CO and PM2.5 during pregnancy is associated with hypertensive disorders of pregnancy (Mobasher *et al.* 2013). Children are more susceptible than adults to both indoor and outdoor air pollution, as their lungs, brain and immune systems are still developing and their airways are more permeable. Young children breathe faster than adults and take in more air for their body weight. For this reason, air pollution is associated with respiratory diseases and pneumonia, which cause death under the age

of 5, and negatively affects children's health (UNICEF 2016a). In a 6-year study of 2,400 children in East London, it was determined that children living in heavily polluted areas of cities have 10% less lung capacity than normal, and this decrease increases the risk of diseases such as asthma and bronchitis (Donnelly 2015). Children exposed to air pollution have worse brain function tests compared to children tested from clean air areas. Children exposed to air pollution have smaller brain volumes and brain tissue abnormalities on brain imaging. Air pollution is associated with higher rates of birth defects, including neural tube and heart birth defects. Polluted air inhaled by a pregnant mother causes changes in the cell structure of the fetus (epigenetics), associated with increased rates of asthma and decreased lung function in the child after five years (Kamloops Physicians for a Healthy Environment Society, 2013).

2.4. The Effect of Globalization and Inequalities in the Economy on Mother and Child Health

As a result of globalization, the gap between the rich and the poor is widening rapidly. Although poverty is a problem generally seen in underdeveloped countries, it is also one of the most important problems that other countries have to deal with. Poverty is defined as the inability of people to meet the basic needs they need to survive. It also refers to the deprivation of people not only of material objects, but also of services in health, education, social security and social activities. Especially the elderly, women, the disabled and children are affected by poverty at a higher rate. One of the important issues in terms of reproductive health, which is affected by poverty, is the fertility rate. The fertility rate varies according to the socioeconomically different regions. The fertility rate is generally higher among the poor. Undoubtedly, one of the most basic indicators of women's health is the maternal mortality rate. Maternal mortality rate is an indicator that is significantly related to poverty (İNSAMER 2018; Inequality and Health 2021; Kocabacak 2014). The causes of death of women in countries with different income and development levels are also different from each other. While women living in developed countries generally die from chronic diseases such as heart diseases and cancer, women living in low-income countries generally die from maternal and perinatal causes and infectious diseases (Kocabacak 2014). One of the most important causes of death during childbirth is not giving birth in the company of a trained health personnel.

While the majority of births worldwide are accompanied by a trained health personnel, this situation varies in low-income countries (Insamer 2018). Looking at birth outcomes, low-birth-weight newborn rates are higher in low-income countries compared to high-income countries (UNICEF 2019). The children of poor families are deprived of the resources necessary for their growth and development, and cannot find an environment to fully develop their abilities (Şener and Ocakçı 2014; UNICEF 2019). As indicators of child poverty, UNICEF accepts the proportion of underweight or short children under the age of five, infant and child mortality rates, adequate sanitation and sanitation, the proportion of fully vaccinated children, the proportion of the population accessing clean drinking water, and the proportion of children entering primary education. Most child deaths occur in countries where the poor live the most. Most of these deaths occur because the country does not have adequate health infrastructure and health resources (İNSAMER 2018). The most well-known and most common effect of poverty on children is malnutrition. Poverty causes malnutrition, stress, malnutrition of the mother and hence milk insufficiency and low birth weight infant. In addition, malnutrition causes more than a third of deaths under the age of five worldwide. Basic nutrients such as vitamin A, iron or zinc, which cannot be met with nutrition as a result of poverty, may cause death, stunting, blindness, retardation in motor and cognitive development, and low IQ in children. Inadequate nutrition resulting from poverty adversely affects physical and mental development, and rates of disability, growth retardation and chronic diseases are more common in poor children. In a study investigating the intelligence levels and achievement levels of children aged 4-18, who are at the lowest and highest levels of poverty, it was found that children from low-income households scored 4 to 7 points lower than standard tests (INSAMER 2018; Hair *et al.* 2015). Some of the poor children cannot find a place to stay, live in an unhealthy and polluted environment, and die due to unclean drinking water and poor hygiene conditions (UNICEF 2016b). In addition, children living in poor families cannot show adequate psychosocial development and emotional and behavioral health problems are more common in these children (Şener and Ocakçı 2014).

2.5. Effects of Armed Conflicts/War and Violence on Mother-Child Health

As a result of globalization, geographical and political borders disappear and demands for independence of local ethnic groups emerge. As a result, armed conflicts take place. Migration, which had previously taken place for economic reasons due to globalization, has now become a necessity rather than a choice (Slone and Mann 2016; Yağmur and Aytekin 2018). War is a collective form of violence and is a public health problem. The devastating results of the war not only negatively affect the region, but also the people living in different geographies and regions. The biological, psychological and social health of the people who experience the war deteriorates, and they are faced with illness and death. In war, sustainable development is undermined as military spending is given priority and government resources are not allocated to social services to finance army resources. Lack of social services increases unemployment and poverty rates. War has a negative impact on the physical infrastructure (railways, roads, water systems, etc.) and the organization of food production and healthcare. The decline in household living conditions increases the susceptibility of mothers and infants to illness and death. Maternal health is the closest determinant of infant mortality. Maternal health is also adversely affected during the war due to reduced access to health services (Gözübüyük *et al.* 2015; Slone and Mann 2016; Akol *et al.* 2016). In Nigeria, there are women who have their fetuses removed, killed and their breasts cut off while giving birth (Richards 2015). War increases maternal mortality rate by destroying health services and preventing access to them (Akol *et al.* 2016). Inadequate prenatal care is recognized as one of the most important causes of poor maternal and child health indicators in conflict-affected settings. Conflict-affected countries have less than half the number of health workers or the infrastructure required for antenatal care. Maternal and child deaths occur during and after conflict, especially due to physical violence and the collapse of health care delivery systems (Gopalan *et al.* 2019). Studies have shown that the number of preterm deliveries, cesarean section deliveries and low birth weight babies has increased compared to the pre-war period. Because conflict causes a disruption in prenatal care, a decrease in the number of trained obstetricians present at the time of birth, malnutrition and increased maternal stress (Davis and Sandman 2010). In a study conducted to evaluate pregnancy outcomes in

the period before and during the armed conflict, it was found that the rates of preterm birth and low birth weight infants increased compared to the period before the war (Bodalal *et al.* 2014).

Wars cause migration (Yağmur and Aytekin 2018). In studies conducted on refugee women, it has been determined that these women experience some problems regarding contraception and receiving prenatal care. In a study, it was determined that the majority of immigrant women had low rates of using long-term effective contraception methods, and their knowledge about tubulization and emergency contraception methods was insufficient. In this case, an increase in the number of unplanned pregnancies of refugee women seems inevitable (Rogers and Earnest 2014; Salisbury *et al.* 2016). In the study conducted to determine the contraception use and reproductive health status of refugee women, it was found that refugee women have insufficient knowledge on reproductive health and family planning issues such as contraception, prenatal-birth and postnatal care, vitamin and mineral deficiencies, unwanted pregnancy, miscarriage, and birth complications (Rogers and Earnest 2014). In addition, refugee women have a higher risk of preterm birth and infant mortality (Büyüktiryaki *et al.* 2015). Psychological status is one of the important factors affecting the menstrual cycle. Fear, shock and stressful situations experienced by migrant women after trauma can lead to menstrual irregularities (Hannoun *et al.* 2007). One of the most important issues that pose a threat to refugee children and local people is the existence of children whose routine vaccinations are not completed. Vaccination of refugee children is one of the main approaches of preventive health services. Immunization is a critical factor in infant health, so any interruption in immunization programs due to war may be a source of increased infant mortality (Özdemir 2017). Childhood malnutrition, which results from the deliberate destruction of crops or the laying of fertile land with mines, affects children the most. As a result of the study conducted on children aged 6 months to 5 years in order to evaluate the malnutrition status of children and the factors associated with malnutrition during the war, 42.5% of the children were short, 22.5% thin, 8.3% extremely thin. and 5.9% were found to have a small head circumference (Zhao *et al.* 2016). Access to clean water is difficult during the war. It has been determined that children who drink spring or river water have a higher risk of being short. In addition, drinking spring or river water is a risk factor for parasitic infection and may cause diarrhea

and malnutrition (Yap *et al.* 2012). Infectious diseases, measles, diarrheal diseases, respiratory diseases are among the diseases experienced by refugees and constitute the basis of the causes of death (Özdemir 2016; Özdemir 2016). War also negatively affects the psychological health of children. In a study conducted to determine the effects of war, conflict and terror on 4.365 children aged 0-6 years, in which 35 studies were examined in total, it was determined that children exposed to war experience posttraumatic stress disorder, emotional problems, sleep problems, and psychosomatic problems (Slone and Mann 2016).

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Chapter 6

A New Service Model in Promoting Health in Pregnant Women: Preconceptional Care and Midwifery Approaches

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Introduction

Obstetric care needs to focus on disease prevention. Traditionally, women receive a care service after pregnancy occurs (Zee et al., 2011; Poels, van Stel, Franx, & Koster, 2018). But research has shown that nearly all couples trying to conceive have at least one risk factor.

Preconceptional care is a type of preventive health service that aims to improve the health of spouses before having children in order to reduce these risks through education, counseling and appropriate intervention, and includes the concept of counseling as well as screening and treatment. It is also a broad term that refers to the process of identifying social, behavioral, environmental and biomedical risks to a woman's fertility and pregnancy outcomes (Baysoy & Özkan, 2012). Therefore, preconceptional care provides an opportunity to timely change unhealthy behaviors that can have a lasting positive effect on the (future) health outcomes of both mother and child (Poels, van Stel, Franx, & Koster, 2018). Investigating certain diseases by actively screening individuals who are considered healthy or who think they are healthy, if used rationally and based on evidence, is considered one of the most powerful tools in the prevention of diseases/injuries. The real and only opportunity to prevent unwanted pregnancy is preconception care. Starting a desired pregnancy in the healthiest way is possible with pre-pregnancy care. It is clear that the general health and consciousness level of the individual affects the pregnancy process and planned pregnancies are associated with better health outcomes. If intervention is made before pregnancy (compared to interventions during pregnancy), the negative effects of chronic diseases, bad habits and infections are reduced to a greater extent (Johnson, 2006). As a result of studies evaluating the effectiveness of

preconceptional care in improving pregnancy outcomes, there was no difference between the groups in terms of preterm birth, presence of congenital anomalies or weight gain; It has been determined that interventions for health promotion (eg, low alcohol consumption rates, etc.) are effective in causing maternal behavioral changes. Important steps have been taken regarding prenatal care in Turkey, but a standard pre-pregnancy care scheme has not yet been implemented by the state (excluding pre-marital counseling services) (Johnson, 2006; Baysoy & Özkan, 2012).

As a result, preconceptional care can improve women's health before, during and after pregnancy. A woman also adopts a healthy lifestyle (HCN, 2007). In a cohort study examining lifestyle and pregnancy loss in women recruited before conception, they recorded daily consumption of cigarettes, caffeinated and alcoholic beverages, and multivitamins from couples. As a result of the study, it was found that the lifestyles of the couples in the preconceptional period were associated with pregnancy loss. The findings support the continued implementation of preconceptional care (Baysoy & Özkan, 2012).

Factors Affecting Receiving Preconceptional Care

- Those who need preconceptional care the most are those who benefit least from these services.
- Places providing preconceptional care are multi-part
- Inadequate treatment services for the high-risk group
- Insufficient efforts to eliminate the identified risk and improve health
- Health promotion messages are not effective unless the target group is motivated.
- Only a few cases have data supporting pre-pregnancy intervention rather than early pregnancy
- Most clinical education programs do not emphasize risk assessment and health promotion initiatives
- Potential opportunities for preconceptional care arise during non-emergency health encounters. These:
    - Pre-marital counseling
    - Contraception counseling
    - After a negative pregnancy test
    - Evaluation of sexually transmitted disease or vaginal infection

- Postnatal care visit (Skogsdal, Fadl, Cao, Karlsson, & Tydén, 2019;

Development of Pre-Pregnancy Care in the World

It is known that the first research on pre-pregnancy care was published by Chamberlain in England in 1980. Following this, studies have been conducted in Europe proving that pre-pregnancy care has a positive effect on maternal and child health, and different pre-pregnancy care programs have been carried out in many countries. The effects of folic acid use have been well-tested, especially in Hungary and England. The Netherlands launched a campaign in 1984 emphasizing the importance of genetic counselin. Israel attaches special importance to the research of genetic diseases (Tay-Sachs, thalassemia, etc.) that are common in their own races. In Asia, Hong-Kong provides education, counseling and care to couples who want to have children through "preconception preparation service units". The United States realized that it lagged far behind countries in terms of İnfant Mortality Rates (IMR) in the 1980s. By starting care during pregnancy early, expanding antenatal care and expanding its content, the IMR decreased from 12.6 per thousand in 1980 to 6.8 per thousand in 2004. Despite this, the United States fell further behind in the IMR ranking. The gains in maternal and child health have been much more pronounced and rapid in countries that provide pre-pregnancy care. Thereupon, a broad-based national pre-pregnancy care program was initiated in 2006 (Skogsdal, Fadl, Cao, Karlsson, & Tydén, 2019; Gürkan, & Abbasoğlu, 2021; Shadab, Nekuei, & Yadegarfar, 2017; Demisse et al., 2019; Bayrami, Didarloo, & Asadinejad, 2021).

Scope of the Preconceptional Care Program

The subjects that should be included in the scope of preconceptional care are summarized under 10 headings. While the first nine items form the basis of the assessment that should be made in every woman of childbearing age, the last item aims to evaluate the general health of the man:

1. Implementing the principles of improving health in general and reducing risk (maintaining an ideal weight by increasing physical activity and healthy nutrition, which are accepted as the basic conditions of health, and staying away from addictive substances, especially tobacco products.

2. Discussing fertility plans, providing family planning counseling and questioning the fertility history

3. Prevention/treatment of infections

4. Immunization

5. Assessment of risks posed by existing medical conditions and appropriate intervention (36)

6. Taking family history and genetic history

7. Minimizing the negative effects of the mother/father-to-be arising from the workplace or the environment in which they live

8. Detection of drug use (prescription+non-prescription)

9. Detection of psychosocial status and special conditions such as disability

10. Evaluation of the general health level of prospective fathers, general counseling on protection/improvement of health, and special counseling on the role of the father in terms of mother-child health during pregnancy (Baysoy, Özkan, Celep, 2017; Mivšek, Rogan, & Petročnik, 2021; Lyons, 2017).

Evaluation Parameters Used in Preconceptional Counseling

- Chronic diseases
- Nutrition counseling
- Folic acid supplement
- Iron supplement
- Vaccination
- Genetic counseling
- Smoking, alcohol and drug use
- Radiation exposure
- Chemical exposure
- Psychological health (BRFSS, 2015; ACOG, 2016; FIGO, 2015).

The Role of the Midwife in Preconceptional Care

Preconceptional care is a model that requires a multidisciplinary approach. For this reason, midwives and other health professionals should care for the patient in team cooperation (Arslan, & Özkan, 2005). However, nurses, who are primary caregivers, play a very important role in preconceptional care in order to increase the health of individuals. Nurses have three major goals in preconceptional care. These; To determine possible risks in mother, father and fetus, to provide education

to parents and to apply necessary interventions. In this context, midwives should evaluate individuals in terms of medical and obstetrics during the preconceptional period. In addition, during this period, nurses should identify individuals at risk for genetic problems, conduct health screenings regarding consanguineous marriage and genetic disorders in the community, guide families with genetic risk, and provide counseling on family planning when necessary.

• The rubella and varicella titer of the woman should be checked, the nurses should provide counseling about the immunization of susceptible women and explain to the couples that it is possible to get pregnant three months after the varicella vaccine.

• The woman should be screened for toxoplasma, women with negative toxoplasma should be told to avoid contact with cats and eating raw meat due to the risk of congenital toxoplasmosis, and the drawbacks of this.

• Hepatitis B titer should be checked, and susceptible couples should be counseled on immunization. In addition, nurses should counsel couples on HIV testing.

• Couples should be directed to investigate carriers in populations at risk for Tay-sachs, Canavan, cystic fibrosis and hemoglobinopathies.

• Before pregnancy, the presence of medical problems such as anemia, urinary infection and hypothyroidism should be questioned and couples should be directed for treatment.

• Body mass index should be calculated by measuring the weight of the expectant mother. If the individual is obese (BMI>30), the possible risks of this situation for pregnancy and delivery should be explained and weight loss should be supported before pregnancy.

• Patients followed for diabetes, hypertension or systemic lupus erythromatosus should be evaluated before pregnancy and counseling should be provided.

• Necessary interventions should be planned to ensure biochemical regulation of women before pregnancy in terms of diabetes and phenylketonuria.

• Education should be given to couples on the harms of drugs, alcohol and cigarette use.

• The benefits of folic acid use should be explained to the couples and they should be encouraged to use it.

• Consanguineous marriage and genetic diseases should be

questioned, and the drawbacks should be clearly explained to the couples.

• The importance of blood group determination, the possible risks of pregnancy should be explained to couples who want pregnancy at young and advanced ages, and they should be followed up regularly.

• Education should be given on healthy and balanced nutrition.

• Couples should be informed and supported to apply to a health institution when pregnancy occurs.

• Women should be informed about marking the beginning of menstruation on the calendar in order to determine the gestational age (Gökdemir, 2017; Arslan, & Özkan, 2005 Stephenson et al., 2018; Allan, Mounce, Crespo, & Shawe, 2018; ACOG, 2012; FIGO, 2015).

Conclusion

Preconceptional care and counseling services are the care that all women and men of childbearing age should receive in the preconception period. With this care, it is aimed for the woman to have a healthy pregnancy and to have healthy babies. However, when we look at the world in general, there is a need for health policies for the dissemination of preconceptional care. Another point that should not be forgotten here is the roles and responsibilities of health professionals. Within these roles and responsibilities, health professionals should routinely screen all women and men of childbearing age, identify risk factors, and plan appropriate interventions. In addition, health professionals should guide these individuals to seek care, guidance and counseling from other members of the team when necessary.

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Chapter 7

Birth Preparation Philosophies Birth Awareness Program Is Based on Prenatal Training

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Introduction

Thanks to development of technology in the modern world, people become aware of developments more rapidly. This ensured people can utilize science more and raised their awareness. In the old periods women did not even take health control during their pregnancies but with technological developments they have regular monitoring and receive prenatal training. Prenatal training affects health of the pregnant woman and the fetus in positive terms. Purpose of the prenatal training is to prepare the expectant mother to safe and healthy prenatal, birth, and postpartum periods. Along with the expectant mother, the social environment of the mother is also prepared for the birth process with prenatal training, and social support received by the mother is increased. With prenatal training, risky situations, if any, are detected in the pregnant woman and the fetus and measures are taken against possible risks. It is the most basic right of every expectant mother to know the changes that occur in her body with pregnancy and to receive information about the prenatal period, birth and postpartum period. Expectant mother should be trained by empathetic health personnel that are equipped with up-to-date information. The expectant mother, who receives prenatal training from a professional, would manage this process successfully which would minimize the risk of possible birth and postpartum complications. With prenatal training, expectant mothers would not perceive birth as a painful event and the birth will become a beautiful memory for them. This, in turn, would increase mother-baby bonding and

allow the mother to spend more time with her baby and adapt to baby care more quickly. Spending time with her baby will become an enjoyable process for the mother. The risk of developing an illness would be minimized for the psychologically healthy mother and baby, reducing the time and money that both the family and the state allocate for health expenses and creating more peaceful, healthy and prosperous societies. Prenatal training should be determined according to the needs of the pregnant woman and should differ in each trimester. A timetable should be established for the trainings provided, and considering the difficulty of accessing every pregnant woman, trainings and feedback should be mostly provided as pregnant women come to their routine health controls.

1.Prenatal Training

In prenatal training, expectant mothers are given training on pushing and breathing exercises, relaxation, methods of coping with birth pains and possible interventions. The purpose of these trainings is not only to educate the mother, but also to inform her regards. Prenatal trainings aim to provide information not only on the perinatal period, but also on the first months after birth starting from the pre-conception period. Prenatal training can be carried out in the form of individual training, as well as in the form of classes. Today, there are prenatal classes in developed countries and it quickly became one of the routine services in developing countries. The first formal prenatal training class in the world was opened in 1913 while the first prenatal classes started to be offered in our country in the 1980s. In the 1980s, under the leadership of Oktay Kadayıfçı, steps were taken to provide prenatal training to pregnant women and their spouses with Lamaze method in Çukurova University Medical Faculty Gynecology and Obstetrics Clinic and USA Incirlik Air Base Hospital, but according to what Kadayıfçı mentioned in his book, the trainings could not be offered for our society was not ready yet. In 1988, Ayşe Öner started to offer antenatal classes at Istanbul International Hospital, and right after that, the first prenatal center was established in Istanbul in 1991 under the name of “Pregnant Education Center”. In 1998, Hülya Okumuş and her team opened a prenatal class at Dokuz Eylül University School of Nursing with the project titled “Examination of the Effect of Prenatal Training and Prenatal Classes” (28). Prenatal training classes started to become widespread in the beginning of the 2000s and after 2007 the number of private pregnant training centers continued to increase, especially in major cities, starting from Istanbul. Again, during

this time, nursing schools in some universities started to offer prenatal trainings as a project. However, some of the classes opened for this purpose were closed when the project ended while some are still continuing training. Today, there are more than 20 centers that can be accessed on the internet and still conduct prenatal training classes most of which are located in 3 major cities, especially in Istanbul. In recent years, with the support of the Ministry of Health to pregnant schools, free classes opened in public hospitals in various provinces have also started to become widespread, and as the interest in these classes increased, training of trainers also started to increase. (28). Oktay Kadayıfçı started training for trainers in our country for the first time in 2001 with the students of Çukurova University Faculty of Medicine, Department of Obstetrics and Gynecology and Perinatology Department and with the support of Adana District Directorate of Health. 10 separate train the trainer classes were organized by this team until 2005. Afterwards, in 2003, Dokuz Eylül University Department of Obstetrics and Gynecology started to organize train the trainer classes and in 2009 the same classes were started to be offered by the Turkish Midwives Association. Midwives Association still continue to offer these train the trainer classes. In addition to these institutions, Şifa University Continuing Education Center, Niğde University Continuing Education Center, İstanbul Birth Academy, İstanbul Medeniyet University, İstanbul University Florence Nightingale Nursing Faculty, Tokat District Directorate of Health also organize train the trainer classes (28). The variety of academic philosophies used in classes have increased with popularization of classes in our country as well as in the world. Birth preparation training models such as Bradley, Dick- Read, Hypnobirthing, and Lamaze method became very popular and effective in the 7 trainings offered in prenatal classes. Recently, new models known as Birthing from Within (England Model), Mindfulness-Based Birth Preparation, Odent Method, Kitzinger Method, and Leboyer Method came forward.

2.Prenatal Philosophies

2.1. Dick-Read

While Dr. Dick-Read was performing as doctor of obstetrics and gynecology in Britain, he became aware of the real nature of birth in 1913 in London in a humble and poor circle. He was called to help with a birth in the East End slums of London. After his journey on his bike in the rain and mud, at around 3 am, near the railroad arches, he arrived at a low

shed. When he entered the small house, in the dim room, under the rain water of the leaky roof, he put on the mask and asked for permission to give chloroform to help his patient who was trying to give birth. It would be a first for him when his patient rejected it outright. He watched in amazement as the mother gave birth to her baby with strong breaths without making a sound. As he prepares to leave, he asks the woman why she did not want to get rid of the pain. The woman gives him the answer that he would never forget. “It did not hurt. Why, it was not supposed to hurt anyway, was it, doctor?” In the months that followed, he spent nights in a London hospital watching the anguish and horror of very wealthy, educated women giving birth and his thoughts always turned to the woman in that hut. In his mind, he compared his existing patients with that calm, relaxed woman who gave birth without any difficulty and asked “Why?” Dick-Read had similar experiences while he was in the military in World War I. On the battlefield in foreign lands a woman who came to give birth approached the ditch and asked for the field doctor. She was referred to the doctor who helped her down into the ditch. The woman had a way of ignoring Dick-Read. Just like the woman in the shed, she gave birth very easily and without any apparent discomfort. The woman in the ditch seemed unaware of the war going on around her. After giving birth to her baby, she swaddled it, asked for help to get out of the ditch and once again crosses the battlefield to go on her way. In another birth he encountered, the woman in birth leaned on an earthen embankment and gave birth. The baby was born easily. He watched the woman wait for a while with her baby in her arms. Having completed her task, the woman started on a journey back to her village with her newborn baby in her arms. Once again, the doctor witnessed a comfortable-quiet-normal birth. There was nothing wrong with the way she gave birth. These events forced Dick-Read to question his belief in what he was taught about birth. He was confused about what made those rural women deliver their babies in the calm serenity without the usual dismayed demeanor he was accustomed to see in more cultured women. In time, he realized that it was not about what the rural women contributed to their birth, but what they did not. And that was fear… Based on these experiences, he started his study that would take a few years. As a result of these studies, he developed the theory that when there is no fear, there is no pain. Fear causes the narrowing of the arteries leading to the uterus, tightening of the birth canal muscles and creating pain. In the absence of

fear, the muscles relax and use their ability to stretch, the heartbeats in the body maintain their rhythm in a calm manner, and the cervix naturally thins and can easily take the baby out. In the 1920s, Dick-Read writes an article that gives a detailed answer to the question: "What is wrong with birth?" He names his theory *Fear-Tension-Pain* syndrome and argues that fear is the cause of tension in the body, especially in uterus which prevents and extends normal process of birth, causing pain. When his colleagues thought that he was crazy for considering birth could be painless. Nobody listened to him. Afterwards, with the publication of his book, Natural Birth in 1933, his theory attracted more attention, he made his ideas more specific and stated that the body was in fact perfectly equipped to reduce the discomfort of childbirth. The theory that in the absence of fear and tension something inside our own bodies releases a natural relaxant that facilitates childbirth was too radical in the scientific world. Dick-Read was more than half a century ahead of his time and could not give a name to it, but he knew from his observations that there was something wonderful about women giving birth that allowed for an easier birth when they were not restrained by fear. The body was filling with its own natural relaxant. It was only in the mid-1970s that scientists discovered that the body itself had a natural source of painkillers. They discovered that when the firing rate of neurons (brain cells), triggered by stress hormones that stimulate the sympathetic nervous system was reduced, the release of natural neuropeptides called endorphins (Natural relaxants), which were 200 times stronger than morphine, and that were secreted from the pituitary gland in the brain, was increased and the sensation of pain in the body decreased or disappeared. What made this possible was the creation and perpetuation of a state of calmness. Endorphins create a calm amnesic state (a state of not remembering what happened over a period of time, a few minutes after the event). This discovery justified Dick-Read's suspicions. At the birth of all mammals, this state of amnesia occurs naturally as the birthing mother approaches the end of the opening stage of birth. In this stage, if the mother maintains her calmness and opens her body to natural relaxants, focusing more on her body and her baby and her giving birth, if she puts aside everything that would distract her and cooperates with her body and baby, she would easily give birth. With all these scientific discoveries, the second edition of Dick-Read's book, Revelations on Childbirth, was published in the USA as Childbirth Without Fear. The teachings of Dick-Read, the creator

and hero of fearless birth, came to be applied under different names, adding to the methods developed in the twentieth century. Like the Lamaze method and birth with husband as a coach (Bradley method), or Hypnobirthing Meditative Birth in the 1989. The common philosophy of all these birth methods was based on Dick-Read's teachings. He emphasized the belief that every woman can give birth to her baby with pleasure and comfort, as long as she clings to the natural maternal instinct that is already in her, as nature designed, like the description of nature, like other mammals in nature, and as long as she catches and maintains the calmness.

"My theories came not from a lab but from my observation at the bedside of mothers giving birth… Dr. Grantly Dick-Read"

2.2. Hypnobirthing

Hypnobirthing, is a birth philosophy and method that physically and psychologically prepares the woman to giving birth. Hypnobirthing philosophy started to be created by Marie F. Mongan in 1987.

"All natural births have a purpose and a plan; who thinks about tearing its cocoon open while butterfly is coming out? Who would break the shell to take the chick out?"

In her book *Fearless Birth,* which was first published in 1942, Mongan described the Dick-Read method, which is still the basis of all pregnant training philosophies. The main problem in childbirth was the fear experienced by our women about childbirth and the *Fear-Tension-Pain* syndrome this created was the main reason for the pain that constrained our women at birth. The basic philosophy of the Dick-Read method was using information, breathing techniques and especially deep relaxation to eliminate fear. He gave special attention to this subject in his book. After receiving her hypnotherapy certificate in 1987, Marie F. Mongan, the founder of the Hypnobirthing Institute, made the first application of this when her daughter was giving birth. In 1990, her daughter Maura gave birth to her son Kyle, concentrating only on herself and her baby throughout the birth, without any pain, under the bewilderment of the health personnel. Marie Mongan focused on her studies on this subject and developed the Mongan Method, which is now becoming more and more widespread in the world, opening the doors of a calmer and more conscious birth to our women. The Hypnobirthing Institute, which is still headquartered in the USA, organizes trainings at

regular intervals and trains those who want to give pregnancy training. Mongan developed the Hypnobirthing philosophy based on Dr. Grantly Dick-Read's fear-tension pain cycle. The Hypnobirthing Philosophy states that childbearing is a normal, natural and healthy function. Hypnobirthing states that all the fears that cause the woman to experience pain during childbirth are actually hidden in her subconscious. For this reason, this philosophy enables women to get rid of their fears of birth with the training given in the prenatal period. According to this philosophy, aim is to relax the woman by applying self-hypnosis during the birth process. Hypnobirthing philosophy is based on the laws of mind. These laws are; Body Follows Mind: Law of Psycho-Physical Response, Power of Language: Law of Harmonious Attraction and Law of Repetition, What You Want Is What You Get: Law of Motivation.

2.2.1. Body Follows Mind: Law of Psycho-Physical Response

For every proposition, thought or emotion a person has in mind, there is a corresponding physiological and chemical reaction within the body. Whatever the mind chooses to perceive to be correct, the body reacts accordingly. If the mind has fearful, negative images of birth, the body unconsciously goes into a defensive state. In this case, the sympathetic nervous system is activated as a physical response in the body and tension occurs. Therefore, it is important to reduce the fear and tension of women in childbirth. Applications to reduce fear and tension during birth suppresses sympathetic nervous system and activates parasympathetic nervous system. As a result, oxytocin release increases. Circular and longitudinal muscles in the myometrium of the uterus work in harmony. Thus, cervical dilatation is realized and the fetus is advanced downwards. As this process progresses, endorphin release increases in women who are able to relax. Thus, the woman feels less pain. As a result, the birth period is shortened.

2.2.2. Power of Language: Law of Harmonious Attraction and the Law of Repetition

Words and propositions create a chain of feelings, beliefs, and reactions. This can be encouraging and supportive as well as it can have a completely negative impact. Words cause thoughts in our minds. Repeating these thoughts in our minds creates emotions. These feelings become beliefs over time. These beliefs create behavior. Therefore, Hypnobirthing Philosophy aims to create positive thoughts and feelings.

Positive thoughts and feelings about birth lead to positive behaviors about birth.

2.2.3. What You Want Is What You Get: Law of Motivation

The meanings that women attribute to giving birth can affect their birth processes. If women see themselves as sick, this may cause them to abandon themselves completely and not take a role in the birth process. For this reason, increasing motivation of women for birth is important for them to actively participate in the birth process. If the woman believes that she can give birth with her own power and that childbirth is a natural process, her adaptation to birth will increase. She would be motivated to perform practices that allow the natural process at birth and to be in harmony with the birth team.

Purposes of Supportive Midwifery Care Program in Birth Based on Hypnobirthing

Ensuring the pregnant woman experiences the natural process of birth
Ensuring the pregnant woman experiences a comfortable and peaceful process of birth
Decreasing the pregnant woman’s labor pain
Decreasing the pregnant woman’s fear of birth
Shortening the duration of birth
Increasing the satisfaction of the pregnant woman from birth
Ensuring the fetus is effectively oxygenated
Ensuring the mother is adjusted to postpartum period
Positively affecting newborn results
Ensures nursing is in early stage and effective

Principles of the Program

1. Creating a positive environment ensuring relaxation.
Preparing a dim and quiet setting
Playing music according to the pregnant woman’s preference
Creating a birth environment where the pregnant woman feels relaxed and peaceful

2. Using a Positive Expression

Avoiding words that might negatively affect the pregnant woman’s perception
Using positive words and sentences

3. Using Relaxation and Breathing Exercises

Making breathing and relaxation exercises

In 2005-2006, data of 596 pregnant women who gave birth with the Hypnobirthing method were compared. It was determined that the rate of C-section delivery in hypnobirthing mothers was 17%. Compared to 32% in the other group, Hypnobirthing mothers seemed to have a greater chance of experiencing a natural birth. At the same time, it was seen in this report that the rates of intervention to birth were much lower. Interventions such as epidural anesthesia, induction, IV insertion, and acceleration of labor with induction were given much less place during labor, and most importantly, all mothers who applied the method stated that they were satisfied with it, and 94% stated that they felt healthy immediately after delivery.

2.3. Lamaze Method

"You will bear children in sorrow," the Bible commands, and for centuries labor pains were considered to be women's inevitable burden. Then in the 1950s came a revolutionary new method for dealing with it, named after its inventor and tireless supporter, a French doctor named Fernand Lamaze. Lamaze proposed a simple yet radical way for women to not only facilitate their labor but also control it. The rest was history of birth…

In 1951, during his observations in Russia, Dr. Fernand Lamaze saw that when informed and trained pregnant women reacted to each uterine contraction with relaxation and conscious breathing instead of fear and self-contraction, their birth was extremely short and easy. Later, he added different breathing techniques to this method and spread his own method in France under the name of painless birth. In the late 1950s, Marjorie Karmel wrote a book called 'Thank you, Dr. Lamaze' in reference to Dr. Lamaze who accompanied her when she was giving birth, and this book received considerable attention all over the world. In 1960, Elisabeth Bing and Marjorie Karmel established the pregnancy training organization Lamaze International in the United States. Although some changes were later added to this method, which is now widely used all over the world, its name was not changed. The Lamaze method prepares pregnant women emotionally and physically for childbirth. The essence of the Lamaze method is based on Pavlov's conditioned reflex. Brain can be trained to accept a particular stimulus, analyze it, and give the correct

answer. This method was practiced before Lamaze by Russian psychologists who called it Psychoprophylaxis. Broadly, it means controlling consciousness. If women relax themselves instead of contracting during labor pains and can control herself with conscious breathing, the birth process will be shorter and the level of pain would decrease. With the establishment of Lamaze International in America, it was stated that Lamaze is not just a method but a philosophy. Accordingly, Lamaze has been adopted not only as a breathing and relaxation method, but also as a philosophy that includes healthy birth practices.

2.3.1. Training with Evidence-Based Applications

One of the activities conducted by Lamaze institution is publications on evidence-based applications that lead to normal birth. Lamaze institution regularly updates these applications it publishes.

Following a study conducted in 1999 the World Health Organization published a guide titled "Care in Normal Birth". 4 of the applications detailed in this book were published by the World Health Organization following the Geneva meeting in 1999. Other 2 applications were added by Lamaze.

6 Applications to Normal Birth

1. Birth must start simultaneously.
2. Pregnant women must be given freedom of action during birth.
3. Pregnant women must be provided emotional and physical support.
4. Routine interventions must be avoided during the act of birth.
5. Natural and active pushing methods must be preferred in birth.
6. Mother and baby must be kept together after birth and unlimited opportunity must be given for nursing.

1. Allowing the birth to start by itself (Lamaze philosophy advocates that induction application is not made unless medically required and the mother shows respect to her body and her baby),

2. Walking, moving, and changing position during birth (Walking, moving, and changing position makes the birth to be easier and safer. Lamaze International proposes creation of a plan on moving during the act of birth and choosing a doctor and hospital that would support the expectant mother during birth.)

3. Ensuring that the expectant mother is accompanied with her loved one (friend, spouse, birth coach) who would support her during birth

(Lamaze International recommends that presence of a loved one with the expectant mother during birth reduces negative feelings about the birth and facilitates the process by increasing the feeling of trust, thus providing support during birth).

4. Not intervening unless medically necessary (Lamaze International recommends that practices such as restriction of eating/drinking during delivery, enemas, forceps, vacuum, episiotomy, epidural anesthesia and continuous EFM should not be applied unless medically necessary)

5. Avoiding supine birth and monitoring her body while pushing (The safest birth for the mother and the baby is when mother gives birth by relying on her body. Lamaze International recommends positions such as squatting, half-sitting, standing on the knees, all fours at birth. The institution believes that pushing down is more useful in every sense when the feeling of pushing comes naturally.)

6. Keeping mother and the baby together to ensure mother-infant bonding and support breastfeeding after birth (rooming in).

2.4. Bradley Method

Bradley method is a model based on the "birth coaching" model, aiming to prepare the couple in normal and natural ways by avoiding unnecessary interventions in childbirth. It was developed by Robert A. Bradley, an obstetrician/gynecologist who grew up on a farm in Nebraska. This model emerged following Bradley's observations of birth experience of animals compared to hospital-standard birth experiences of women and side effects. Bradley defined the concept of Birth Coaching. Although Bradley used the word coach for the person who supports the birth in his book, today the word husband/partner is used instead of this word in current editions of the book. Unlike other methods, in this method, couples attend the training together. Bradley Method identified 6 needs of women giving birth:

1-Darkness and loneliness
2-Silence/quiet
3-Physical comfort during the first stage of birth
4-Physical relaxation
5-Controlled breathing
6-Keeping eyes closed and having the appearance of sleeping

The basis of this method is the partner's role as a coach. Classes teach how to support and coach the wife who is giving birth and how to

meet her needs. Responsibilities during the birth experience are shared clearly and equally between spouses. Thus, a perfect bond is established between spouses. The classes are based on Bradley's observation that if a father-to-be is allowed to be with his partner during birth, he experiences some changes. The woman ceases to be a passive observer and assumes an active role that includes supportive and protective dimensions. After twelve weeks of training, couples develop skills in emotional, physical and interpersonal relationships that lead them to meet their birth expectations. In addition, these classes teach relaxation methods, give knowledge on the birth process, supporting and coaching childbirth, being an informed client, and advocating for evidence-based practices. Bradley reported that based on 14,000 births, 96% of women gave birth without intervention. According to current statistics, 88% of couples had a normal vaginal delivery without intervention. The Bradley Method focuses not only on partner coaching, but also on giving birth as a shared experience between spouses. It guides pain tolerance and emphasizes the brain-body relationship in relaxation. Based on the idea that it may harm the baby, it defends the necessity of avoiding medical interventions. It differs in this respect from the Lamaze Method, which allows intervention and drug use in coping with pain.

2.5. England Model (Birthing from Within)

This is a model developed by Pam England, in which a holistic approach is adopted in birth training and postpartum preparation. Pam, a birth trainer with nurse/midwife background, saw birth as an art and allowed families to tell their knowledge about previous births, their fears, wishes and needs with painting, drawing, role-playing and making models. Influenced by her own birth, Pam developed this model with in-depth study of the needs of a woman giving birth. Pam is also one of the two authors of Birthing from Within: An Extra-Ordinary Guide to Childbirth Preparation. In the England model, a learning method based on creativity and free choice is adopted. Introspection and trial-and-error methods are often used. Parents learn about birth from their own mothers, fathers, babies, and cultural perspectives. For example, as an expectant mother receives her information on birth from the perspective of a healthcare professional (complex physiological events, complications, hospital procedures), this provides an outside perspective on her own birth. Conversely, if the trainer is her own mother who has experienced birth, she looks at birth from within, has the power to take responsibility

to protect her baby and herself becoming defensive and protective. Birthing from within website states that birth trainers, nurses, midwives, mothers and therapists in many parts of the world have been using this model since 1999.

2.6. Odent Model

In the Odent Method, healthcare professionals are in the position of spectators. According to Odent, birth is a special experience and couples should experience this experience with love in the best physical environment.

2.7. Kitzinger Method

This method is based on the idea that women should be treated naturally. It aims to control the labor pains of the pregnant woman with relaxation and breathing during delivery. Kitzinger saw birth as an individual, sexual and social event; thus, she developed the psychosexual approach in prenatal education and is also called the Psychosexual Method. Because pregnancy and childbirth are a source of emotional and physical stress, Kitzinger tried to teach women how to express their feelings. She also focused on body image, relaxation techniques and special breathing exercises. The method adopted philosophy of adapting to contractions, control and concentration and active response to pain. With abdominal relaxation and chest breathing, aim is to help the woman understand the birth and to use sensory memory in preparation for birth.

2.8. Leboyer Method

In Leboyer method, birth is seen as a traumatic event for the newborn and it is believed that birth must be harmless. Thus, the method advocates that pain and trauma of the baby should be reduced by avoiding routine environments and procedures (such as strong light, noise, hitting the newborn’s bottom, cutting the umbilical cord before the baby starts breathing) and making the birth harmless. The method recommends making the delivery room suitable for the newborn and wrapping the newborn in a warm blanket after birth.

2.8.1. Positioning

Today, many women give birth in the supine or semi-recumbent position in hospitals in the position preferred by the health personnel. This may cause the woman to feel as if she is pushing upwards, to

become passive in labor and to slow down the delivery. The use of an appropriate position in labor can help reduce anxiety, fear and distress, reduce catecholamine levels and prevent fetal distress. It can also reduce pain, analgesia use and perineal trauma, while making uterine contractions more effective. The correct position to be used in delivery should be determined according to the wishes of the woman, the stage of labor and the position of the fetus. The most suitable position for childbirth would be the position that is suitable for the stages of birth, does not apply pressure on blood vessels, does not restrict movement, where the pelvis is fully mobile, and where the body is in harmony with gravity. Balance ball can also be used in these positions.

2.8.2. Positions in the first stage of birth

Standing and upright positions are recommended. These positions are very beneficial for the fetus and mother. In the horizontal position, the amount of blood going to the uterus decreases and hypoxia develops in the uterus, and accordingly the level of pain felt during contractions increases. The Sims position prevents sacral pressure and provides comfort. The side position reduces strain on the back. The lunge position is used to relieve back pain in labor and this position facilitates rotation of the fetus to the occiput posterior position. The dangle position reduces external pressure on the sacrum and hips, assisting the descent of the fetus

2.8.3. Positions in the second stage of birth

In this stage, positions are applied to increase progress and provide comfort. In the active birth stage and all processes of birth, upright positions are generally recommended, such as standing, walking, kneeling, sitting or squatting. These positions facilitate the development of biomedical forces of birth, raising the uterus, orienting the presenting part of the fetus to the pelvic outlet and assisting fetal descent. In addition, since these positions help to relax and reduce pain, genital trauma is less common and the duration of action is shortened. Daily practice before birth can positively affect the outcome of birth and finding the right position at birth. Giving different positions by evaluating the condition of the mother and fetus at different stages of birth is the most appropriate approach and helps to eliminate negative situations that may develop on the mother and baby.

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Chapter 8

Using The Hypnosis Method in Birth

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INTRODUCTION

The pain and perception experiences of expectant mothers at birth are multifaceted. Due to the medicalization of childbirth, many women seek alternative solutions that relieve labor pain (Smith CA, 2003). The mother's loss of control of her emotions, anxiety and fear are the most common causes of pain and severity awaiting delivery. The condition may also increase the risk of postpartum depression and post-traumatic stress disorder (PTSD) (Bailham D, 2003). The pain is exacerbated by anxiety, tension and fear. The pain experienced by women during childbirth is not a simple phenomenon. Psychosocial factors such as feelings of pain self-efficacy, fear, social support, coping strategies, and anxiety have been shown to be associated with women's historical experiences of labor pain. (Hodnett ED, 2011). In a study, it was reported that women's feelings of anxiety and fear were related to each other in the fear-tension-pain cycle, and fear caused muscle pain and tension during childbirth, resulting in extra pain and an increase in the woman's fear level. Developing techniques such as hypnosis can reduce birth anxieties and fears (Jensen MP, 2014).

Hypnotherapy or clinical hypnosis is the use of hypnosis for a medical purpose. The hypnosis method used in childbirth focuses on the woman's sense of security and mental relaxation and feelings of comfort (Jensen MP, 2015). It involves focusing attention inward and increasingly responsive to verbal or nonverbal communication suggestions. This verbal and nonverbal communication can affect perceptions, mood, thoughts and emotions. Communication can affect how you perceive pain. Suggestions make the individual feel safe, comfortable and see their birth feelings positively (Montgomery GH, 2002).

Hypnosis was first introduced by James Braid in the 1840s and started to be used as a pain relief method in childbirth. Some research scales have been developed to measure people's susceptibility to suggestions during hypnosis. In the 1950s, it was shown in studies that it was used instead of anesthesia in some interventions, including cesarean section, in individuals with high hypnotizability. In this context, it can be said that researchers can measure an individual's sensitivity to hypnosis. Studies have reported that the susceptibility to hypnosis increases during pregnancy. In other words, it can be said that pregnant women are more sensitive to verbal and non-verbal communications. Today, hypnosis is used as a complementary treatment rather than an alternative to anesthesia. For this purpose, the use is mostly aimed at reducing the anxiety and stress of the person. (Madden, 2016).

Hypnosis is based on the laws of the mind (the body follows the mind, the power of language, the law of harmonious attraction, the law of motivation) (Mete ve Uludağ, 2017). The aim is to increase the woman's sense of control and to achieve positive birth by reducing the fear of birth in this way (Yılmaz, 2019). Birth hypnotherapy emphasizes 'dehypnosis' individuals from negative expressions, thoughts and feelings towards birth. For example, women may associate contractions during childbirth with severe pain. In hypnotherapy, there is an effort to hypnotize the woman so that she can see her perception of contractions differently. For this purpose, different words such as ripples or waves are used instead of the word contraction (Werner A, 2013).

It has been reported that there are two main ways to perform pain relief hypnosis during childbirth. The first can be provided by a hypnotherapist who supports the mother during childbirth and helps guide the mother into self-hypnosis. The second way can be achieved by teaching mothers how to self-hypnosis. This training is done in the form of one-to-one or group lessons. During hypnosis, the woman does not completely lose consciousness. The two most common methods in the United States are the Hypnobabies method and the HypnoBirthing Marie Mongan Method. Suggestions given to reduce pain during hypnosis increase cerebral regional blood flow in the frontal and occipital lobes, resulting in visual rejuvenation, decreased alertness, and a change in consciousness (Wobst AH 2007). Spinal and supraspinal pain pathways are altered by the effect of hypnosis. Suggestions and concentration of attention significantly change the perception of pain and

the pain pathway. Hypnosis is also an advantageous method for controlling different pregnancy complications and reducing the possibility of preterm labor and delivery in patients at higher risk. In the study of Cyna et al., they showed that primiparous women who experienced hypnosis needed epidural painkillers less than the control group (Cyna AM, 2006). Vandevusse et al. also investigated the use of hypnosis in childbirth, and women were given autohypnosis training. The results of the study showed that women who received self-hypnosis training were given lower doses of tranquilizers and pain relievers than women in the control group. Additionally, women in the hypnotized state received less epidural analgesia compared to those in the control group (Vandevusse 2007). Jenkins and Pritchard described the theoretical evaluations and practical applications of hypnosis in normal labor and childbirth. Women in self-selected hypnotic states were given thirty-minute training sessions provided by a hypnotherapist. The results of the study showed that women who conceived for the first time in an autohypnosis setting had significantly shorter Stages 1 and 2 of labor compared to the control group compared to women who had previously given birth. They also suggested that the hypnosis method reduces the use of painkillers and can shorten the delivery period, especially in women who become pregnant for the first time (Jenkins MW, 1993).

CONCLUSIONS

One of the most common experiences women worldwide experience is childbirth, and labor and the pain associated with childbirth can be very worrying. Although various pharmacological procedures are effective in reducing labor and birth discomfort, their performance can be risky. Consistent with the literature, the number of studies on hypnosis in the management of labor pain is insufficient. Therefore, future studies should be directed towards replicating methodological studies evaluating this unproven hope for labor and labor pain.

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Chapter 9

Pharmacological and Non-Pharmacological Methods of Overcoming Labor Pain

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1. What Is Labor Pain?

One of the strongest pains known and described today is labor pain. In the literature, labor pain is described to be perceived as more severe than chronic pain such as lumbar pain, cancer pain, phantom pain and acute pain such as laceration. While the act of labor is managed, pain management should be emphasized as much as the follow-up of the pregnant woman and fetus. In pain management, non-pharmacological methods are used as well as pharmacological approaches. Labor is perceived as one of the most positive events in life, where mothers endure pain for their babies. This differs labor pain from other types of pain. Studies have shown that primiparous women experience more severe labor pain than multiparous women.

2.Pain According to Stages of the Act of Labor

Labor takes place in four stages.

2.1. Pain in the First Stage of Labor

The first phase is effacement and dilatation phase. During uterine contractions, pressure of the amniotic fluid increases, lower segment of the uterus and the cervix are stretched. The factors that lead to pain are ischemic myometrium caused by pressure created by uterine contractions between nerve fibers between the muscle fibers in the uterus and fundus, contraction of the cervix, and vasoconstriction due to sympathetic hyperactivity. This condition causes visceral pain that can spread to the back, usually felt between the navel and pubis.

In summary, pain in the first stage depends on:

- Dilatation of the cervix,
- Hypoxia of the uterus during contractions,
- Stretching of the lower segment of uterus,
- Pressure on neighboring tissues.

2.2. Pain in the Second Stage of Labor

This stage begins with the completion of cervical dilatation and completes with the complete delivery of the fetus. As the fetus advances, pain is felt in the pelvis and perineum. Somatic pain is felt as a result of stretching and tearing of the vagina, urethra, bladder, pelvic cavity muscles, peritoneum and uterine ligaments, fascia and subcutaneous tissues due to distention. Some patients may experience burning, aching and cramping pain in their thighs and legs as a result of withdrawal of the pelvic peritoneum, pressure on organs in the pelvic cavity such as the bladder, urethra, and rectum, and the roots of the lumbosacral plexus.

In summary, pain in the second stage depends on:

- Hypoxia of uterine muscles,
- Pressure of the fetus on perineum,
- Pressure on surrounding tissues.

2.3. Pain in the Third Stage of Labor

Painful stimulus continues in this phase which lasts for 5-30 minutes after birth of the baby and includes drainage of the placenta accompanying fetal descent and separation of placenta.

2.4. Pain in the Fourth Stage of Labor

The fourth stage of labor covers the first 4 hours following birth of the placenta. In case anesthesia is applied, this time might change.

3. Methods Used to Cope with Labor Pain

Pharmacological and non-pharmacological methods are used in coping with pain.

3.1. Pharmacological Methods in Coping with Labor Pain

They are divided into two groups as systemic and regional.

Systemically administered anesthetics are narcotics, sedatives, tranquilizers, amnestic, inhalational analgesia, and intravenous general anesthesia. Although systemic anesthetics are very effective in relieving

labor pains, they are not used in high doses due to their side effects. Almost all drugs used in systemic anesthesia pass through the placenta and affect the fetus. While they cause respiratory depression in the newborn, they also have side effects such as nausea, vomiting, hypotension, and loss of protective reflexes in addition to respiratory depression in the mother.

Regional anesthetics are among the most commonly used methods for analgesia in labor in recent years, allowing the pregnant woman to be awake and take part in labor. When compared with inhalational anesthesia techniques, drug-induced fetal respiratory depression and maternal aspiration pneumonia are less common in regional anesthesia. The most commonly used forms of anesthesia are spinal, lumbar, epidural, caudal, paracervical, pudendal, and local perineal infiltration. Each technique has a specific application. Thanks to such applications, some or all of the nerves that carry pain impulses can be blocked.

3.2. Non-Pharmacological Methods in Coping with Labor Pain

There are four different non-pharmacological methods that are generally used in the control of labor pain. These are relaxation method, mental stimulation, sensual arousal and breathing method.

3.2.1. Relaxation

3.2.1.1. Biofeedback (Biological feedback)

The purpose of biofeedback is requesting information given about physiological changes such as cervical dilatation and contractions back from the woman during pain. Thus, by directing the attention and care of the woman in her body to a different direction, pain is perceived to be weaker, awareness of the body increases which frees woman of mental tension and relaxes.

3.2.1.2. Action/Position

One of the effective interventions in coping with labor pains is to make appropriate action and position changes. Studies have shown that women feel less lumbar and abdominal pain during labor when they are standing or sitting, compared to the flat or side lying position. In the early stages of the dilatation phase, mothers feel more comfortable in the vertical position than in the horizontal position. On the other hand, in the later stages of the dilatation phase, mothers prefer the horizontal position to the vertical position.

3.2.1.2.1. Labor Dance (A new approach)

Labor dance is used to reduce the pain perceived by women during birth while studies on the subject are quite limited. Application starts in the active phase of the first stage of labor and continues until the end of the first stage. Women are given the opportunity to move rhythmically with someone she prefers, accompanied by soothing soft music. Dance aims to increase the effectiveness of the method applied by adding spouse/partner support, upright posture, music and massage, as well as the music and body movements included in the dance, and at the same time to provide emotional support to the woman. There are five components in the birth dance: upright posture, constant partner/partner support, pelvic movement, music, and massage.

3.2.1.3. Hypnosis

Named as sleeping in the Ancient Greek, hypnosis is known to be a method used to decrease birth labor by the 19th Century. This method depends on the woman getting relieved from her fears and relaxing through self-hypnosis methods and experiencing a happy, pain-free birth. There are studies on hypnosis considerably shortening the 1st stage of labor and significantly decreasing the experienced pain. Purpose of hypnosis is to increase the woman's feeling of being in charge, thus decreasing fear of labor and experience positive childbirth.

3.2.1.4. Music

The history of therapy with music dates back to ancient times. Therapeutic tools and music were often used together. Homera used music in surgeries and proved it to be effective. In ancient Rome, Celcus and Areteus stated that music soothes the soul and is good for mental illnesses. Egyptians also used music during childbirth. Music is also considered to have a relaxing or distracting effect Another mechanism is that auditory stimulation directly and neurologically suppresses pain. Individual actively participates in this method. Music helps by distancing the person from unpleasant painful stimuli, increasing endorphin release and initiating relaxation. The mechanism with which music affects labor is explained by the gate control theory of pain.

It is known that soft music pregnant women listen to in the first stage has relaxing effect. Studies demonstrated that soft music pregnant women listen to especially during the latent phase reduces level of pain and anxiety they experience. In their randomized controlled study on 161

women, Simavli et al. (2014) noted that music listened to during labor reduces risk of anxiety and postpartum depression following childbirth. According to results of two other studies where music was used, it was found that the therapy did not reduce labor pain. Massage is noted to decrease labor pain when used in conjunction with music.

3.2.1.5. Sophrology

Covers hypnosis, deep relaxation methods, suggestion, and meditation methods and is a method balancing the states of consciousness, leading to the person training and healing oneself. While a high level of satisfaction was achieved in these methods used in antenatal classes, there are no scientific studies on their use in coping with labor pain.

3.2.1.6. Haptonomy

Known as the science of touching and feeling, haptonomy is about emotional relationship and interaction between people. Its purpose is to heal, acknowledge presence of another person, touching with words and actions to create basic self-reliance. Practitioners argue that the link created by touching between parents and the fetus would ensure a faster and easier childbirth. Experts argue that it is not possible to make a real assessment because of its relation with affectivity and it is not supported with scientific studies yet.

3.2.2. Mental Stimulation

3.2.2.1. Imaging

Imaging ensures that the patient focuses on another point than pain. During labor, imaging is effective in relaxing. If the woman focuses on relaxing and imagines, can focus on her own thoughts in every contraction and can continue this for a long time.

3.2.2.2. Focusing – Distracting

Distraction is the process of taking the woman's attention away from the pain sensation with a stimulus from the environment. Walking in the hallway, sitting in a chair, talking to visitors, watching TV, and using the phone would keep most women busy. Some women bring into their delivery room an object they like, such as a photograph, that they can focus their attention on during contractions. Others choose a fixed object in the room for the same purpose. In both cases, they focus on the object

to reduce their perception of pain as the contraction starts. Depending on the situation midwives and nurses encourage women to imagine by saying "think of your baby moving in the birth canal", "think of your baby moving down and out", "think of your expanding birth canal".

3.2.3. Sensory Stimulus

3.2.3.1. Acupuncture

It is one of the traditional treatment methods of traditional Chinese medicine. In practice of acupuncture the body is divided to meridians and each part is considered to control management of a different area. Pain is reduced by applying needles on peripheral nerves in these parts and giving a small scale electric current. Among its advantages there are feeling of lesser pain after the first hour of placement of needles, reducing application of pharmacological methods, and sparing the baby and mother of damages.

It is considered that applying acupuncture that could be used to control labor pain on SP6 point increases threshold of pain and stimulate endorphin release. Study by Skilnand et al. (2002) determined that labor pain scores of groups that was applied acupuncture was significantly lower than scores of groups that were not applied acupuncture.

3.2.3.2. Acupressure

Acupressure is one of the non-pharmacological methods that the WHO approved as supportive therapy in treatable illnesses. The main purpose in this method is to stimulate desired areas by applying pressure.

In acupressure it is known that there are a total of 32 meridians, 12 of which are essential. Vital energy flows through the 12 meridians for 24 hours. The flow time of energy from each channel is two hours. Of these twelve meridians, six are yin, that is energy conserving and distributing, and the other six are yang, that is energy producing meridians. Meridians in the body are named according to the organs they are related to. Organs forming the 12 main meridians are lung, pericardium, heart, small intestine, large intestine, spleen, liver, kidney, stomach, gall bladder, and urinary bladder. Disruption of the interaction between yin and yang affects not only the organs in which the flow is disturbed, but also the organs before and after them.

In order for acupressure to be effective, acupuncture points must be correctly identified. There are three basic methods in identifying acupuncture points. These are:

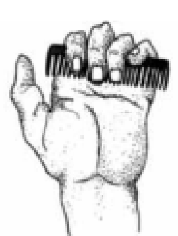
1. Identifying points based on superficial, anatomical landmarks,
2. Identifying points by measuring bone ratios,
3. Identifying points with finger measurement.

Measurement has an important place in practice of acupressure. A unit of measure called Cun (Sun) is used to measure the distance of a point to another. This unit is equivalent to approximately 2.5 cm. and width of the thumb width and the distance between the first and second knuckles of the middle finger of the hand is accepted as a Cun (Sun). The length created by holding the four fingers side by side is 3 cans. This measurement should be based on fingers of the person to whom acupressure would be applied.

Some points that must be considered while applying acupressure are:

1. Must not be applied on skin with disrupted integrity.
2. Must not be applied in case of skin infections or diseases.
3. Acupressure must not be applied on varicose areas.
4. Acupressure must not be applied in case of inflammatory diseases.
5. One of the most important cases when acupressure must not be applied is when the person acupressure is applied to feels disturbed or refuses application. In such a case the person's wish must be respected.

Using acupressure methods during labor: Acupressure is used in the intrapartum period to control labor pain, to help the pregnant woman relax and cool down by reducing her anxiety, to ensure induction of labor, and to reduce the rate of cesarean sections. The most commonly used acupressure points to control labor pain are SP6, LI4 and BL67 points.



The line where fingers meet with the palm is known as hand points. It is reported that tight stimulation of this point with an object such as a comb in the palm of the hand increases the release of endorphins and reduces pain.

Studies have shown that applying acupressure to the SP6 point reduces the level of pain perceived by pregnant woman, shortens the duration of labor, reduces the rate of cesarean sections, and the rate of oxytocin use. Literature shows that acupressure application to the LI4 point is effective in reducing perceived labor pain and shortening the delivery time. Öztürk and Saruhan (2008), determined in their study that

application of ice to the LI4 region did not have an effect on reducing the perceived labor pain, but the pregnant women who applied ice to the LI4 point stated that they were relieved during delivery. It was reported that applying acupressure to the LI4 and GB21 points for 5-10 minutes can help the baby move through the birth canal in the cases when action does not progress in the second stage of labor. Literature shows that applying pressure on BL67 point reduces labor pain, provides labor induction and helps the birth to start spontaneously similar to other acupuncture points used in childbirth.

3.2.3.3. Transcutaneous Electrical Nerve Stimulation (TENS)

This is the process of delivering low-voltage electrical impulses to nerve cells. According to the TENS mechanism, there are two kinds of theories. The first is the gate control mechanism and the other is reducing the perception of pain due to the release of endorphin hormone as a result of stimulation of sensory neurons in low frequencies. Mother can be given a controller that would vary the intensity and duration of the electrical stimulation and control the pain. TENS has advantages such as its easy and long-term use, being able to turn off to terminate its effect, sparing mother and the baby of damages, and being used under maternal control. Its disadvantages are its price, the inability to use it in conjunction with a fetal monitor, and being effective in only in the first stage of labor.

3.2.3.4. Intradermal Liquid Injection

Also known as intradermal water block, this method is based on the application of four intradermal water bubbles. Theoretically, intradermal applied sterile water disturbs the nerve endings and blocks other painful sensations. Technically, for intradermal water block application 0.05–0.1ml of sterile water for injection and a 1ml 25-gauge needle-tipped syringe must be used. The first two intradermal bubbles are placed on each posterior superior iliac spines and the other two are placed 3 cm below and 1 cm medial to the initial areas. These placements are important for the method to be successful. It was determined that intradermal water blocks did not reduce general labor pain in mothers, but decreased perception of pain. The most important advantage of this method is that it is effective, does not have any negative effects on the health of the mother and fetus, and its being affordable. The short duration of its effects, its requirement of repetition, and lack of effect

outside lumbar pain are its disadvantages. In a randomized study of 99 cases where Martensson et al. assessed VAS scores of mothers who received intradermal water injection at 10 and 45 minutes after the procedure, the authors reported that pain scores in the experimental group were significantly lower than in the placebo group. In a similar randomized study of 272 cases, Trolle et al. reported that a remarkable analgesic effect was noted in the experimental group injected with sterile water even 1 or 2 hours after application compared to placebo control group.

3.2.3.5. Hot/Cold Application

Theoretically, hot application relieves muscle spasm and also causes an alteration in the viscoelastic properties of the tissues, reducing the effects such as pressure and tension in the nerve endings and providing analgesia. On the other hand, increased circulation with vasodilation ensures that metabolic wastes that stimulate pain are removed from the area. It creates an analgesic effect by providing blood supply to the area in tension type ischemia-based pain. As a means of hot application at labor, hot water bottles/water bags, heated bags filled with rice or cherry seeds, hot towels or compresses, heating blankets and hot water baths are used. Perineal hot application, theoretically thanks to the above-described analgesic effect of heat, reduces the perineal pain experienced during the descent of the baby's head, while increasing flexibility of the perineal tissues, reducing the need for episiotomy and the risk of perineal damage. The ideal temperature to be used in perineal hot application should be between 40 ºC and 45 ºC. When such a heat is applied for 6 to 8 minutes, it can reach tissues at 3 cm deep. If special perineal pads are used in the application, they are applied to the perineum in the beginning of the second stage of labor when the pads reach the desired temperature. If wet compresses would be used in the application, compresses are dipped into the water at 40-45ºC and squeezed well and a preliminary application is made to the inner surface of the upper leg in order to familiarize the mother and to understand if she feels discomfort. It is suggested that the duration of the application should not exceed 30 minutes in order to benefit from the therapeutic effect of hot application. If the application is extended to 30-45 minutes, congestion occurs in the tissues. In applications exceeding one hour, vasodilation is replaced by vasoconstriction which gives the opposite of the intended effect.

Cold application reduces muscle spasm, inflammation, and edema. With the stimulation of nerve fibers with thick diameters, it reduces the sensitivity of the skin and relieves the pain. If the pregnant woman is very sweaty and overwhelmed during labor, cold application can help the woman relax. Cold application is usually applied to the waist, forehead, face, arms, and hands of the pregnant woman.

In two of the five studies where hot-cold application method was used, hot application was used in one, while cold application was used in one, hot-cold applications were used in turns in one and cold application was used in one as massage. Studies reported that application of hot, cold, and both in turns are effective in reducing birth labor. In studies pain was assessed using Visual Analog Scale (GAS). In both studies where hot application was used, it was determined that hot application reduced labor pain. In studies where cold massage and cold application are used, cold application was found to be effective in reducing pain. In study where cold-hot applications were used in turn, the method was found to reduce pain.

3.2.3.6. Hydrotherapy

Warm water send calming impulses to the nerves in the skin, increases vasodilation, and leads to a decrease in catecholamine. Thus, it leads the pregnant woman in warm water to feel less pain during labor contractions. Hydrotherapy has the effect of relaxation in the perineum, vagina and cervix, and the release of endogenous oxytocin due to the stimulation of the nipple by water. It is recommended that hydrotherapy method would be applied after cervical dilatation is 5 cm because early reduction of pain might prolong labor

3.2.3.7. Massage

Massage applied on the lumbar area, legs, shoulders, etc. areas during labor is recommended for reducing pain and supporting relaxation and positive thinking during labor. Massage could be applied by the pregnant woman herself or by another person.

a) Massage Applied by the Pregnant Woman: Pregnant woman can apply massage on her abdomen, legs or lumbar area in order to cope with pain during labor. Massage applied by pregnant women themselves are the most effective in the early stages of the first stage.

b) Massage Applied by Another Person: Partner, midwife or other persons supporting labor can apply massage on the lumbar area, abdomen, legs, and feet of the pregnant woman.

• **Abdomen Massage:** One of the areas where pain is felt most during labor is the lower half of the abdomen and the suprapubic region. Generally, abdominal massage is given clockwise between contractions. The pressure to be applied to this area should be superficial. It is recommended that the massage movements applied to the abdomen are synchronized with breathing.

• **Lumbar Massage:** Lumbar pain results from the pressure exerted by the fetal head on the coccyx and sacrum with each contraction. It is felt especially in the lumbosacral region and intensifies as labor progresses. Massage could be applied on lumbar area while the mother is standing, lying on her side or sitting. If the mother is in a side-lying or sitting position, a pillow can be placed under her head and between her knees. Rubbing applied to the sacrum area using the sole or flat of the hands, applying pressure to the sacrum and coccyx area with small circular movements are other applications that relieve the mother's lumbar pain. Massage is stopped during in-between contractions.

• **Shoulder and Neck Massage:** Massage is applied on the area from the shoulder to the scapula with circular movements. The protruding edges of both shoulders are rubbed and moved towards the arms. This movement can be repeated 3-4 times. While rubbing the neck area, more time should be spent on tense areas. Massage is applied on the shoulders and neck area by leaning the mother's head forward

• **Lower Extremity Massage**: Massage including effleurage, stroking, and kneading actions applied on the legs and the feet during labor is relaxing (Massage methods). Foot massage stimulates many reflex points and ensures labor gets easier. Some examples of studies are:

➢ In their randomized study of 60 primiparous cases in which they examined the effect of massage on labor pain, Chang et al. reported that PBI pain scores were found to be significantly lower in favor of the test group, who received massage in all phases of labor, compared to the control group.

➢ In a similar randomized study of 28 cases with moderate socioeconomic status, Field et al. reported that the pain scores of the test group, who received massage from their partners and used breathing

techniques, were significantly lower than the control group where only breathing techniques were used.

- Brown et al. (2001) informed that 38% of mothers who were applied massage and effleurage during labor found the application to be very effective while 57% found it somewhat effective, and 5% found ineffective.

3.2.3.8. Aromatherapy

One of the oldest non-pharmacological methods used to cope with labor pain is aromatherapy. Studies showing that aromatherapies are effective ways to manage pain and psychological effects in labor gained momentum between 1996 and 2002. Today, studies continue to provide high levels of evidence. The mechanism with which aromatherapy makes an analgesic effect is not clear. Essential oils increase the release of endogenous neurotransmitters with a calming and relaxing effect. They can be applied to the skin, inhaled directly or through a heater. Aromatherapy is also helpful for reducing anxiety. Aromatherapy application during labor is usually application of essential oils such as rose, lavender, sage, etc. as rubbing on the skin of the mother in labor or inhalation. In the second phase of the baby's descent and birth, peppermint oil is recommended for giving the mother a feeling of strength, while lavender oil reduces the sense of panic and strengthens contractions. It may also be useful to use essential oils on the acupressure (pressure) points during labor or to use them during a foot bath. Aromatherapy can be used by massaging essential oils during bath or by fumigation to increase physical and mental well-being. Aromatherapy is reported to have effects such as endorphins, serotonin, noradrenaline. It is reported to have positive effects such as reducing pain, protecting from stress and reducing fear and anxiety.

3.2.4. Breathing Methods

In case breathing methods are used correctly, they increase the mother' pain threshold, allow her to relax, and relieve the uteroplacental circulation. In in the latent phase breathing exercises can be described to women who have not been trained in preparation for birth, helping them cope better with labor pain.

There are various breathing methods and they could be used according to needs of pregnant women. They are presented below.

➢ **Normal Breathing:** Used in the beginning of the latent phase. Pregnant woman breathes in through the nose and breaths out by pursing her lips as if blowing out how food. During breathing only chest wall moves. Speed of breathing is 2 times per 15 seconds.

➢ **Slow – Deep Chest Breathing:** In the beginning of each contraction pregnant woman breathes normally. This is deep and audible breathing. Woman inhales through her nose and exhales through her mouth. Initially, woman breathes normally, then inhales for 5 seconds through her nose and exhaled through her mouth for 5 seconds. Slow and deep chest breathing is maintained throughout the contraction.

➢ **Rapid – Superficial Chest Breathing:** This method is known as audible breathing. This breathing sounds like a puppy gasping for breath. Sounds of “hii” or “hoo” accompany breathing out. Woman breaths using her upper chest muscles and not her abdominal muscles. Each contraction begins with normal breathing. As the contraction becomes more intense, the respiratory rate is gradually increased. As the contractions decrease, the respiratory rate also slows down. Normal breathing is resumed between two contractions.

➢ **Breathing Out – Abdominal Breathing:** Abdominal breathing model is applied to reduce pelvic pressure and relieve the feeling of straining. In this method, the breath is taken in and out through the mouth. This is more like the rapid-superficial type of breathing, where air is exhaled during breathing, as if blowing out a candle.

3.2.4.1. Dick Read

Dick Read makes the following comment of labor: Childbirth is a physiological event and is not painful in this regard. Fear causes stress and stress causes pain. Dick Read targets training pregnant women on anatomy of labor, its physiology, hygiene in pregnancy, relaxation methods, breathing, and exercise movements.

3.2.4.2. Lamaze

The most preferred method for relieving labor pain is the Lamaze breathing method. In this method, which is based on the Pavlovian conditioning theory, women are conditioned in the prenatal period to avoid pain. Informing the pregnant woman about breathing methods and ensuring they practice will be very effective in reducing anxiety, fear, discomfort and pain.

4. Role of the Midwife in Controlling Labor Pain

- The midwife should particularly explain to women who are expecting their first baby that their labor experience will be unlike that of the others and should ensure that their fears are eliminated. Those who have had multiple births should be encouraged to share their previous experiences and express how they felt. It should be explained that they will have a very different experience at this birth.
- All pregnant women are worried about their own and their baby's health during labor. In order to eliminate these concerns, the midwife should be able to actively participate in the event and inform the pregnant woman so that she can calmly assume her own responsibilities.
- During the event of labor, the midwife must demonstrate breathing and relaxation methods as coping methods with the pain, their purposes, application methods, and how they are performed.
- The midwife must measure the level of information of the pregnant woman ahead of birth.
- In the process of labor, the midwife must consider other non-pharmacological methods to decrease fear and pain and encourage the woman to apply.
- During contractions midwife must describe to pregnant woman massage methods, which massage would make which effect, and position types. During contractions abdominal discomfort can be reduced with effleurage. Midwife must assist pregnant woman to take position regarding back pain during labor and apply pressure on sacral 33 area or lower back to help relax.
- Midwife must apply cold on pregnant woman's lips and face and help her relax. During labor, the midwife must inform mother on how the labor progresses, state of the fetus and mother to relieve her worries. At the end of labor, she should show the newly born to the mother and ensure beginning of the initial interaction. In case the midwife falls insufficient to cope with the pain using non-pharmacological methods, the midwife should ensure application of pharmacological agents to ensure the labor is concluded with positive emotions, experiences and healthy mother and baby.

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Chapter 10

Psychology and midwifery approaches in pregnancy

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Introduction

The pregnancy process is expressed as a period in which the expectant mother is expected to spend happily with the anatomical, physiological and psychological changes of the woman. If the expectant mother cannot cope with the new adjustment period, changes and stress factors, she faces the risk of mental illnesses. Mental disorders seen during pregnancy are important not only for women but also for spouses and children. However, it is known that the importance of mental disorders seen in this period did not attract enough attention. Both the difficulties in recognizing mental disorders, the lack of specific diagnostic criteria for these diseases, and the inadequacy of diagnostic tools constitute diagnostic difficulties. The basis of mental illnesses; It is the interaction of genetic, social and psychological factors. Stress and mental illnesses experienced during pregnancy can have negative effects on both the mother and the developing baby (Küçükkaya, Süt , Öz, & Sarıkaya, 2020; Atashi V, Kohan, Salehi, & Salehi, 2018).

Mental illnesses during pregnancy

The most common mental illnesses during pregnancy are depression and anxiety disorders. In the meta-analysis study, which also included Turkey, in 2017; The prevalence of co-occurrence of anxiety symptoms and mild-severe depressive symptoms during pregnancy was 9.5%, and the prevalence of co-occurrence of anxiety symptoms and moderate-severe depressive symptoms was 6.3% (Kucharska, 2021).

Anxiety and depression experienced during pregnancy increase pregnancy and birth complications, cause preterm labor, low birth weight, intrauterine growth retardation, and adversely affect the health of the newborn. Therefore, the diagnosis of anxiety and depression during

pregnancy is considered very important not only for the pregnant woman but also for the health of the family and the baby (4). In the meta-analysis study, it was determined that the prevalence of clinical diagnosis of anxiety and depression disorder during pregnancy was 9.3%, and the prevalence of co-diagnosis of anxiety and depression disorder was 1.7% (Küçükkaya et al., 2020; Kucharska, 2021).It is important to identify risk factors for the diagnosis and prevention of anxiety and depression in pregnant women, for mother-baby health, and to have a healthy pregnancy and postpartum period (Tunçel, & Süt, 2019).

Prenatal Distress

Prenatal distress is frequently used for negative emotional and mental psychological events encountered during pregnancy; It is a psychological event pattern that is common in pregnancy and includes stress, anxiety and depression. Although pregnancy is defined as a period of happiness, joy and excitement for pregnant women, it is seen as a negative process that negatively affects the quality of life and causes physiological and psychological problems for many women (Jomeen, 2004; Coşkun, Okcu, & Arslan, 2019).

The psychological stress experienced during pregnancy is due to pregnancy-specific conditions. Physical and hormonal changes in women, which usually cause rapid changes in mood during pregnancy, can be a source of psychological distress on their own (Mulder et al., 2002). While psychosocial problems during pregnancy vary according to pregnancy periods, it is not known which problems pose a greater threat to which period of pregnancy, but each trimester has its own factors that create psychological pressure, apart from individuals (Kuğu & Akyüz, 2001). While the first trimester is generally about accepting pregnancy and adapting to the reality of pregnancy, the second trimester is affected by the complaints arising from pregnancy-specific physical problems. In the last trimester, uneasiness due to the closeness of the birth, worries about how the birth will take place, whether it can cope with the pain, and whether the baby will be healthy or not come to the fore (Topaç Tuncel, Kahyaoğlu Süt, 2019; 134).

Pregnancy distress has a multidimensional structure that includes psychological, social and physiological components. Therefore, it is not correct to associate it with only one reason or try to explain it (Mulder et al., 2002; Topaç Tuncel, Kahyaoğlu Süt, 2019; Coşkun, Okcu, & Arslan, 2019). Psychosocial health of pregnant women during pregnancy; socio-

demographic characteristics (education level, socioeconomic level, spouse relationship, social support, low self-esteem, social isolation), obtetric characteristics (parity, gestational week, previous pregnancy and birth experiences, number of children, planned pregnancy status, etc.) and psychological characteristics. (attitudes of family members towards pregnant women, previous mental problems of the mother, positive and negative role models in the environment) are also affected (Boybay, & Dereli, 2015; Körükcü, Deliktaş, Aydın, & Kabukcuoğlu, 2017). Apart from these situations, which cause prenatal distress for pregnant women; They have a wide variety of fears such as experiencing pain during labor, harm or death of the baby at birth, episiotomy, not knowing how to give birth, and being helpless (Mulder et al., 2002; Topaç Tuncel, Kahyaoğlu Süt, 2019; Coşkun et al., 2019).

Exposure to prenatal distress in the fetus; It causes preterm birth, prematurity, intrauterine growth retardation, low birth weight, small head circumference, malpresentation, change in fetal heart rate, fetal hypoxia, low APGAR score, neonatal asphyxia, meconium aspiration, hypoglycemia, polycythemia and respiratory distress Exposure to prenatal distress long-term effects of staying; Complications related to respiratory, gastrointestinal and urinary systems due to growth retardation, cerebral palsy, low intelligence, lack of attention, retardation in language skills (Atasever, & Çelik, 2018; Çapık, Apay, & Sakar, 2015; Usta, & Balıkçı, 2012).

Stress in Pregnancy

Stress is a defense that occurs in physiological systems as a result of the incompatibility between body functions and the environment (Yıldız, 2011). It can be caused by biological, psychological, socio-cultural factors or a combination of these factors. source of stressor; Pregnancy can be internal, such as guilt and regret, or it can be external, such as role change and death (Yıldız, 2011; Madazlı 2005). Pregnancy is one of the main sources of stress in terms of both role change and trying to adapt to motherhood. However, the expectation of the environment from the woman to be a good mother increases the stress level of pregnant women (Çapık et al., 2015). Anxiety levels of expectant mothers often increased due to birth of a baby with malformation, births with an operation, being in environments where they would feel lonely, fear of doing the wrong things, and uncertainties about what they did not know about birth (Madazlı 2005; Çapık et al., 2015).). Pregnancy and preparation for

motherhood are life events where sensitivity and harmony are important. The degree to which pregnancy is perceived as stressful among women can vary greatly with the effect of sociodemographic and obstetric characteristics. In addition, today's living conditions, the working of pregnant women and the difficulty of working conditions are also factors that cause women to experience the pregnancy process more stressful (McCrory, & McNally, 2013).

Anxiety in Pregnancy

Anxiety is a state of anxiety that often arises as a result of unconscious conflicts, and at the same time, it is perceived that a danger is approaching despite a danger that does not actually exist (Vırıt, Akbaş, Savaş, & Sertbaş, 2008). Anxiety during pregnancy; It occurs due to pregnancy and perinatal stressors. Anxiety that develops during pregnancy creates negative consequences for mother-baby health in the birth and postpartum period. Physiological changes such as fatigue, loss of energy, nausea/vomiting during pregnancy are also symptoms of anxiety. Therefore, it may be difficult to distinguish anxiety disorders during pregnancy. It has been reported that anxiety in pregnant women is associated with preterm labor, low birth weight according to the week, and the development of polyhydramnios, and it also causes variable APGAR scores, fetal hemodynamic and movement disorders, premature rupture of membranes, cervical dyskinesia, and cesarean delivery (Tunçel, & Süt, 2019; Madazlı 2005; Çapık et al., 2015).

Depression in Pregnancy

Depression, in which the individual's desire to live and enjoyment of life is lost, he feels intense grief and sadness, his thoughts about the future are pessimistic and pessimistic, when he thinks about his past, he has an intense feeling of regret and guilt, sometimes he thinks of death and attempts suicide, sleep, appetite It is a disease state in which even the physiological needs related to sexual desire are interrupted and deteriorated (Topaç Tuncel et al., 2019).

Pregnancy depression is a mental health problem that adversely affects the health of the pregnant woman and the fetus and that manifests itself intensely during pregnancy. The rate of depression during pregnancy varies between 12-36% (Topaç Tuncel et al., 2019; Bilgen, 2020). This situation affects the pregnant woman through hormonal, psychological, environmental, biological and genetic factors;

Norepinephrine and cortisol levels increase in pregnant women, which reduces blood flow to the uterus, resulting in very serious obstetric and neonatal consequences on the pregnant and fetus. Pregnancy depression is an important issue that should be emphasized because it invites such serious health problems on pregnant women and fetuses, and also paves the way for the deterioration of their well-being. Midwives, who are closely involved in pregnancy follow-up, especially in primary care, have a great responsibility for detection and early diagnosis and treatment during pregnancy (Boybay, & Dereli, 2015; Körükcü et al., 2017).

Midwifery approaches to Coping with Prenatal Distress

The healthy continuation of pregnancy is related to the ability of the pregnant woman to cope with the difficulties and problems she faces. In particular, the pregnant woman's awareness of the problem, the coping methods she used when she faced any problem, the presence and quality of social support have an important role in coping. In order to cope with the stress experienced in the prenatal period, it is important to have a positive attitude, to protect mental health, to adopt a healthy lifestyle, to develop problem-solving skills and to receive social support, as well as to strengthen the bond with the baby (Vırıt et a., 2008; Körükcü et al., 2017). The level of maternal-fetal attachment should be improved in order for the pregnant woman to lead a healthy life, to eliminate the stress factors related to pregnancy and to protect her mental health. People with whom pregnant women feel close actively take part in solving the problem with the support they provide in stressful situations. The support mechanism that has the most positive effect on coping with prenatal stress of pregnant women is their close environment and especially their spouses. It is known that pregnant women whose motherhood role is approved by their spouses and who can share their problems with their spouses experience less prenatal stress (Okanlı, Tortumluoğlu, & Kırpınar, 2003; Türkoğlu et al., 2014).

Midwives should evaluate pregnant women in terms of prenatal stress, especially in their primary care follow-ups, notice them in the early period; Pregnant women should be a guide and assistant in coping with stress. The midwives, which can be used to cope with prenatal stress such as relaxation exercises, breathing exercises, daydreaming, preparing for the baby, creating memories, yoga, massage therapy, social support, music therapy, fetal movement counting and strengthening spirituality, are used to cope with stress that occurs during pregnancy. should have

knowledge about effective methods and should inform about these methods. Problems of midwives and other health care professionals that cause anxiety in pregnant women before and during pregnancy should be carefully examined and resolved. Therefore, midwives and other health care providers should be aware of the importance of supporting pregnant women.

Conclusion

Pregnant women need to be informed spiritually. Thus, the fears and anxieties of pregnant women about pregnancy can be reduced and the psychological adaptation to pregnancy can be facilitated. In addition, increasing the mental awareness of pregnant women and health personnel about the process will enable early recognition, prevention, early intervention and treatment of many mental problems that may arise during pregnancy.

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Section 3: NUTRITION AND DIETETICS

Chapter 11

Correlation Between Food Intake and Single Nucleotide Gene Polymorphism in Taste Receptors

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1.Introduction

Taste perception occurs through the dissolution of the chemical molecules, which form the taste in food, saliva and their interaction with the taste receptors on the tongue. This interaction initiates signal transmission to the processing regions, in which taste is perceived, in the brain, and, as a result, taste perception occurs (Hartley, Liem, & Keast, 2019). The factors causing the differences in taste perception can be considered as internal and external factors. An individual's gender, age, genetics, and ethnicity are among the internal factors that affect the sense of taste. The external factors affecting the perception of taste also include many factors such as smoking, body weight, presence of health problems, and drug use (Murtaza, Hichami, Khan, Ghiringhelli, & Khan, 2017; Puputti, Aisala, Hoppu, & Sandell, 2019; Ozturk& Dikmen, 2021). The sense of taste functions as a nutrient perception system during food consumption and affects food intake and indirectly the incidence of chronic diseases caused by nutrition by influencing the amount of food consumption, speed of consumption, and chewing time (Boesveldt & de Graaf, 2017; Chamoun et al., 2018;). The variations in fat, sweet, and bitter taste receptors underlie the differences in taste perception among individuals (Mennella, Pepino, & Reed, 2005). The assumed key receptors are CD36 for fat taste, taste receptor type 1 member 2 (T1R2) and T1R3 for sweet taste, T2R38, umami taste receptors T1R1 and T1R3 for bitter taste, salt taste receptors epithelial sodium channel (ENaC), and transient receptor potential cation channel subfamily V member 1 (TRPV1).

2. Sense of Taste

The sense of taste is one of the five basic senses (sight, hearing, taste, smell, and touch) and refers to the sense that occurs when non-volatile chemical molecules stimulate taste receptor cells in the tongue, soft palate, and oropharyngeal region (Bachmanov & Beauchamp, 2007).

The tongue's anterior and posterior surfaces have 2000 to 5000 taste buds and each taste bud has between 50-100 cells (Chamoun et al., 2018; Chaudhari & Roper, 2010). The cells forming the taste buds are divided into four different types, including three different mature cells (Type I, II, III) and one basal cell (Type IV), based on their morphology and neurotransmitter expressions: Type I cells are electron-dense cells with long apical microvilli (Bigiani, 2001; Chaudhari & Roper, 2010). Type I cells are thought to play a supportive role for taste bud cells, similar to glia cells of the central nervous system. (Bartel, Sullivan, Lavoie, Sévigny, & Finger, 2006). Type I cells also maintain the extracellular environment through neurotransmitter clearance, ion transport and redistribution (Chaudhari & Roper, 2010). Type I cells make up about half of all taste bud cells. They surround other cells in the bud and are responsible for the expression of specific molecules that can activate neurotransmitters involved in the sense of taste. (Pumplin, Yu, & Smith, 1997). Type II cells are called receptor cells. Type II cells involved in sensing sweet, bitter, or umami taste also depend on G protein receptors (GPRs) (Besnard, Passilly-Degrace, & Khan, 2015; Kaufman & Lamster, 2002; Pérez et al., 2002). Type II taste cells do not form synapses with afferent nerve fibers (DeFazio et al., 2006). Instead, these taste receptor cells communicate via channels such as voltage-gated ion channel 1 (CALHM1) modulated by calcium concentration in response to membrane depolarization after taste stimulation. Type II cells make up a quarter of the cells in the taste buds and are often called "taste receptor cells" because they have specific receptors that can bind sugars (sweet taste), glutamates (umami taste), and bitter taste molecules (Ozdener et al., 2011). Type II cells also express a series of proteins essential in taste transduction, including G proteins, α-gustducin, and phospholipase c-beta 2 (PLCβ2) (Chandrashekar, Hoon, Ryba, & Zuker, 2006). Type III cells are presynaptic cells and these cells secrete neurotransmitters for intercellular communication of the taste system (Besnard et al., 2015; Huang, Maruyama, Stimac, & Roper, 2008). Type III cells are related to the perception of sour tastes and have a role in transmitting sensory

information to the central nervous system through the synthesis and release of neurotransmitters (Chaudhari & Roper, 2010). Lastly, Type IV cells are basal, non-polarized, and undifferentiated cells and are located at the base of the taste buds (Besnard et al., 2015; Murtaza et al., 2017). These cells do not produce a specific taste stimulus. As the taste cells begin to regenerate, the progenitor cells differentiate into Types I-III by providing new taste cells to the bud (Castillo-Azofeifa et al., 2017; Miura & Barlow, 2010). It is not known exactly which taste bud cell type contains the fat taste receptor CD36, but it was hypothesized that Type II and/or Type III cells contain this receptor (Chamoun et al., 2018; Simons, Kummer, Luiken, & Boon, 2011).

3. Taste Receptors and Gene Polymorphism

There is a correlation between genetic variation in taste receptors and the risk of nutrition-related chronic diseases. Differences in taste perception affect food intake by directing individuals to different food preferences. This variation in food intake may affect general health status and risk of chronic disease (Garcia-Bailo, Toguri, Eny, & El-Sohemy, 2009).

2.4. Taste of Fat

Oleogustus (taste of fat) is the most recently described taste type (Running, Craig, & Mattes, 2015). In recent human studies, the correlation between perception of fat and body weight gain were pointed out (Stewart & Keast, 2012; Stewart et al., 2010). The sensitivity of long-chain fatty acid (LCFA) is associated with fatty food consumption, energy intake, and body mass index (BMI) (Stewart et al., 2010). In slim individuals consuming diets high in fat, fatty acid sensitivity decreased over time, but not in obese individuals. These observations have demonstrated that individuals less sensitive to fat taste have higher fat intake, which partially explains why obese individuals consume high fat foods more than normal-weight individuals (Stewart & Keast, 2012).

In a study, CD36 knockout mice were shown to be incapable of detecting LCFA in behavioral tests (Laugerette et al., 2005). Oral sensing of linoleic acid, α-linolenic acid, and oleic acid was associated with the CD36 receptor in taste buds (Chamoun et al., 2018).

In their study, Ma et al., (Ma et al., 2004) investigated the correlation between common SNPs in the CD36 gene, lipid and glucose metabolism, and risk of cardiovascular disease (Ma et al., 2004). In this study, the

haplotype consisted of the following five SNPs: (1)- 33137 A / G (rs1984112; MAF = 0.3468), (2)- 31118 G / A (rs1761667; MAF = 0.3904), (3) 25444 G / A (rs1527483; MAF = 0.1018), (4) 27645 (del / in) (rs3840546; MAF not reported), and (5)- 30294 G / C (rs1049673; MAF = 0.3832). In the adult population of European origin, the 30294C polymorphism was significantly associated with higher plasma free fatty acids and was more strongly associated with males than females. A similar increase was seen in plasma free fatty acid levels in men carrying the – 33137A and -31118G polymorphisms. According to the order of the above-mentioned SNPs, an individual's haplotype can be represented by naming the nucleotide bases in order. It was determined that the men with the AGGIG haplotype had 31% higher free fatty acids and 20% higher plasma triglycerides (TG) than non-carriers. The AGGIG haplotype was also associated with an increased risk of coronary artery disease in Americans (n=197) and Italians (n=321) with Type 2 Diabetes. In this study (Ma et al., 2004), it was found that CD36 did not regulate lipid metabolism and risk of cardiovascular disease in adults of European origin, but it is unclear whether or not this modulation is at the level of taste perception or metabolism (Ma et al., 2004).

CD36 has an important role in lipid metabolism, and the polymorphisms within the CD36 gene have also been associated with the risk of cardiovascular disease (Noel et al., 2010). The relationship between genotypes and haplotypes of the five SNPs in the CD36 gene ((−33137G, −31118A, −22674C (rs2151916; MAF = 0.3339), 27645 del/ins and 30294C) and lipid levels were examined in the normal weight individuals (Ramos-Arellano et al., 2013). HDL cholesterol levels were lower in -22674C carriers than the -22674T carriers, and the LDL cholesterol levels in TT homozygotes were lower than the -22674C allele carriers. The LDL cholesterol levels were higher in 30294C polymorphism carriers of the CC29 genotype compared to the non-carriers. The subjects carrying the AATDC haplotype had a 3.2 times higher risk of LDL cholesterol > 100 mg/dL than those carrying the AGTIG haplotype and the subjects carrying the AATIC haplotype were found to have 2 times higher total cholesterol > 200 mg/dL than those carrying the AGTIG haplotype. Therefore, it is thought that genetic variation in CD36 may modulate the risk of cardiovascular disease by affecting lipid metabolism (Ramos-Arellano et al., 2013).

In another study, including 3036 obese (age = 15.0 ± 1.1 years) and

339 normal-weight (age = 14.6 ± 1.1 years) young people, the relationship between CD36 SNPs and obesity risk was assessed. Four SNPs (rs3211867, rs3211883, rs3211908, and rs1527483) were found to be associated with an increased risk of obesity, higher body mass index (BMI), and higher body fat percentage (Bokor et al., 2010).

In their study, Pepino et al. (2012) stated that there was a relationship between -31118A SNP and fat preference. 21 obese participants with locus variations AA (n = 6), AG (n = 7) and GG (n = 8) were examined for oleic acid and triolein detection thresholds. It was found that G allele homozygotes had eight-times lower oral detection thresholds (i.e. higher sensitivity) for oleic acid and triolein compared to the A allele (Pepino, Love-Gregory, Klein, & Abumrad, 2012).

It was hypothesized that G homozygocity for the −31118 SNP is associated with the reduced CD36 function (Ma et al., 2004). This is thought to be due to higher plasma free fatty acids and TG than normal glucose and insulin levels in G allele homozygotes. The role of this receptor is to translocate free fatty acids from plasma to muscle and other tissues, so high plasma free fatty acids are indicators of defective CD 36. The increasing free fatty acid level in plasma directs free fatty acids to the liver independent of CD36. The liver synthesizes TGs and releases them into the plasma, which may explain why TGs are high in G allele homozygotes.

Decreased expression of CD36 in the tongue leads to decreased taste sensitivity to fat, thus an increase in fat intake and higher plasma free fatty acids and TG. However, the studies examining SNPs found that the fat taste sensitivity decreased with the A allele, not the G allele, and more fatty foods were preferred. This apparent inconsistency may be due to differences in CD36 promoter activity between skeletal muscle and tongue. This difference can be examined in the future by assessing CD36 expression in these tissues and other associated SNPs in a group of individuals genotyped for the −31118 SNP. This information will be useful in combining current studies on CD36 genetic variation and its effects on oleogustus perception and metabolic profile. It also provides information to individuals on optimizing their diet to improve their metabolic profile based on their CD36 genetic profile (Madden et al., 2008). The CD36 genetic variation may have the potential for LCFAs to affect fat intake and body weight gain by reducing taste sensitivity in individuals. Cardiovascular diseases and dyslipidemia may result from

this eating behavior associated with excessive consumption of fat, especially dietary fat mainly containing saturated fats (Colin-Ramirez et al., 2014). Although the number of studies conducted so far is limited, genetics provide data on the relationship between fat perception and fat preference. It is essential to characterize genetic variations in the accepted fat taste receptors to understand better the role of fat taste perception in developing nutritionally induced chronic diseases.

2.5. Sweet Taste

The sweet taste receptor consists of T1R2 and T1R3 subunits. All of these T1Rs are G-protein coupled receptors. These receptors are located in the taste bud and combine as dimers (which can be hetero or homologous) to form receptor complexes that are sensitive to sweet molecules (Chandrashekar et al., 2006). The sweet taste receptor TAS1R2/3 is the sensor for all substances that evoke sweet taste perception, and many natural and synthetic compounds activate this receptor (49). In addition, naturally occurring sweet proteins such as brazzein, thaumatin and monellin, and naturally occurring taste modifying proteins such as miraculin also bind to T1R2 and T1R3. (Chamoun et al., 2018). Although both T1R2 and T1R3 are required to perceive sweet taste, only T1R2 is a subunit specific to sweet taste perception because T1R3 dimerizes with T1R1 and plays a role in detecting umami taste (Nelson et al., 2002).

Multiple polymorphisms of all three T1R genes are found in African, Asian, European, and Native American populations. These SNPs include nonsynonymous SNPs and are located in the N-terminal extracellular domain, the portion of the ligands that are thought to bind for taste sensing (Chamoun et al., 2018). In a study examining whether or not variations of Ile191Val in T1R2 were associated with differences in sugar consumption in 1037 healthy and 100 young adult individuals with type 2 diabetes, a relationship was determined between the Ile191Val SNP (rs35874116; MAF = 0.2670) in T1R2 and BMI in people with BMI $\geq$ 25. In healthy individuals, Val carriers (homozygous or heterozygous) were significantly less sugar than the homozygous Ile carriers. In the individuals with type 2 diabetes, Val carriers consumed significantly less sugar than Ile homozygotes (Eny, Wolever, Corey, & El-Sohemy, 2010). In addition, another study examined the genetic variation in T1R3 and found that intronic SNPs in the T1R3 promoter were associated with sucrose sensitivity in humans. These SNPs are thought to account for

16% of the variability in sweet taste perception. The relationship between genetic variations in sweet taste receptors and sweet food consumption is associated with chronic nutritional diseases (Fushan, Simons, Slack, Manichaikul, & Drayna, 2009). In a study examining the relationship between risk of dental caries development and sweet food consumption and conducted on 80 young adults, the relationship between dental caries development risk and Ile191Val polymorphism (T1R2) was examined (Kulkarni et al., 2013). Val carriers of the T1R2 SNP, individuals with less sweet food consumption, were found to have a lower risk of developing dental caries. A similar result was also observed in another study conducted in schools. A significant correlation was observed between the Ile191Val (T1R2) and rs307355 (T1R3) SNPs and the total number of caries. Moderate caries (4-7 caries) were determined in Rs307355 heterozygotes and high-risk caries (> 8 caries) were determined in Val homozygotes of T1R2 SNP (Haznedaroğlu et al., 2015). In the light of the studies, it is thought that T1R2 SNP may cause chronic diseases related to nutrition as a result of influencing eating behaviors in individuals who genetically tend to prefer sweet foods.

3.3. Bitter Taste

Consumption of foods having bitter at high concentrations is generally rejected and this is thought to be an adaptation to avoid toxic substances such as rancid fat, hydrolyzed protein, and plant alkaloids (drugs, stimulants, poisonous plants) (Glendinning, 1994). Individuals with a high sensitivity to bitter taste may avoid the consumption of vegetables with a bitter taste and may prefer more sweet and fatty foods as a substitute for these foods. This eating behavior has the potential to increase the risk of cardiovascular disease, obesity and cancer (Goldstein, Daun, & Tepper, 2005).

Although there are 25 different T2R types for bitter taste perception in taste receptor buds of type II cells (Dong, Jones, & Zhang, 2009), only T2R38 has been genetically associated with the bitter taste state (Kim et al., 2003). Bitter taste receptor T2R38 is thought to be responsible for phenylthiocarbamide (PTC) and 6-n-propylthiouracil (PROP) taste perception (Kim et al., 2003). Three common SNPs have been identified in this gene; P49A (rs713598; MAF = 0.4952), A262V (rs1726866; MAF = 0.4255) and V296I (rs10246939; MAF = 0.4794).

It is associated with the changes in bitter taste sensing sensitivity and these variations are summarized in Table 1.

Table 1. T2R38 gene SNPs and their relationship with bitter taste perception

SNP Type	Polymorphism	SNP ID	Result	Reference
non-synonymous	*145G> C *(A49P) *886T> C	*rs713598 *rs1726866	*A direct molecular link was established for variations in the T2R38 receptor in variations in bitter taste perception. *Greater propylthiouracil (PROP) sensitivity was associated with less acceptance of coffee, legumes, vegetables and pies, citrus fruits, soy products, green tea, and selected oils. *T2R38 variations account for the majority of individual differences in the perception of PROP bitterness in both children and adults, and some of the individual differences in sweet taste preferences in children.	*(Bufe et al., 2005) *(Drewnowski, Henderson, Shore, & Barratt-Fornell, 1998) *(Mennella et al., 2005)
non-synonymous	*785T>C(V262 A)	*rs1726866	*PTC/PROP threshold values were significantly and negatively correlated with body height and lean mass.	(Sharma & Kaur, 2014)

3.4. Umami taste

The name “umami” comes from Japanese, which means “delicious yummy taste” (Chandrashekar, Hoon, Nicholas, Ryba,& Charles, 2006). The heterodimer complex of T1R1 and T1R3 can be activated by amino acids, 5-tribonucleotides such as inosine monophosphate (IMP) and guanosine monophosphate (GMP), or many L-amino acids, including monosodium glutamate (MSG) and L-aspartate (Nelson et al., 2002). Metabotropic glutamate receptor 1 (mGluR1) and mGluR4 in taste receptor cells also effectively detect this taste (Chamoun et al., 2018).

The umami taste is an indication of the food rich in purines. However, serum urate has recently been associated with numerous biological effects such as high blood pressure, increased hepatic lipogenesis and insulin resistance (Lanaspa et al., 2012).

The taste thresholds for three common SNPs in a study conducted with Japanese adults: Gln12His (rs75881102; MAF = 0.0114) and Ala372Thr (rs34160967; MAF = 0.1354) in Arg757Cys in T1R1 and T1R3 were researched. T1R1, Ala372Thr (rs34160967), the Thr allele was associated with increased sensitivity to umami taste. In T1R3, Arg757Cys SNP, the Cys757 allele was found to reduce sensitivity for umami taste. Having T1R1, Thr372, SNP and T1R3, Arg757, SNP was found to cause an overall decrease in the umami taste threshold (Shigemura, Shirosaki, Sanematsu, Yoshida, & Ninomiya, 2009). Further studies are needed to understand better the effect of genetics on preference or intake of foods rich in umami taste. Further characterization of the genetic variation implied in this taste pattern will affect individuals' tendency to prefer foods containing umami taste.

3.5. Sour taste

Protons in the structure of acids are thought to be the primary stimuli of sour tastes. (Behrens, Voigt, Meyerhof, & Rehbrücke, 2013). It is thought that the sour taste perception occurs by causing depolarization in taste bud cells upon stimulation of taste buds by acidic substances (Chamoun et al., 2018). The assumed sour taste receptors PKD2L1 and PKD1L3 function as a heteromer to reveal this taste. The PKD2L1 and PKD1L3 genes are thought to carry coding SNPs that may affect sour taste perception (Chamoun et al., 2018).

3.6. Salty taste

Perception of salty taste affects sodium intake, and excessive salt intake indicates a significant public health concern due to its sodium content (Chamoun et al., 2018). Because of the importance of electrolyte consumption for mammalian physiology, the desire to consume sodium-rich foods may be attributed to physiological factors rather than the salty taste given to sensory foods (Wald & Leshem, 2003).

ENaC and TRPV1 receptors have a role in the perception of salty taste (Dias et al., 2013). In the ENaC gene, two intronic SNPs influence salty taste sensitivity. Homozygotes for the A allele of rs239345 (A/T) (MAF = 0.2642) and the T allele of rs3785368 (C/T) (MAF = 0.2899) perceive salty taste less than carriers of the other alleles ($p = 0.02$; respectively $p = 0.03$). In the TRPV1 gene, the Val585Ile polymorphism rs8065080 (C/T) (MAF = 0.3177) and carriers of the T allele are more sensitive to salty taste than the CC genotype ($p = 0.008$). These findings suggest that genetic variation in the ENaC and TRPV1 genes may contribute to interindividual differences in salty taste perception (Dias et al., 2013).

When assessing all its aspects, the environmental effects may play a more dominant in defining a salty taste-preferring phenotype but (Dias et al., 2013). However, the genetic findings associating TRPV1 and ENaC with salty taste preference suggest more about genetic effects.

4. Conclusions and Recommendations

The studies on the effects of SNPs in taste receptors on eating behavior and thus the health of individuals are extremely promising. In particular, the genetic variation has important health effects in CD36 long-chain fat taste receptors, T1R2 sweet taste receptors and T2R38 bitter taste receptors. In addition to researching SNPs in taste receptor genes for umami, sour and salty tastes, there is a need to investigate the potential of taste perception to affect food intake and health. Gender-specific differences in various ethnicities are also among the important factors to be considered in future studies.

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Chapter 12

Effect of Quercetin on Obesity and Obesity-Related Diseases

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INTRODUCTION

The physiological functions of flavonoids have been widely studied since the determination of their bioactivity about 80 years ago (Kawabata, Mukai, and Ishisaka, 2015). The differences in dietary flavon-3-ols are due to the binding of phenolic-OH groups and added sugars at different positions. All flavon-3-ols, including quercetin, have a common 3-hydroxyflavone backbone (Kelly, 2011).

Quercetin, one of the flavonoid subclasses, is widely available in nature (Ross, and Kasum, 2002). Quercetin is a flavon-3-ol found as a glycoside in many foods such as vegetables, fruits, and tea (Nishimuro, et al. 2015). Quercetin-3-O-glucoside, a form of quercetin found in plants in many different forms in nature, is generally thought to function as a pigment that gives color to fruits and vegetables (Miles, McFarland, and Niles, 2014).

Quercetin shows antioxidant activity. Quercetin-containing flavonoids prevent cardiovascular diseases and other diseases by removing free radicals, inhibiting lipid peroxidation and other antioxidative effects (Kobori, Masumoto, Akimoto, and Takahashi, 2009). Besides, it is known that quercetin is effective on many diseases such as diabetes, neurological diseases, sleep, and obesity. With these properties, quercetin is a promising food ingredient for many diseases (Kelly, 2011).

Definition and Chemistry

Flavonoids are a family of plant compounds that have a similar flavone backbone (a molecule with three rings attached to hydroxyl (OH) groups). Flavonoids occur as either glycosides (combined with sugars (glycosyl groups)) or aglycones (not combined with sugars) (Ross, and Kasum, 2002). Flavonoid types and examples are given in Table 1.

Table 1. Flavonoid Subclasses and Examples (Ross, and Kasum, 2002)

Class	Examples
Flavones	Apigenin, Chrysin, Luteolin
Flavon-3-ols	Kaempferol, Myricetin, Quercetin
Flavanones	Hesperidin, Naringenin
Flavoles (catechins)	Epicatechin, Gallocatechin
Anthocyanidins	Cyanidin, Malvidin, Pelargonidin
Isoflavones	Genistein, Daidzein

Quercetin is a flavon-3-ol, one of six subclasses of flavonoid compounds (Ross, and Kasum, 2002). Quercetin is 3,3',4',5,7-pentaphhydroxyfavanone (3,3',3',5,7-pentahydroxy-2-phenylchromene-4-on) because it has an OH group at the 3,5,7,3 and 4' positions (Kelly, 2011). The most common form of quercetin, which is usually found in the glycosylated form, is rutin (Yalçın, Yılmaz, Altındağ, and Koçtürk, 2017). The sugar-free structure of quercetin is called aglycone. This structure is insoluble in cold water, partially soluble in hot water, and soluble in alcohol and oil and it is yellow. The glycoside structure of quercetin is formed by adding a glycosyl group (a sugar such as glucose, rhamnose, or rutinose) instead of an OH group (usually at position 3). The presence of the glycosyl group (quercetin glycoside) causes increased water solubility compared to quercetin aglycone (Kelly, 2011).

Absorption, Metabolism, and Bioavailability

Rutin and other quercetin glycosides, which are oligosaccharides or polysaccharides, are absorbed in the lower part of the digestive system (large intestine) as aglycons by deglycosidation by enterobacteria. On the other hand, quercetin monoglucosides such as isoquercitrin and Q4'G are absorbed in the upper part of the intestine (small intestine) after enzymatic hydrolysis by β glucosidase and/or lactose phlorizine hydrolase (LPH) occurring in the intestinal mucosa. Some of the quercetin

monoglucosides can be absorbed via the sodium-dependent glucose transporter-1 (SGLT-1). These metabolites are taken into the digestive tract via multidrug-resistance-associated protein 2 (MRP-2), and then transported to the liver via the portal vein and exposed to secondary metabolism. In addition, some of the dietary quercetin is transported through the lymphatic route (Terao, Kawai, and Murota, 2008).

For physiological functions, conjugated metabolites of quercetin in plasma or other tissues or deconjugated aglycon in specific tissues are used (Nishimuro, et al. 2015). Quercetin metabolites exist in human plasma as glucuronide or sulfate with or without methylation (Murota, et al., 2007).

Dietary Resources

Quercetin is the main flavon-3-ol in the human diet (Hollman, de Vries, van Leeuwen, S. Mengelers, and Katan, 1995). Commonly found in different types of fruits and vegetables (Alinezhad, 2013). Onion, apple, and wine are considered rich sources of quercetin. Besides, quercetin be found in different plant species such as tea, pepper, coriander, fennel, radish, dill, and fruits (Nabavi, Russo, Daglia, and Nabavi, 2015).

The amount of quercetin in foods varies depending on the growing condition of the product. For example, organically grown tomatoes have higher quercetin aglycone levels than those grown using conventional cultivation techniques. Dietary consumption of quercetin differs between countries. The daily intake of flavonoids (about 75% of which is quercetin) ranges from 5 milligrams to 80 milligrams per day. The amount of fruit, vegetable, and tea consumed is among the variable affecting the level the most (Chen, Jiang, Wu, and Fang, 2016). It has been found that 13 mg of flavonoids are consumed per day in the United States and while (Sampson, Rimm, Hollman, de Vries, and Katan, 2002) 4.37 mg of quercetin is consumed in China (Sun, 2015).

Quercetin intake with dietary food or as a supplement increases plasma quercetin concentration (Nishimuro, 2015). In a study, it was determined that blood plasma flavonoid levels increase parallel to the increase in flavonoid intake (Zamora-Ros, 2011). Therefore, it is possible to indicate that daily intake of quercetin-rich food increases the bioavailability of quercetin and contributes to the prevention of lifestyle-related diseases (Nishimuro, 2015).

Effect of quercetin on obesity and obesity-related diseases

Obesity

Obesity represents one of the main public health problems worldwide, as its prevalence is increasing alarmingly in developed countries and low-middle-income countries and is an important risk factor for various chronic diseases (WHO, 2016; Ricci, 2019). Obesity, which is characterized by excessive accumulation of fat in the body, increases the risk of chronic diseases. Moreover, it has been associated with depression and low self-respect as it reduces the quality of life (Blüher, 2019).

It is estimated that approximately 60% of the world's population will be obese by 2030. Therefore, according to the World Health Organization, obesity is currently a more serious world health problem than malnutrition (Leitner, and Frühbeck, 2017). It is estimated that 23% of ischemic heart disease cases, 44% of type 2 diabetes cases, and up to 41% of some cancers can be associated with obesity/overweight. Altogether, overweight and obesity represent the fifth most important risk factor for global mortality, and deaths attributable to obesity are at least 2.8 million/year worldwide (WHO, 2000).

Obesity, a global health problem, results from an imbalance in energy intake and expenditure, leading to cell hypertrophy and hyperplasia, and adiposity. Obesity is characterized by a state of chronic oxidative stress associated with the overproduction of reactive oxygen species (ROS, e.g., hydrogen peroxide, peroxyl, superoxide anion) followed by a reduction in antioxidant levels (Imessaoudene, et al., 2016). Adipose tissue is known not only as a triglyceride storage organ but also as an endocrine organ. Adipose tissue secretes cytokines and adipokines that releated to the development of inflammation and oxidative stress (Fernández-Sánchez, et al. 2011). Quercetin and other polyphenols can ameliorate obesity through different molecular pathways. Quercetin is effective on obesity by increasing the activity of AMPK and Nrf2 while decreasing the activity of ROS, proinflammatory cytokines, JNK, and PPAR γ (Nabavi, Russo, Daglia, and Nabavi, 2015).

When the literature on the effect of quercetin on obesity is examined, it is seen that there are a limited number of human studies (Zhao, et al., 2017; Chen, Jiang, Wu, and Fang, 2016; Nabavi, Russo, Daglia, and Nabavi, 2015). In a study, quercetin (150 mg/day) was found to reduce waist circumference and triacylglycerol concentration (Pfeuer, et al., 2013).

Quercetin can inhibit glucose uptake and increase lipolysis in isolated rat adipocytes. Moreover, it can reduce cell proliferation and induce apoptosis, including in 3T3-L1 preadipocytes (Ahn, Lee, Kim, Park, and Ha, 2008). In the study of Rivera et al. on obese rats, 2 mg/kg or 10 mg/kg quercetin was given over a week. As a result, improvement in dyslipidemia, hypertension, and hyperinsulinemia was observed in rats in each group. However, only the group that received 10 mg/kg of quercetin per day exhibited a decrease in body weight (Rivera, Morón, Sánchez, Zarzuelo, and Galisteo, 2008).

Another animal study investigated the effect of consuming a quercetin-rich diet on obesity and hepatic fat accumulation in mice consuming a Western diet high in fat, cholesterol, and sucrose. After 20 weeks of quercetin supplementation, there was a reduction in visceral and liver fat deposition but no change in body weight. Besides, there were a decrease in plasma TNF-α and hepatic thiobarbituric acid-reactive substances (Kobori, Masumoto, Akimoto, and Oike, 2011).

Quercetin, which has anti-inflammatory properties on adipose tissue, has important roles in obesity. In a study on mice, quercerin decreased the levels of inflammatory markers (TNFα, IFNγ, IL-4, and IL-1) (Stewart, et al., 2008). In another study on Wistar rats, quercetin was shown to suppress the expression of oxidative stress and inflammatory markers, including Nrf-2, nuclear factor kappa B (NF-kB), and heme oxygenase-(HO-)-1 (Panchal, Poudyal, and Brown, 2012). In a study by Rivera et al., 10 mg/kg quercetin can improve the inflammatory status of visceral adipose tissue by suppressing TNF-α expression and increasing adiponectin levels in obese rats (Rivera, et al., 2008). On the contrary, although quercetin suppresses oxidative stress in obese animal models, Shanely et al. (2010) reported no effect on oxidative stress and antioxidant in obese subjects.

Diabetes

Diabetes Mellitus (DM) is a disease characterized by elevated blood sugar and macro nutrient metabolism as a result of defects in insulin activity and/or secretion (Tüfekçi Alphan, 2014). In particular, type 2 diabetes is the disease most commonly associated with obesity. By 2025, the prevalence of obesity-related diabetes is expected to double to reach 300 million (Dyso, 2010).

Insulin induces glucose uptake by binding to its receptors on the cell membrane of target organs. When the insulin receptor (IR) is

phosphorylated, phosphorylation of insulin receptor substances (IRS) increases. IRS activates the phosphatidylinositol 3-kinase (PI3K)/Akt pathway, which is largely responsible for the metabolic action of insulin, and the Ras/mitogen-activated protein kinase (MAPK) pathway, which mediates gene expression for the action of insulin. When the PI3K/Akt pathway is activated, it regulates glucose transporter 4 (Glut4) expression and translocation and promotes glucose uptake into cells. Obesity plays a role in the formation of insulin resistance. Insulin resistance is involved in the disruption of the PI3K/Akt pathway in target organs such as adipose tissue and skeletal muscle, leading to downregulation and translocation of Glut4 expression. In obesity, excessive fat deposition in visceral adipose tissue causes hypertrophy and dysfunction of adipocytes (Sato, and Mukai, 2020). Quercetin suppresses inflammation by modulating the AMPK pathway (Nabavi, 2015)

Quercetin has been shown to reduce macrophage infiltration of adipose tissues, reduce levels of proinflammatory mediators, and regulate AMPK phosphorylation and Sirt1 expression in rats (Dong, 2014).

GLUT4 is responsible for the uptake of glucose from the blood into muscle cells (Bryant, Govers, and James, 2002). Dietary polyphenols that can induce the translocation of GLUT4 like quercetin can promote glucose uptake in skeletal muscle cells and, thus, may be a potential resource in preventing or ameliorating diabetes (Kawabata, 2015; Nabavi, 2015).

In a study on patients with polycystic ovary syndrome, a group received 1 gram of quercetin daily for 12 weeks. As a result, the HOMA-IR and insulin levels of the quercetin group were found to be significantly lower than the placebo group (Rezvan, 2017). In a study, quercetin could improve liver and pancreas functions by inhibiting cyclin-dependent kinase inhibitor p21 (WAFl / Cipl) (Cdknla) gene expression and improving cell proliferation (Kobori, et al., 2009).

Aldose reductase is an enzyme that catalyzes the conversion of glucose to sorbitol and has important functions in the eye. Diabetes plays an important role in the formation of cataracts (Kelly, 2011). Quercetin is an in vitro inhibitor of aldose reductase and effectively blocks the accumulation of polyols in intact rat lenses incubated in a high-concentration sugar medium (Varma, Mikuni, and Kinoshita, 1975).

Cardiovascular Diseases

One of the main mechanisms by which flavon-3-ols reduce cardiovascular risk is their vasodilatory and antihypertensive effect. Although these diseases are among the main causes of death worldwide, they can also have a great impact on morbidity (Perez, 2014). Cardiac output, blood volume, nervous system, and rennin-angiotensin system play a role in the regulation of blood pressure (Marunaka, et al., 2017). It is thought that quercetin may reduce blood pressure by reducing oxidative stress, its effect on the renin-angiotensin-aldosterone system (RAAS), and improving vascular function (Larson, Symons, and Jalili, 2012).

In the study of Brüll et al., (2015) individuals were given 162 mg/day quercetin for 6 weeks. A significant decrease was found in systolic blood pressure (−3·6 mmHg ($p<0.05$)) of hypertensive individuals compared to the group receiving placebo. In a randomized, double-blind placebo-controlled study, 730 mg/day quercetin was given to hypertensive (n:22) and prehypertensive (n:19) individuals for 28 days. A significant decrease was observed in the diastolic and systolic blood pressure of hypertensive individuals compared to the baseline. However, no difference was found in prehypertensive individuals (Edwards, et al., 2017).

Another cardiovascular disease is atherosclerosis, which results in the narrowing of the vessels with the accumulation of fat in the vessels. The formation of fatty plaques, damage caused by inflammation or reactive oxygen species, and LDL oxidation play a role (Kawabata et al., 2015). In a study, the use of 50 mg/kg quercetin for 14 weeks in rats reduced the formation of atherosclerosis and oxidative stress (Lara-Guzman et al., 2015).

Toxicity and Dose

While quercetin was known to be mutagenic in the 1970s, nowadays it has been shown that quercetin is protective against genotoxicants and therefore, antimutagenic (Bischoff, 2008). Even at doses as low as 150 mg daily, the plasma quercetin concentration increases significantly and has a biological effect at these doses. In studies, it was usually given 1000 mg/day, divided into two per day (Kelly, 2011).

Conclusion

Quercetin is the most abundant form of flavonoids in nature and is found in foods such as vegetables, fruits, and tea. Quercetin has important functions in the body. It is reported that this compound increases the

activity of nuclear factor erythroid-derived 2-like (Nrf2) and AMP-activated protein kinase (AMPK), and it is effective on obesity by decreasing the production of reactive oxygen species (ROS) and proinflammatory cytokines and the peroxisome proliferator-activated receptor gamma (PPAR γ) and c-Jun-NH2 terminal kinase (JNK) and its activity. This compound can cause a reduction in adipose tissue. Quercetin can affect diabetes, one of the obesity-related diseases, by modulating the AMPK pathway and inducing the translocation of GLUT4. Besides, quercetin may play a protective role against cardiovascular diseases by helping to prevent LDL oxidation and lowering blood pressure. As a result, it is seen that quercetin may affect obesity, diabetes, and cardiovascular diseases, but its exact effect is not yet clear. However, more studies are needed in the future to determine the appropriate dose and form of quercetin on diseases.

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Chapter 13

Evaluation of the Association Between Polycystic Ovary Syndrome and Vitamin D: Current Approaches

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1. Introduction

Vitamin D is a vitamin that has the structure of steroid, is fat-soluble, and provides bone formation and mineralization (Voulgaris et al., 2017). Although vitamin D is found in foods such as fatty fish, liver, egg yolk and milk, the requirement of vitamin D cannot be met through nutrition. Vitamin D deficiency is a public health problem and it is estimated that one billion people in the world have this deficiency (Palacios & Gonzalez, 2014). It has been determined that in Turkey, vitamin D deficiency is 15.6-59.0% in winter and 15.6-25.0% in summer in adolescents, 33.4% in elderly population and 51.0% among women in menopausal period (Lumme et al., 2019; Wang et al., 2012). In addition, it is stated that Vitamin D deficiency is associated with polycystic ovary and metabolic syndrome, insulin resistance, hyperandrogenism, advanced glycation end products, cardiovascular, infectious and autoimmune diseases, etc. (Li, Brereton, Anderson, Wallace, & Ho, 2011). Vitamin D deficiency has been determined to be widespread as a result of sedentary life of the majority of people, applying sunscreen to protect against skin cancer, inability to get sufficient Vitamin D and/or not getting sufficient Vitamin D due to the clothing style in some areas (Joham et al., 2016). In a study conducted with 9560 adult individuals in 2013 in Turkey, Vitamin D level of 93% of the individuals was found to be <20 ng/ml (Satman et al., 2013).

Vitamin D is found in two basic forms in metabolism: D2 (Ergocalciferol) and D3 (Cholecalciferol). Cholecalciferol is synthesized in skin from 7- dehydrocholesterol with UV rays. On the other hand, ergocalciferol is its form taken with food and is produced with the help of

UV rays in plants, yeasts, and fungi. Approximately 95% of vitamin D in humans is synthesized in the skin depending on sunlight (Shahrokhi, Ghaffari, & Kazerouni, 2016). Vitamin D, which is taken in the diet or synthesized in the skin, is transported to the liver via vitamin D-binding protein (DBP) and is converted to 25-hydroxycholecalciferol ((25(OH)D3), calcidiol). Calcidiol level is thought to be the best indicator in the assessment of vitamin D in the body because of its ease of measurement and the half-life period in the circulation (2-3 weeks). Calcidiol is converted into 1.25(OH)2D3 by 1-alpha hydroxylase in the kidneys. Expression of this enzyme is regulated under the effect of parathyroid hormone (PTH). Although 1α-hydroxylase is expressed mainly in the kidneys, this enzyme can also be found in various non-renal tissues such as bone, breast, colon, placenta and prostate (Shahrokhi et al., 2016; Thomson, Spedding, & Buckley, 2012). 1.25-dihydroxycholecalciferol is found in the circulation together with vitamin D binding protein until it reaches to the target tissue and binds to the Vitamin D Receptor (VDR) in order to show its effect in the target tissue. The fact that vitamin D receptors are involved in 2776 genomic position and modulate 229 gene expressions indicates that this vitamin has the potential of affecting various physiological processes (Thomson et al., 2012).

Various factors can affect the Vitamin D status in body including the amount and intensity of sunlight, and the use of vitamin D supplements. Besides, lifestyle factors (for example, smoking, alcohol and obesity) and genetic factors (SNPs and mutations) affect status of Vitamin D (Lorenzen et al., 2017). According to the report of the Ministry of Health, 30 ng/ml which is 25-OH D level that will not cause parathyroid hormone (PTH) elevation in adults is taken as threshold value and values below 30 ng/ml are considered as insufficient/low and values below 10 ng/ml are considered normal as severe deficiency (Ministry of Health, 2011).

1.1 Polycystic Ovary Syndrome

Polycystic Ovary Syndrome (PCOS) is the most commonly seen endocrinopathy in women of reproductive age with characteristics such as menstrual irregularity, elevated androgen levels and polycystic-appearing ovary. Inheritance, obesity, and diabetes are the main risk factors for PCOS. In addition, it is stated that insulin resistance has an impact on the pathogenesis of PCOS and it is an important factor that makes the underlying metabolic abnormalities more severe (Vitamin, 2020). The

most common endocrine disorder seen in women of reproductive age is a reproductive disorder that also has an effect on various metabolic processes (Barthelmess & Naz, 2014; Fang et al., 2017). Although PCOS is thought to be a lifelong health problem encountered as from adolescence, it is stated to be seen at the ages before adolescence (El Hayek, Bitar, Hamdar, Mirza, & Daoud, 2016). It has been reported that hyperandrogenic symptoms such as increased adrenal androgen secretion, hirsutism, acne and/or alopecia, menstrual irregularity and polycystic ovary develop (Lerchbaum & Obermayer-Pietsch, 2012).

Although there is no consensus on the definition of polycystic ovary syndrome, Table 1 shows the most commonly used diagnostic criteria (El Hayek et al., 2016).

Table 1. Diagnostic Criteria for Polycystic Ovary Syndrome

National Institutes of Health (NIH)	**Androgen Excess and Polycystic Ovary Syndrome (PCOS) Society**	**Rotterdam Criteria**
(2 criteria)	(2 criteria)	(at least 2 criteria)
Hyperandrogenism	Hyperandrogenism	Hyperandrogenism
Menstrual irregularity	Menstrual irregularity or polycystic ovaries on ultrasound	Menstrual irregularity
		Polycystic ovaries on ultrasound

1.2. The Role of Vitamin D in Polycystic Ovary Syndrome

Vitamin D deficiency in patients with PCOS has been associated especially with metabolic symptoms such as insulin resistance, obesity, hyperandrogenism, and fertility. Vitamin D is believed to be effective in the formation of PCOS through gene transcription and hormonal modulation (Thomson et al., 2012). In addition, it is emphasized that VDR has a role in more than 3% of human genome including genes having importance for glucose metabolism and the level of Vitamin D may be important in the pathogenesis of PCOS (Fang et al., 2017; Lerchbaum & Obermayer-Pietsch, 2012). It has been determined that Vitamin D deficiency are seen more commonly in PCOS patients and serum calcidiol level of 67-85% is <20 ng/ml (Dipanshu & Chakravorty,

2015; Fang et al., 2017).

1.2.1. Insulin Resistance and Vitamin D

Hyperinsulinemia has an important role in the pathogenesis of PCOS and insulin resistance is seen in 50-70% of these patients (Ardabili, Gargari, & Farzadi, 2012; Voulgaris et al., 2017). The causes of insulin resistance seen in PCOS are thought to be multifactorial (Ardabili et al., 2012). It is stated that Vitamin D deficiency plays an important role in the development of insulin resistance in PCOS pathogenesis. Vitamin D deficiency has been reported to be associated with insulin resistance, type-2 diabetes and dyslipidemia (Forouhi, Luan, Cooper, Boucher, & Wareham, 2008; Hahn et al., 2006). Although the presence of the correlation between Vitamin D and insulin resistance is not clear (Voulgaris et al., 2017; Wehr et al., 2009), it is expressed that:

(i) Low vitamin D concentration increases serum parathormon concentration and decreases insulin sensitivity (Dipanshu & Chakravorty, 2015; Voulgaris et al., 2017),

(ii) Vitamin D regulates insulin receptor and increases insulin secretion for glucose transport and its deficiency decreases the insulin secretion (Voulgaris et al., 2017),

(iii) In vitamin D deficiency, the balance of intracellular and extracellular calcium, which is important for insulin- mediated metabolic events is deteriorated and insulin secretion is affected in insulin-sensitive tissues (Fang et al., 2017; Voulgaris et al., 2017).

(iv) Since vitamin D has a modulating effect on the immune system, vitamin D deficiency can stimulate inflammation related to insulin resistance (Wehr et al., 2009).

In a recent study using the gold standard to evaluate peripheral insulin sensitivity, it was stated that Vitamin D deficiency was not associated with insulin resistance but was associated with obesity (Muscogiuri et al., 2012). It was expressed that the presence of a higher rate of adipose tissue in obese individuals decreased vitamin D bioavailability. In addition, since obese individuals receive less sunlight, their Vitamin D biosynthesis is less and thus vitamin D deficiency can be seen in these individuals with less bioavailability and less biosynthesis (Thomson et al., 2012).

A negative correlation was found between serum vitamin D level and body mass index (BMI), body fat amount and HOMA-IR in patients with PCOS ($p<0.05$). In addition, serum vitamin D levels were found to be

higher in patients with normal weight (normal weight 21.3±11.8 ng/ml, slightly obese 19.2±13.2 ng/ml, obese 15.0±10.5 ng/ml; p=0.024, respectively). HOMA-IR level of obese individuals with PCOS was found to be higher (normal weight 1.7 ± 1.1 mU.mM/ L; slightly obese 2.6 ± 1.4 mU.mM/ L; obese 5.7 ± 3.7 mU.mM/ L; p< 0.0001, respectively) (Hahn et al., 2006). A similar result was found in the study of Yıldızhan et al., (2009). In obese patients with PCOS, serum vitamin D level was lower by 56.3% (normal weight: 29.27 ± 8.10 ng/ml; obese: 12.79 ± 3.76 ng/ml; p<0.01) and HOMA-IR value was found higher (normal weight: 2.18 ± 0.61; obese: 4.64 ± 1.63; p<0.01). Negative correlation between vitamin D and insulin resistance was found only in obese patients with PCOS (Yıldızhan et al., 2009). In the study conducted by Li et al. (2011) on a total of 52 individuals including 25 individuals in PCOS group and 27 individuals in control group, serum vitamin D level was found to be lower than 25 nmol/l in 44% of women with PCOS and 11.2% of those in the control group. The mean BMI value in PCOS patient group was higher compared to the control group (30.8 kg/m2; 23.5 kg/m2; p=0.02, respectively). In patients with PCOS and vitamin D deficiency, insulin resistance was seen more regardless of BMI and waist/hip ratio (Li et al., 2011). Similar results were found in another study and vitamin D deficiency in PCOS was associated with the low insulin sensitivity regardless of body mass index (Ngo et al., 2011).

Insulin resistance and hyperinsulinemia underlie the pathogenesis of PCOS (Yılmaz et al., 2015). In the study by Lerchbaum et al., (2012) the correlation between low vitamin D level and the insulin resistance was determined only in obese women with PCOS (Lerchbaum & Obermayer-Pietsch, 2012). Although insulin resistance is frequently encountered in 65.0% of obese individuals, it is seen in 20.0% of slim patients with PCOS (Yılmaz et al., 2015). The correlation between vitamin D and insulin resistance was explained with mechanisms beyond the presence of obesity (regardless of the obesity in individuals) (Lerchbaum & Obermayer-Pietsch, 2012). In addition, obesity is one of the main factors affecting insulin resistance, but the insulin resistance seen in PCOS is believed to be caused by the pathogenesis of PCOS rather than the presence of obesity (Yıldızhan et al., 2009).

1.2.2. Hyperandrogenism and Vitamin D

Hyperandrogenism is one of the main symptoms of PCOS and is characterized by excessive androgen release in the body. It was

determined that hyperandrogenism was higher in 75.0% of PCOS patients and amount of released free testosterone was higher in more than 80.0% (He, Lin, Robb, & Ezeamama, 2015). It is expressed that vitamin D deficiency exacerbates especially obesity, hyperandrogenism and reproductive dysfunction even more and contributes to the development of PCOS (Vitamin, 2020). In recent years, the indicators used to diagnose hyperandrogenism are Serum dehydroepiandrosterone (DHEAS), serum testosterone, sex hormone binding globulin (SHBG), and free androgen index (FAI) (He et al., 2015). There are controversial results in studies conducted between hyperandrogenism and serum vitamin D levels in women with PCOS (Aasheim, Hofsø, Hjelmesæth, Birkeland, & Bøhmer, 2008; Hahn et al., 2006; Wehr et al., 2009; Yıldızhan et al., 2009). In a study conducted in Turkey with 100 women with PCOS, serum 25(OH) vitamin D levels are correlated with testosterone, DHEAS levels and LH/FSH (Yıldızhan et al., 2009). However, in another study, while there was no correlation between vitamin D level in serum and total testosterone, DHEAS, estradiol or LH / FSH, a significant correlation was found between FAI and SHBG. In addition, when individuals with PCOS are grouped in terms of BMI, FAI (normal weight: 5.4 ± 3.7, slightly obese: 8.1 ± 3.8, obese: 11.0 ± 6.9) and SHBG (normal weight: 65.5 ± 35.3 nmol/l; slightly obese: 41.2 ± 27.4 nmol/l; obese: 29.1 ± 21.4 nmol/l) were determined (Hahn et al., 2006). While vitamin D level is correlated with SHBG and hirsutism in 206 women diagnosed with PCOS, no correlation was found between testosterone and free testosterone (Wehr et al., 2009). Vitamin D is thought to be effective in female reproductive tissues such as ovary, amniotic membrane, endometrium, and placenta and physiological reproduction (Thomson et al., 2012). In a study, in which a combined treatment containing 50.000 IU Ergocalciferol and 1500 mg calcium/day was applied weekly or once every two weeks to 13 women with chronic anovulation and hyperandrogenism, it was determined that menstrual cycles returned to normal in 7 women and 2 women became pregnant within 6 months (Thys-Jacobs, Donovan, Papadopoulos, Sarrel, & Bilezikian, 1999).

1.2.3. Advanced Glycation End Products and Vitamin D

Advanced glycation end products (AGE) occur by a non-enzymatic interaction between free amino groups on reducing sugars (mainly glucose) and lipids, nucleic acids and proteins, and is a heterogeneous group composing of with highly reactive molecules. Receptors (such as

RAGE) that do not bind AGEs to the cell surface receptor reduce the synthesis of proinflammatory cytokines and the synthesis of reactive oxygen types (ROS). It was determined that the formation of AGEs occurred slowly under physiological conditions, insulin resistance was important in pathophysiology of PCOS and accelerated the synthesis of these compounds (Shahrokhi et al., 2016).

In the study conducted by Diamanti-Kandarakis et al. (2007) in cellular level, they stated that AGEs were overexpressed in granulosa and theca cells in women with PCOS, AGE compounds accumulated in women with PCOS and affected the normal ovarian structure and function (Diamanti-Kandarakis et al., 2007). In the study by Irani et al., (2014), Vitamin D supplementation led to a decrease in Anti-Müllerian Hormone (AMH) concentrations and an increase in serum RAGE levels in women diagnosed with PCOS (Irani, Minkoff, Seifer, & Merhi, 2014). It was expressed that the decreased serum AMH levels contributed to the improvement of ovulation process by increasing the follicle sensitivity to FSH in women with PCOS, while the increase in serum RAGE levels bound AGEs in the body and suppressed the inflammatory state (Chang, Klausen, & Leung, 2013; Visser, 2006).

1.2.4. PCOS and VDR Gene Polymorphism

Various studies have investigated the effect of VDR gene polymorphism on metabolic and endocrine disorders in PCOS (Dasgupta, Dutta, Annamaneni, Kudugunti, & Battini, 2015; Santos, Lecke, & Spritzer, 2017; Voulgaris et al., 2017; Wehr et al., 2011). Although there are studies showing that VDR, Apal and BsmI gene polymorphisms are risk factors for PCOS, there are studies stating that there is no correlation between these polymorphisms and PCOS (Voulgaris et al., 2017). In a study, while no correlation was found between VDR gene variants and PCOS, Cdx2 gene was determined to be correlated with testosterone level and FOK-l gene with infertility (Dasgupta et al., 2015). In a study conducted with 545 women with PCOS and 145 healthy women, while a correlation was found between VDR, CDX2 and insulin metabolism and between Apal and Hyperandrogenism, no correlation was found between polymorphisms and PCOS (Wehr et al., 2011).

1.2.5. Vitamin D Supplementation in Polycystic Ovary Syndrome

Although the number of studies investigating the effect of Vitamin D supplementation on women with PCOS is limited, the conducted studies

are positive (Lerchbaum & Obermayer-Pietsch, 2012). It was expressed that Vitamin D and/or calcium supplements may reduce insulin resistance by helping to normalize menstruation (Rashidi, Haghollahi, Shariat, & Zayerii, 2009; Thys-Jacobs et al., 1999) and may decrease androgen levels associated with PCOS (Kotsa, Yavropoulou, Anastasiou, & Yovos, 2009; Selimoglu et al., 2010).

It was found in a study that vitamin D treatment along with 1 mcg alpha calcidiol treatment given daily to 15 women with PCOS for 3 months improved the insulin secretion (Kotsa et al., 2009). In their study, Palm et al., (2012) found that vitamin D supplementation was given to patients with PCOS for 3 months, thus insulin resistance parameters did not change but total testosterone level decreased (Pal et al., 2012). In another study, 60 PCOS patients were divided into intervention and placebo groups. The intervention group who received orally 50.000IU D3 supplementation once a 20 days and when at the end of two months this group was compared with placebo group, it was determined that there was no difference in insulin resistance; whereas, vitamin D supplementation increased vitamin D level and decreased PTH level in intervention group (Ardabili et al., 2012). In another study, it was determined that 50.000IU D vitamin supplementation was made weekly and monthly for two months and it did not affect the metabolic symptoms in PCOS patients but it only increased the vitamin D level (Rashidi, Ghaderian, & Moradi, 2017). In a study conducted in Turkey with 11 PCOS patients, a single dose of 300.000 IU oral Vitamin D supplementation was observed to decrease HOMA-IR value of patients (Selimoglu et al., 2010).

2. Conclusion and Recommendations

Since the vitamin D deficiency is a growing public health problem in all over the world, it is involved in many physiological processes in the body besides its known effects on the bone and muscular system. PCOS is correlated with insulin resistance, obesity, hyperandrogenism, and infertility, in which Vitamin D deficiencies are common and are involved in the pathogenesis of the disease. The correlation between vitamin D and the insulin resistance has been explained by mechanisms beyond the presence of obesity (regardless of the presence of obesity in individuals). In addition, obesity is one of the main factors affecting the insulin resistance but the insulin resistance seen in PCOS is believed to be caused by the pathogenesis of PCOS rather than the presence of obesity. Hyperandrogenism is one of the main symptoms of PCOS and is

characterized by excessive androgen release in the body. Hyperandrogenism was detected in 75.0% of PCOS patients and amount of released free testosterone was detected in more than 80.0%. Vitamin D deficiency also caused the formation of PCOS by particularly exacerbating obesity, hyperandrogenism and reproductive dysfunction. It was determined that VDR had a role in the human genome including genes important for glucose metabolism and the amount of vitamin D was important in the pathogenesis of PCOS. It was also found that vitamin D deficiency had an effect on the formation of insulin resistance in the pathogenesis of PCOS and the formation of type-2 diabetes and dyslipidemia. Vitamin D supplementation was effective in the management of PCOS and decreased the associated metabolic symptoms. However, comprehensive interventional studies investigating the effect of vitamin D supplementation on hormonal and clinical parameters in its correlation with PCOS are needed.

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Chapter 14

Some Spices with Anti-Obesity Activity

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INTRODUCTION

Spice is a Latin derived word comes from species which means sort, kind. A spice is edible, aromatic, and dried. It comes from a plant's root, bark, flower, bud, leaves, or stem (Aggarwal and Heber, 2014).

Spices have been used in foods for hundred years for various purposes. These are,

i) enriching aroma, taste and colour of food,

ii)masking the unwanted odours,

iii) preventing meat spoilage (antibacterial)

iv) maintaining food quality (Çon et al., 1998; Demircioğlu et al., 2007)

Beyond all benefits as mentioned above spices have antioxidant, antifungal, anti-inflammatory, anticancer, antiobesity and antidiabetic effects. It is well known that spices with natural antimicrobial effects used in foods are safer than many other synthetic antimicrobials, as well (Sağdıç et al., 2002).

A. ANTIOBESITY EFFECTS OF SPICES

Some certain spices such as turmeric, ginger, cinnamon and black pepper have been proved antiobesity effects. Spices provide their antiobesity effects through many pathways.

1.TURMERIC

The primary phytochemicals of the turmeric are curcuminoids. Curcuminoids consist of curcumin (77%), demethoxycurcumin (17%), and bisdemethoxycurcumin (3%) (Figure 1). Curcumin is a kind of yellow pigment in the turmeric and is a diferuloylmethane. It is a low-

weight, hydrophobic polyphenolic flavonoid, as well (Goel et al., 2008; Aggarwal and Heber, 2014; Cao et al., 2014; Akbay and Pekcan, 2016).

Figure 1. Chemical structure of curcumin, demethoxycurcumin and bisdemethoxycurcumin (Cao et al., 2014)

Curcumin exerts its antiobesity effect by multiple pathways. First, curcumin has been reported to induce preadipocyte apoptosis. Wu et al.. (2019), stated that preadipocytes decreased after curcumin application in their in-vitro study. Second, curcumin has been shown to inhibit adipocyte differentiation by inhibiting PPAR-γ and C/EBPa expression (Wu et al., 2019; Bradford, 2013). PPAR-γ and C/EBPa have central role on adipogenesis. It has been reported that PPAR-γ mediates preadipocyte differentiation into mature adipocytes (Chawla et al., 1994; Kadowaki et al., 2002). Some in-vitro studies have found that curcumin decreases PPAR-γ and C/EBPa expression, by activating 5' adenosine monophosphate-activated protein kinase (AMPK) and NFE2-related factor 2 (Nrf2), thus it inhibits adipogenesis (Bradford, 2013; Kim et al., 2016; Wu et al., 2019). Third; curcumin directly inhibits some transcription factors inducing lipogenesis such as fatty acid synthase (FAS), adipocyte protein 2 (aP2), lipoprotein lipase (LPL) and acetyl-CoA carboxylase (ACC) whose expressions are regulated by PPAR-γ and C/EBPa (Kim et al., 2016a). Fourth, curcumin inhibits adipocyte differentiation by activating Wnt/β-catenin pathway (Ahn et al., 2010). Wnt/β-catenin signaling pathway is an important regulator of adipocyte differentiation. In order to initiate adipocyte differentiation and adipogenesis Wnt/β-catenin signaling must be inactive in the cells (Prestwich and Macdougald, 2007; Bradford, 2013). Curcumin activates

Wnt signaling by increasing mRNA expression of Wnt10b that activates the canonical Wnt signaling pathway. Besides, curcumin increases the expression of Fz2 a direct Wnt receptor and c-Myc and cyclin D1 which are targets of Wnt/β-catenin signaling (Ahn et al., 2010). Fifth, curcumin stimulates the phosphorylation of AMPK and increases sirtuin-1 (SIRT1) by activating small molecules (Zendedel et al., 2018). SIRT1 promotes mitochondrial biogenesis and respiration in adipocytes and activates Wnt/β-catenin pathway, thereby increased SIRT1 may inhibit adipogenesis (Zhou et al., 2016; Majeed et al., 2021). Sixth, curcumin may prevent adiposity by promoting epigenetic modulations such as DNA hypomethylation, Nrf2 CpGs demethylation in gene promoters (Bradford, 2013). Demethylation of Nrf2 is related with the re-expression of Nrf2. Consequently, curcumin inhibits obesity by increasing Nrf2 expression via epigenetic pathways (Khor et al., 2011). Seventh, curcumin increases beta oxidation and lipolysis by increasing the expression of lipases such as hormone-sensitive lipase (HSL), adiponectin, adipose triglyceride lipase (ATGL), and AMP-activated protein kinase (AMPK) phosphorylation (Kim et al., 2016a). Finally, curcumin has many beneficial effects on gut microbiota. It has been reported that, after oral or intraperitoneal administration, curcumin corrects gut dysbiosis by supporting beneficial bacteria strains such as *Bifidobacteria, Lactobacilli* and reducing harmful bacteria strains such as *Prevotellaceae, Coriobacterales, Enterobacteria, Rikenellaceae,* decreasing the ratio of *Firmicutes/Bacteroidetes* and increasing SCFA-producing bacterias such as *parabacteroides, bacteroides, alloprevotella and alistipes* (Scazzocchio et al., 2020; Li et al., 2021). Gut dysbiosis is both cause and consequence of obesity (Zhao, 2013). Li et al. (2021) stated that curcumin supplementation decreased body weight gain and fat depots in high fat feeding mice by modulating gut microbiota.

Beside in-vitro and animal studies, the antiobesity effects of curcumin has been shown in human studies, as well (Akbari et al., 2019; Saraf-Bank et al., 2019; Asan et al., 2020). In a metaanalysis consisting of 21 randomized controlled trials, it has been found that curcumin supplementation reduces BMI, body weight, waist circumference, leptin levels and increases adiponectin levels. However, high heterogeneity of the studies due to different populations, durations, dosages and methodologies prevents assigning a precise dose in the metaanalysis (Akbari et al., 2019). In addition, Asan et al. (2020) reported that 93.34

mg/day curcumin supplementation to diet of women with PCOS resulted in lower body weight, body fat mass, waist circumferences, fasting blood glucose levels, fasting insulin levels, HOMA-IR and C-reactive protein (CRP) levels after 8 weeks trial.

2.GINGER

Ginger is one of the well-known spices and consumed around world. The main bioactive compounds of ginger are gingerol, shogaol and zingerone (Kim et al., 2016b; Wang et al., 2019a) (Figure 2). Gingerols are most abundant phytochemicals in ginger and consists of 6-gingerol, 8-gingerol and 10- gingerols with different lengths. Among gingerols 6-gingerol content is the largest and 15% of bioactive compounds. Of the shogaols, 6-shogaol is the most prominent and active biocomponent having antibacterial and antioxidant effects. However, 6-shogaol is less than 2% of phytochemicals in ginger (Yonei et al., 1995; Ok and Jeong, 2012; Jung et al., 2017; Wang et al., 2019a). Zingerone which derived from fried or cooked ginger has spicy-sweet aroma. The amount of zingeron is about 9.25% of ginger and has lipolytic, antioxidant, anti-inflammatory activity (Ahmad et al., 2015; Srinivasan, 2017).

zingerone

[6]-gingerol

[6]-shogaol

Figure 2. Chemical structure of zingerone, 6-shogaol and 6- gingerol (Kim et al., 2016b)

Ginger displays its antiobesity effects through many mechanisms such as increasing thermogenesis, suppressing adipogenesis and controlling appetite.

Many studies exerted that ginger supplementation increases thermogenesis and energy expenditure to prevent obesity (Iwami et al., 2002; Mansour et al., 2012; Ebrahimzadeh Attari et al., 2018; Wang et al., 2019a). Iwami et al. (2002) reported that one of the mechanisms of action

of ginger on energy expenditure is increasing oxygen consumption. Besides, it has been found that ginger regulates energy metabolism by promoting the release of catecholamines then activating the sympathetic nerve system and finally increasing the expression and synthesis of uncoupling protein 1 (UCP-1) (Ebrahimzadeh Attari et al., 2018). UCP-1 termed as thermogenin resides within the inner mitochondrial membrane and responsible for non-shivering thermogenesis (NST) (Porter, 2017). UCP-1 ensures proton leak from the inner mitochondrial membrane to inter-membrane space. This leak (by another name mitochondrial uncoupling) is responsible for 20–25% of the basal metabolic rate (Schneider et al., 2016). Moreover, ginger stimulates energy expenditure by increasing tricarboxylic acid cycle (TCA) metabolites as well. Wang et al. (2019a) reported that high fat diet distorts glycolytic pathway and causes cell-wide energy metabolic dysfunction. On the other hand, ginger supplementation increases TCA cycle metabolites such as pyruvate which provides glucose aerobic oxidation and energy production, and lactate. Lactate is known as a redox/electron carrier, increasing thermogenic gene expression (such as UCP-1) in white adipocytes; also, inducing conversion of white adipocytes into beige adipocytes which consumes more energy than whites (Carrière et al., 2014; Wang et al., 2019a; Carrière et al., 2020). One of the main actions of ginger on energy expenditure is also browning white adipocytes (Wang et al., 2019a; Wang et al., 2019b; Sampath, 2021). It has been reported that ginger promotes brown adipose tissue function and activates white adipose tissue browning by altering the gene expression. There are 3 types of adipose tissues; white, brown and beige. While white adipose tissue (WAT) is responsible for energy storage with triglyceride droplets, brown adipose tissue (BAT) is liable for thermogenesis and energy expenditure and burns fat (Cypess and Kahn, 2010; Fedorenko et al., 2012; Wang et al., 2019a). Because, BAT has high mitochondria content and abundant expression of UCP1 (Shinde et al., 2021). White adipocytes can be transformed into beige adipocytes (browning process), which are similar to brown adipocytes, such as higher respiratory, thermogenesis and energy consumption rate Therefore, browning process may increase energy consumption. It has been declared that this process is executed through increasing expression of sirtuin-1 (SIRT1)/AMP-activated protein kinase (AMPK) and then peroxisome proliferator-activated receptor γ coactivator 1α (PGC-1α) finally increasing mitochondrial

biogenesis (Wang et al., 2019a; Wang et al. 2019b). In addition to this pathway, Sampath et al. (2021) reported that 6-gingerol and 6-shagoal browning white adipocytes through up-regulating expression of beige progenitor such as CD137 and up-regulating expression of brown fat-specific genes such as UCP1, PGC1α, PRDM16, FGF21, TMEM26, CIDEA and PPARγ.

Many studies have declared that ginger and its bioactive flovanoid 6-shogaol prevents obesity by suppressing adipogenesis/lipogenesis (Suk et al.; 2016; Guru et al., 2020; Kim et al.; 2021). Ginger exerts its activity by suppressing two primer adipogenesis/adipocytes differentiation regulators, PPAR-γ and C/EBPα, via increasing AMPK phosphorylation which means AMPK activation. In addition, ginger decreases the expression of lipogenesis related proteins such as FAS and Sterol Regulatory Element-Binding Protein 1c (SREBP-1). (Okamoto et al., 2011; Suk et al., 2016; Suk et al., 2017). It has been declared that SREBP-1c is the key transcription for lipogenesis and stimulates C/EBPα and PPARγ, as well. Besides, it has been found that ginger significantly decreases the expression of some transcription factors related with adipocytes differentiation such as glucose transporter 4 (GLUT4), adipocyte protein 2 (aP2), acetyl-CoA carboxylase (ACC) and adiponectin (ApN) (Kim et al., 2021).

Inducing apoptosis of mature adipocytes can be assumed as one of the anti-adipogenic activity of ginger. Manaharan and Kanthimathi (2016) reported that ginger stimulates apoptosis in mature adipocytes by suppressing thymoma viral proto-oncogene 1 (AKT1) gene regulating cell proliferation and differentiation. Supression of AKT-1 inhibits cell proliferation and induces apoptosis in mature adipocytes.

One of the antiobesity effect of ginger and its bioactive compound zingerone is stimulating lipolysis (Pulbutr et al., 2011; Suk et al., 2016; Sayed et al., 2020). Adipocyte lipolysis is a complex process primarily controlled by adipose triglyceride lipase (ATGL) hormone sensitive lipase (HSL). It has been reported that ginger stimulates lipolysis by inducing ATGL and HSL (Han et al., 2008; Kim et al., 2021).

Some researchers claim that ginger ameliorates obesity by controlling appetite (Reinbach et al., 2010; Mansour et al., 2012). On the other hand, Wu et al. (2008) and Gregersen et al. (2013) exerted that ginger has no effect on fullness. Macit et al. (2019) reported that ginger may promote satiety by modulating 5-hydroxytryptamine (5-HT) named as serotonin

and its receptors. Because, activation of serotonergic neurons may decrease food intake and cause loss of appetite.

In human studies, antiobesity effect of ginger such as losing weight or reducing BMI is observed on obese female subjects but not on non-obese subjects (Sugita et al., 2014; Attari et al., 2016; Park et al., 2020). The studies showing beneficial effect of ginger mostly conducted for 12 weeks and amount of ginger varies from 200 mg/day to 2 g/day (Attari et al., 2015; Attari et al., 2016; Park et al., 2020).

3.CINNAMON

Cinnamon is the dried bark of Cinnamomi cassiae, which have been used widely since ancient times and mentioned in ancient Rome, China, Greek and Latin inscriptions (Gürson and Özçelikay, 2005; Soliman et al., 2012).

The most important active components of cinnamon are cinnamaldehyde and trans-cinnamaldehyde (Rao and Gan, 2014; Mahmoodnia et al., 2017) (Figure 3). Cinnamaldehyde which provides typical flavor and odor of cinnamon constitutes 90% of the essential oil of the cinnamon bark (Camacho et al., 2015).

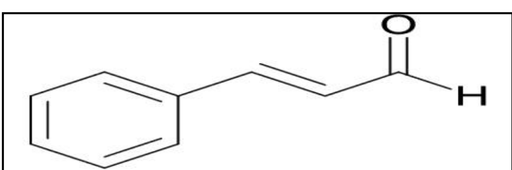

Figure 3. Chemical structure of cinnamaldehyde/trans-cinnamaldehyde (Mahmoodnia et al., 2017)

Cinnamon proves its antiobesity effect by six pathways. First, cinnamon reduces food intake by decreasing ghrelin secretion. Ghrelin is an orexigenic hormone that is produced mainly in the stomach (primarily by fundus cells) and increases food intake (Camacho et al., 2015). Besides, cinnamaldehyde is known as main agonist of transient receptor potential-ankyrin receptor 1 (TRPA1) (Derbenev and Zsombok, 2016). Camacho et al. (2015) reported that since TRPA1 and ghrelin co-localize in the same enterochromaffin cells of the duodenum, while cinnamaldehyde (bioactive component of cinnamon) increased TRPA1 expression, ghrelin secretion is reduced. Second, cinnamon inhibits adipocyte differentiation and adipogenesis. It has been shown that cinnamaldehyde prevents adipogenesis through down-regulating the

expression of PPAR-γ and C/EBPα (Huang et al., 2011). Third, cinnamon decreases lipogenesis. Qin et al. (2010) indicated that cinnamon extract inhibited mRNA levels and protein levels of SREBP-1 and FAS which stimulate lipogenesis. On the other hand, Lee et al. (2016) declared that cinnamon extract promotes lipogenesis during the initiation stage of adipocyte differentiation but not during the preadipocyte phase and post stage of adipocyte differentiation. Fourth, cinnamon inhibits intestinal lipid absorption. Fat digestion and absorption, in turn, consist of enzymatic hydrolysis, emulsification, micelle formation. Intestinal fat digestion is mainly provided by pancreatic lipase which hydrolyses fats into free fatty acids and glycerol. Cinnamon has been shown to inhibit pancreatic lipase enzyme. Besides, it inhibits pancreatic cholesterol esterase which plays an important part in cholesterol digestion. The other main factors for fat absorption such as cholesterol micellization and bile acid binding are inhibited by cinnamon, as well (Abeysekera et al., 2017). Fifth, cinnamon increases energy expenditure through increasing UCP1 expression a thermogenic gene increasing energy expenditure by activating beta3-adrenoceptor (β3-AR). Because, β3-AR is known as an upregulator of UCP-1 in adipose tissue. Cinnamon may exert this activity by activating norepinephrine that stimulates non-shivering thermogenesis, thus UCP-1 expression, as well (Pandit et al., 2018). Besides, cinnamon browns white adipocytes and turns into beige cells which have more UCP-1 (Mottillo et al., 2014; Kwan et al., 2017). Phosphorylation of AMPK by cinnamon can be a key factor for browning process (Neto et al., 2020). Sixth, cinnamon increases thermogenesis and energy expenditure by activating cAMP-dependent protein kinase (PKA) and p38 mitogen-activated protein kinase (p38 MAPK) pathway. Both enzymes induce key thermogenic genes such as fibroblast growth factor 21 (FGF21), cell death-inducing DNA fragmentation factor-like effector A (CIDEA), cytochrome C, somatic (CYCS), mitochondrial transcription factor A (TFAM), thus increasing thermogenesis (Jiang et al., 2017).

Considering human studies, most of them have been shown that cinnamon has notable antiobesity effect on losing weight, reducing BMI and waist circumference (Wainstein et al., 2011; Khedr et al., 2020; Ahmad et al., 2021). Two metanalysis consisting of 21 and 12 randomized controlled trials have been proved similar results, as well (Yazdanpanah et al., 2020; Mousavi et al., 2020). It has been noted that

cinnamon shows its activity especially at the dosages of ≥2 g/d, and over 12 weeks (Mousavi et al., 2020).

4.BLACK PEPPER

In traditional medicine particularly Chinese and Indian, black pepper plays a prominent role to treat diseases. The most important bio-active component of black pepper is piperine which gives biting taste to the spice (Figure 4). It has been known that piperine (1-piperoylpiperidine) has chemopreventive, antioxidant, immunomodulatory, anti-carcinogenic and anti-inflammatory activities (Zheng et al., 2016; Gorgani et al., 2017).

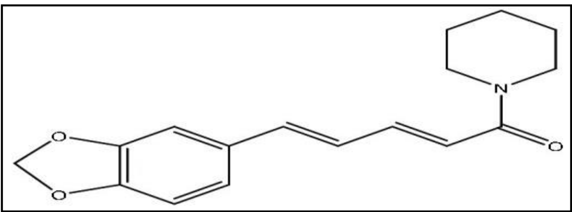

Figure 4. Chemical structure of piperine (Zheng et al., 2016)

Black pepper shows its antiobesity effects through preventing appetite, suppressing adipogenesis/lipogenesis and adipocytes expansion, promoting lipolysis and increasing energy expenditure.

Black pepper ameliorates obesity by suppressing appetite and promoting satiety (Zanzer et al., 2018). Lailiyah et al. (2021) reported that black pepper exerts its activity by inhibiting (growth hormone secretagogue receptor) GHSR-Ghrelin interaction. Black pepper acts as an antogonist of GHSR which is the receptor of ghrelin (appetite hormon) and inhibits appetite. Another mechanism of suppressing appetite of black pepper can be through blocking cannabinoid receptor 1 (CB1) which has an orexigenic activity (Pagotto et al., 2006; Yuliana et al., 2011).

Black pepper suppresses adipogenesis by attenuating activities of PPARγ, C/EBPβ and SREBP-1c the key transcription factors (Park et al., 2012). Besides, black pepper suppresses the other lipogenic transcription factors such as FAS, fatty-acid-binding protein-4 (FABP-4), ACC dose-dependently (Meriga et al., 2017).

Increasing lipolytic enzymes and promoting their mRNA expressions is one of the adipogenic activities of black pepper. It has been found that black pepper increases the plasma levels of ATGL, LPL and HSL and their mRNA expressions (Du et al., 2020).

One of the prominent effects of black pepper to ameliorate obesity is inhibiting adipose tissue expansion. Not only inhibiting adipocyte differentiation, but also inhibiting growth of adipocytes can be an important factor to prevent obesity. It has been reported that piperine (bio-active component of black pepper) down-regulates the expressions of genes that are related with adipocyte expansion such as secreted frizzled-related protein 5 (SFRP5), mesoderm specific transcript (MEST) and polymerase I and transcript release factor (PTRF/Cavin1) (Du et al., 2020).

Black pepper may exert its antiobesity activity by increasing energy consumption. Nogara et al. (2016) have declared that piperine increases the basal metabolic rate of skeletal muscle, thus enhances the energy consumption. However, unlike this study, O'Connor et al. (2013) and Gregersen et al. (2013) have indicated that black pepper/piperine do not alter energy expenditure.

The follow-up human studies regarding antiobesity effect of mere black pepper has not been found. However; a randomized, double blind, placebo-controlled 8 weeks trial, which has performed epigallocatechin gallate, capsaicins, piperine and L-carnitine combination on overweight subjects has reported significant weight loss and fat mass reduction in subjects (Rondanelli et al., 2013).

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Section 4: CHILD DEVELOPMENT

Chapter 15

Breastfeeding Practices of Mothers with Babies up to 24 Months Old*

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INTRODUCTION

Adequate, balanced and healthy nutrition is one of the most basic needs for the health of individuals and the communities. Nutrition is an indispensable part of life at every stage starting from prenatal period and lasting for life, and is one of the protective factors that play a considerable role in minimizing health problems. The importance of nutrition to human health is better understood day by day, and having an adequate, balanced diet, and adopting healthy eating habits play a central role in reducing nutritional problems in society (Tayar, Haşıl Korkmaz and Özkeleş, 2017). Adequate and balanced nutrition is very important for the first two years of life and breast milk is the most important and the primary source of nutrition in the infant's diet during this period. A newborn baby should only take breast milk for the first six months and insufficient intake of breast milk and intensive use of infant formulas during these months might lead to various developmental problems. It is therefore very important for mothers to have at least basic knowledge and skills about infant nutrition and appropriate breastfeeding practices. What makes breast milk so unique is that its composition varies depending on the age and condition of the infant (Baysal and Arslan, 2007; Giray, 2004; Karaağaoğlu and Eroğlu Samur, 2011; Kültürsay, Bilgen and Türkyılmaz,

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2014).

Breast milk and breastfeeding offer many health benefits to mother and infant. For example, the risk of developing diseases such as osteoporosis and breast cancer is reduced; the return of the uterus to its pre-pregnancy size/state and the mother's weight loss are accelerated thanks to breastfeeding. Breast milk is economical and readily available, so it does not require any further preparation. It is quite easy for the newborn to digest breast milk because the amount of nutrients included is suitable for the infant, and the chance of getting sick for the infant is quite small due to the antibodies and germicidal enzymes contained in it. Additionally, breast milk does not cause allergies and the incidence of anemia is less common in infants who are fed breast milk (Allen and Hector, 2005; Clark and Bungum, 2003; Çankırılı and Aydın, 2014; Pan American Health Organization (PAHO), 2002).

Moreover, it is easy to digest as most of the carbohydrates in breast milk are composed of lactose, so breast milk plays an active role in regulating the baby's blood sugar. Lactose also helps reduce intestinal infections, which positively affects the development of the baby's immune system. The primary energy source of newborns consists of fats and 40-50% of the energy that babies get from breast milk comes from fats. By entering the cell structure, fats provide transporting of some vitamins and hormones in milk to the newborn. Since unsaturated fatty acids are abundant in breast milk, they have an important impact on nervous system and brain development and retinal functions in the eye. Due to the high protein content in breast milk, the baby's protein requirement during the first six months is met in this way and the proteins in breast milk also protect the baby from digestive system infections (Gür, 2007; Karaaağaoğlu and Eroğlu Samur, 2011; Kültürsay et al., 2014; Mocan, 2016).

During the first six months, breast milk can provide all the nutrients needed by the infant, yet starting from the sixth month, breast milk becomes inadequate in terms of certain nutrients (e.g., protein, vitamins A and D), and complementary foods are therefore needed (Westcott, 2000). Some mothers start giving complementary foods at earlier times to make their infants get used to different tastes; however, the taste of breast milk changes depending on mother’s diet. In addition, supposing that their babies wake up frequently at nights just because they are hungry, some mothers may start complementary foods earlier, thinking that their breast milk is not enough. Nevertheless, the height and the weight of the infant

are two main indicators that a mother is producing enough breast milk for her baby (Devecioğlu and Gökçay, 2012).

It is not appropriate to introduce complementary foods early, and introducing them late might also lead to various health problems such as malnutrition and faltering growth in infants. For this reason, it is particularly important to start complementary foods in time (Elmacıoğlu, 2008). As complementary foods form a sound basis for healthy and proper nutrition, great care should be taken to ensure that right foods are selected and prepared appropriately for the infant. In addition, in order for them to be sustainable, complementary foods should consist of those prepared at home. It is an important step for achieving a healthy diet if the infant sits at the table together with family members (Devecioğlu and Gökçay, 2012). The use of traditional breastfeeding practices by some mothers causes the emergence of different practices in infant feeding. These practices include giving a variety of complementary foods (e.g., sugar water, zamzam water and date) right after delivery instead of breastfeeding, giving some other nutrients (e.g., pot liquor, soup and ground rice) besides breast milk within the first six months and early introduction of complementary foods, to name a few (Gökduman and Akdolun Balkaya, 2010).

Determining breastfeeding and infant feeding practices of mothers is considered to be an important issue that needs to be investigated. When the studies on breastfeeding and infant feeding are examined, it is noteworthy that these studies generally focus on breastfeeding practices only (Abuidhail, Al-Modallal, Yousif and Almresi, 2014; AlFaleh, 2014; Ata Yüzügüllü, 2017; Atmaca, 2008; Bayram, 2006; Bostancı, 2013; Brown, Raynor and Lee 2011; Duran, 2008; Eker and Yurdakul, 2006; Erkan, 2018; Eskibozkurt, 2008; Forster and McLachlan, 2010; Gökduman, 2009; Gönenli, 2017; Hannula, Kaunonen and Puukka, 2014; Holmes, Auinger and Howard, 2011; Kaya, 2009; Kunduracı, 2018; Lundberg and Thu, 2012; Rady, Samir, Tomerak and Gaafar, 2014; Singh, Devi and Raman, 2009; Şencan, 2008; Tanrıkulu, 2011; Tatar Çiçek, 2009; Tunçel, Dündar, Canbaz and Pekşen, 2006; Vaaler, Stagg, Parks, Erickson and Castrucci, 2010), and there are few studies examining breastfeeding and complementary feeding together (Delikanlı, 2013; Gümüştakım et al., 2017; İpekçi, 2010; Lange et al., 2013; Mallan, Sullivan, Susan and Daniels, 2016; Ok and Conk, 2010; Samlı et al., 2006; Şahan, 2008; Wasser et al., 2013). For this reason, the purpose of

this study is to determine the existing practices by examining the breastfeeding and infant feeding practices of mothers who have babies up to 24 months.

Method

Research Design

Carried out to determine the breastfeeding and infant feeding practices of mothers with children up to 24 months old, this study adopted phenomenological research design, which is one of the most commonly used methodologies in qualitative research. In this research design, the focus is on the facts or phenomena that we are aware of but do not have an in-depth and detailed understanding (Yıldırım & Şimşek, 2016).

Participants

Maximum variation sampling method - one of the purposive sampling methods - was used in the present study. In this method, the aim is to create a small sample and maximize the diversity in terms of the characteristics of the individuals in the sample (Yıldırım & Şimşek, 2016).

Within the scope of the research, the maximum variation sampling was used in order to ensure the participation of mothers living in different places (province-district-village), with different educational backgrounds and with children from different age ranges (between 0-24 months). While forming the research sample, Family Health Centers in provinces, districts and villages were visited and interviews were held with mothers with babies aged 0-24 months. Accordingly, 150 mothers with 0 to 24 month-old babies comprised the study sample.

It was seen that 50 (33.3%) of the mothers lived in a province, 50 (33.3%) in a district and 50 (33.3%) in a village. Their ages varied between 25 and 45 years. 32 (21.3%) of mothers were primary school, 38 (25.3%) middle school, 37 (24.7%) high school and 43 (28.7%) were university graduates. 103 (68.7%) of mothers were housewives, 13 (8.7%) were workers, 29 (19.3%) were government employees and 5 (3.3%) were self-employed. The age of first pregnancy in mothers ranged between 19 and 32 years. Regarding their obstetric characteristics, 57 (38%) mothers experienced their first pregnancy; 60 (40%) were in their second pregnancy; 29 (19.3%) were in their third pregnancy and 4 (2.7%) were in their fourth pregnancy. 10 (6.7%) mothers had a baby aged 0 to 6

months, 33 (22%) mothers had a baby aged 7 to 13 months, 46 (30.7%) mothers had a baby aged between 14 and 20 months, and 61 (40.7%) mothers had a baby aged 21 months or older.

Data Collection Tools

In the study, a semi-structured questionnaire form consisting of open-ended questions and a voice recorder were used in order to determine the breastfeeding and infant feeding practices of mothers with children up to 24 months. The open-ended questions in the questionnaire were prepared by the researcher following a review of literature on breast milk and infant feeding (Akbaş, 2015; Akbay, 2015; Akbayram, 2015; Aktaç, 2012; Bayram, 2006; Bostancı, 2013; Delikanlı, 2013; Duran, 2008; Erkaya, 2012; Gökduman, 2009; Gözükara, 2012; İpekçi, 2010; Kaya, 2009; Kılcı, 2014; Koç, 2014; Önay Derin and Erdoğan, 2018; Özkan, 2017; Şahan, 2008; Şahin, 2017; Şencan, 2008; Tanrıkulu, 2011; Uçan, 2016; Ünlü, 2017; Yılmaz, 2016; Yılmaz, 2014). 12 experts – five experts from the department of nutrition and dietetics and seven from the department of child development - evaluated the questions in terms of content validity, and the questionnaire was given its final form by conducting a pilot study. During the interviews, participants answered the questions created in line with the purpose of the research, and additional questions were also included in case responses were considered inadequate or unsatisfactory.

Data Collection and Analysis

Interviews took place at Family Health Centers and mothers' homes, and each interview lasted between 45 and 60 minutes. Before the interviews, the mothers were informed about the content and scope of the interview. Interviews were conducted with the volunteer mothers in order to obtain in-depth information, and informed consent forms were collected from the mothers. A voice recorder was used to record the interviews, and notes were taken by the researcher during the interviews to support the research data. All the data collected was analyzed using content analysis method (Yıldırım & Şimşek, 2016).

Within the scope of the research, the written texts were analyzed line by line, and a coding system was created based on the sections that constituted a meaningful integrity in themselves. In the next stage, relationships between the identified codes were examined and similarities and differences between the codes were determined. Interrelated codes

were grouped together to construct themes. An expert in the field assessed the codes and themes obtained in this process. At this stage, it was examined whether the resulting themes reflected an adequate data set and whether the data was effectively organized according to these themes; the themes were revised and rearranged accordingly. Next, the data was arranged in line with the identified codes and themes, and care was taken to describe and explain the data in an easily understandable way. Direct citations from the interviews with the mothers were included, as well. Finally, the findings identified and presented during the research process were interpreted and conclusions were drawn. In order for the data to make sense, the relationships between the findings were explained and a number of conclusions were drawn from the findings based on the cause-and-effect relationship, and explanations were made about the significance of the results obtained (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz and Demirel, 2016; Creswell, 2016; Johnson and Chistensen, 2014; Patton, 1990; Yıldırım and Şimşek, 2016).

The data from the interviews were classified and their frequency and percentage distributions were presented. In frequency analysis, units to be converted into numerical data are taken and analysis indicators are indicated as frequencies (Bilgin, 2014). For the evaluation of the first five foods that mothers give their babies when they start complementary foods, a scoring system was implemented by using the formula $T=5T1+4T2+3T3+2T4+T5$ to make the comparison more specific. In the formula, T indicates total score, T1 first preference, T2 second preference, T3 third preference, T4 fourth preference, and T5 fifth preference. While scoring, the frequency of the first preferred food was multiplied by 5, the frequency of the second preferred food by 4, the frequency of the third preferred food by 3, the frequency of the fourth preferred food by 2, the frequency of the fifth preferred food by 1, and thus total scores were calculated for each food (Aktaş, 1979).

To establish validity, a review of literature was performed and 12 experts –5 experts from the department of nutrition and dietetics and 7 from the department of child development – evaluated the questions prepared by the researcher and the questionnaire was given its final form based on the expert views. During the interviews, mothers answered the questions prepared in accordance with the aims of the research and additional questions were also included when responses were considered inadequate or unsatisfactory. To prevent data loss, the notes taken during

the interviews were written in detail and all interview sessions with mothers were recorded. An expert in the field assessed the codes and themes and it was examined whether the resulting themes reflected an adequate data set and whether the data was effectively sorted according to these themes; themes were rearranged accordingly afterwards. Moreover, the validity was increased through inclusion of the exact quotations of the opinions of mothers from which codes and categories were created. In order to ensure reliability, each step in the research (method, formation of the research sample, data collection tools, data analysis) was described in detail, besides saving recordings of the interviews and providing exact quotations from the participants (Büyüköztürk et al., 2016; Türnüklü, 2000; Yıldırım and Şimşek, 2016).

RESULTS AND DISCUSSION

This section includes discussions and findings related to the interviews with mothers to find out their breastfeeding and infant feeding practices.

Table 1. Distribution of the Mothers' Responses Regarding the First Food Given to Infant Following Birth

Education Level	First Food Given to Infant Following Birth							
	Breast Milk		Infant Formula		Other		Total	
	n	%	n	%	n	%	n	%
Primary School	16	50.0	5	15.6	11	34.4	32	100
Secondary School	28	73.7	3	7.9	7	18.4	38	100
High School	19	51.4	15	40.5	3	8.1	37	100
Two-Year College or University	31	72.1	10	23.3	2	4.7	43	100
Total	94	62.7	33	22	23	15.3	150	100

As can be seen from Table 1, among mothers who reported breast milk as the first food, 50% were primary school graduates, 73.7% secondary school graduates, 51.4% high school graduates and 72.1% two-year college or university graduates. Those who gave infant formula as

first food included 15.6% of primary school graduates, 7.9% of secondary school graduates, 40.5% of high school graduates and 23.3% of two-year college or university graduates. As to mothers who reported other foods like sugar water, zamzam water, date and yoghurt, 34.4% were primary school graduates, 18.4% secondary school graduates, 8.1% high school graduates and, 4.7% were two-year college or university graduates. The results overall showed that more than half of the mothers (62.7%) gave their babies breast milk as the first food after birth, while 34.4% of the mothers with primary school education gave their babies foods such as sugar water, zamzam water, date, and yogurt.

Some answers given by mothers are as follows: "*I gave breast milk to my baby in the first place (M.6)", "After he was born, my mother-in-law gave a little zamzam water and date (M.18)", "First we had to give infant formula (M.20)", "My mother gave sugar water (M.21)", "The nurse helped me with how to breastfeed, so I gave breast milk as the first food (M. 75)", "I wanted to breastfeed after birth, but I had to give infant formula (M. 71)", "I gave yogurt (M.85)"*. Following the question "*What food did you give your baby first after birth?*", the second question mothers answered was; "*Why did you give this food as the first food?*" Answers were presented in Table 2, Table 3 and Table 4.

Table 2. Distribution of Mothers' Responses Regarding Why They Gave Breast Milk as First Food Following Birth

Reasons	**n**	**%**
Healthy Food	31	32.9
Recommendation of Healthcare Personnel	15	16.0
To Stimulate Production of Breast Milk	11	11.7
To Prevent Jaundice	11	11.7
Important in Infant Feeding	17	18.1
To Produce More Breast Milk	4	4.3
To Boost Immunity System	3	3.2
Lack of Trust in Infant Formulas	2	2.1
Total	94	100

As shown in Table 2, mothers gave various reasons why they first introduced breast milk after birth: 32.9% of the mothers stated that breast milk was healthy; 16% said it was recommended by health personnel; 11.7% reported that it was important in preventing jaundice and 11.7% of the mothers said they gave breast milk to stimulate the production of their breast milk. Other reasons included its importance in infant feeding (18.1%), production of more breast milk (4.3%), boosting immunity system against contagious disease (3.2%) and lack of trust in infant formulas (2.1%)

Some answers to this question are as follows: *"I gave breast milk to prevent jaundice (M.17)". "I gave breast milk because the nurse in the hospital told me to breastfeed immediately (M. 33)". "I gave breast milk so that his body could develop immunity (M.56)". In order for my milk to come in quickly, the baby had to suckle, so I gave breast milk (M.76)". "I gave breast milk because I did not trust the formulas (M.140)". "The nutritional value of breast milk is too much, so I gave breast milk (M.147)"*

Table 3. Distribution of Mothers' Responses Regarding Why They Gave Infant Formula as First Food after Birth

Reasons	**n**	**%**
Low or No Milk Supply	30	90.9
Infant in the Intensive Care Unit	2	6.1
Infant Refusing Breastfeeding	1	3.0
Total	33	100

From looking at Table 3, it is seen that a great majority of mothers (90.9%) gave infant formula as the first food due to the lack of breast milk. Also, 6.1% of the mothers said they gave formula because their baby was in the intensive care unit, and 3% did so because their baby did not want to breastfeed at all.

Some answers given to this question are as follows: *"After delivery, my baby could not latch on to breast properly, so we had to give formula (M.55)". "I gave formula because my milk did not come in (M.66)". "Right after delivery, my baby was placed in the intensive care unit, so we gave formula (M.71)". "I wanted to give breast milk, but because my*

milk did not come in, I gave formula as the first food (A.81)".

Table 4. Distribution of Mothers' Responses Regarding Why They Fed other Foods (Sugar Water, Zamzam Water, Date and Yoghurt) As First Food after Birth

Reasons	**n**	**%**
Recommended by People in My Close Circle	12	52.2
Important Religiously	9	39.1
Easy to Digest	2	8. 7
Total	23	100

As seen in Table 4, slightly more than half of the mothers (52.2%) gave sugar water, zamzam water, date and yoghurt as the first food upon the suggestions of people in their close circle. For 39.1% of the mothers, these were religiously important and 8.7% of them said they gave these foods because they were easy to digest.

Responses of the mothers varied as follow: "*My mother first gave us zamzam water and date, that is why I gave them to my child (M.4)". "I gave them because it is religiously important to give zamzam water and date before breastfeeding (M.25)". "We gave yogurt because it was easy to digest (M.85)".*

In a study conducted by Önay Derin and Erdoğan (2018) to determine the breastfeeding practices of mothers with babies aged between 0-24 months, it was found that more than half of the mothers (66.3%) gave breast milk to their babies as the first food after birth. In the study carried out by Yeşilçiçek Çalık, Çetin and Erkaya (2017), it was seen that 76.3% of the mothers gave breast milk as their first food after birth, 14% gave formula, 6% gave sugar water and 3.7% gave water. Dinç, Dombaz, and Dinç (2015), reported that 83.5% of the mothers gave breast milk to their babies as the first food. Also, Demirtaş and Çelik (2017) found that approximately 86% of the participants gave breast milk to their babies as the first food.

It is noteworthy in our study that, of all the mothers, mostly primary school graduates (34.4%) gave their babies foods such as sugar water, zamzam water, date and yoghurt as they thought these foods are religiously important and easy to digest. In a similar study conducted by Önay, Akman, Akdeniz and Kaçaroğlu Vicdan (2009), it was found that 8.1% of mothers gave sugar water to their babies, 4.3% gave water and 1.2% gave cow's milk. Şenol, Ünalan, Çetinkaya and Öztürk (2004)

reported in their study that 62.5% of the mothers gave sugar water to their newborn babies as the first food. The study conducted by Eker and Yurdakul (2006) showed that mothers used traditional practices such as giving sugar water before and after breastfeeding.

In addition, 28% of mothers interviewed in this study said they breastfed their babies within the first half hour of birth while 47.3% of them said they breastfed as often as their babies wanted (every time they cried). Yeşilçiçek Çalık et al., (2017) reported 45.6% of the mothers in their study breastfed their babies within the first half hour. In the studies undertaken by Dinç et al., (2015) and Gökduman (2009), 54.7% and 90.3% of mothers breastfed their newborns within the first half hour, respectively. Also, Ural (2011) reported that 59.3% of the mothers breastfed their babies every time they cried, while in a study carried out by Delikanlı (2013) the rate of mothers who breastfed their babies as they cried was found to be 82.4%.

Table 5. Distribution of Mothers' Responses Concerning If Their Breast Milk Supply Is Adequate

Breast Milk Supply	**n**	**%**
Sufficient	102	68.0
Insufficient	48	32.0
Total	150	100

As can be seen in Table 5, the number of mothers who reported having an adequate supply of breast milk (68%) was more than double the number of those who thought their breast milk was not enough to meet their infant's need (32%). Therefore, it is noteworthy that majority of the mothers had a perception of insufficient milk production.

Some answers to this question are; *"No, it is not enough, the people around say so (M.23)", "I think I have enough milk because my baby is full. (M.31)", "After breastfeeding, my baby doesn't cry, I think if my milk wasn't enough, she'd cry. (M.68)", "My baby feels hungry all the time because I can't make enough milk. (M.90)", "My baby's weight gain is normal because my milk is sufficient. (M.105)"*

Gökduman (2009) studied what traditional practices mothers with babies up to 6 months use to increase their breast milk production, and found that 72.7% of these mothers perceived their breast milk production to be sufficient. Dinç et al. (2015) also reported 85.4% of the mothers thought their milk supply was sufficient in the first six months.

Mothers who thought their breast milk was not sufficient were asked to answer the question "*Why is your milk not enough*?", and 35.4% of the mothers said that their milk was insufficient because their baby suckled not much, and 29.2% said their milk supply was not adequate as they did not eat properly. 16.7% of the mothers based it on genetic factors, 10.4% on stress and 8.3% on fatigue and lack of sleep. Given these findings, it is seen that mothers associate the insufficiency of breast milk supply with fatigue and lack of sleep the least, and they mostly associate it with the baby's less suckling and the mother's poor nutrition.

The most common concern mothers experience during breastfeeding is that they think their milk will not be enough to meet their baby's need (Aluş Tokat, 2009). Lack of self-confidence, anxiety, fatigue, stress, infrequent breastfeeding, wrong position of the baby when breastfeeding, late start of breastfeeding, not breastfeeding at night, short breastfeeding duration, early start of complementary feeding, and using bottles and pacifiers are among the reported reasons for insufficient breast milk supply (Dennis, 2002). Ata Yüzgüllü (2017) investigated the reasons for mothers not to breastfeed exclusively for the first six months and found that 45.8% of mothers thought their breast milk was insufficient. Chan, Nelson, Leung, and Li (2000) concluded that 77% of mothers who had babies in the neonatal intensive care unit fed their babies with complementary foods during their hospital stay due to their perception of insufficient milk. Binns and Scott (2002) stated that before discharge from the hospital, 16.7% of women stopped breastfeeding early due to the perception of insufficient milk, and 23% felt worried about low supply of breast milk when they were discharged from the hospital.

To the question "*How do you know whether your breastmilk is enough?*", 30% of the mothers answered that they know their milk is enough if their baby does not cry after breastfeeding, and 24.6% said if their baby falls asleep while *breastfeeding*, they know they have enough breast milk. In addition, 16.7% of the mothers shared that they understood it by physical development of their baby, 16% by having lots of breastmilk, 8% by baby's vomiting after the breastfeeding and 4.7% by the baby's full diaper. It was seen that in evaluating the amount of their breastmilk, mothers generally consider whether their baby is peaceful, wets his/her diaper or has a healthy physical development before and after breastfeeding, yet they ignore factors like gulping sounds of the baby or the number of daily breastfeeding. In their study, Abuidhail et al. (2014)

examined the prevalence, duration, practices and difficulties of exclusive breastfeeding, and 53% of mothers in the study said when they fed their babies with breast milk only, their babies would still be hungry.

Table 6. Distribution of Mothers' Responses Regarding the Ways to Increase Breast Milk Production

Ways to Increase Breast Milk Production	n	%
Drinking Water	55	36.7
Drinking Herbal Tea	30	20.0
Drinking Fruit Juice	13	8.7
Proper Rest and Nutrition	8	5.3
Nothing	8	5.3
Frequent Breastfeeding	6	4.0
Eating Sweet Foods	5	3.3
Eating Different Variety of Food (Bulgur, Onion, Sesame Butter Etc.)	25	16.7
Total	150	100

As Table 6 indicates, mothers mostly prefer drinking water (36.7%) and herbal tea (20.0%) to increase the amount of their breast milk. Another popular way to increase breast milk production is to eat different variety of food (16.7%) such as bulgur, onion, tahini, nuts, liver, dates, figs, white grapes, plenty of green vegetables, boiled grape juice, compote and milk.

Some answers mothers gave are as follows: "*I eat sweet foods because they increase my breast milk (M.1)", "My mother-in-law said that bulgur pilaf would increase my milk, so I eat bulgur (M.29)", "I eat lots of greens, because my mother advised so. (M.31)", "I hear from the people around those onions increase milk, so I eat onions (M.44)". "I drink plenty of fruit juice because it is liquid and sweet foods increase milk (M.67)". "My wife bought herbal tea from the pharmacy and I am drinking it (M.76)", "I pay attention to proper rest and nutrition (M.109)". "I breastfeed frequently (M.111)", "The nutrient that*

increases my breast milk most is water. That's why I drink water (M.124)".

It is noteworthy that drinking water is the most favored way for breastmilk production and more than one-third of the mothers in the study (n=55) said they drink water to increase their breast milk production. Other practices shared by these mothers include drinking herbal teas and fruit juice, consumption of foods such as bulgur, onions, tahini, nuts, liver, dates, figs, white grapes, fruit and plenty of green vegetables, boiled grape juice, compote and milk, proper rest and nutrition, frequent breastfeeding and eating sweet foods. Our findings showed that the majority of mothers have enough knowledge about how to increase their breast milk production and some mothers use traditional practices to do this. In Ural's (2011) study, it was found that mothers use traditional practices to increase their breast milk production and for these mothers, water followed by soup, increases breast milk production the most when compared to other liquids, and the most effective solids to increase milk production include fruits, vegetables and bulgur. In the study carried out by Erkaya (2012), 74% of the mothers were found to have an adequate and balanced diet, and they said mostly water, vegetables and greens, soup, compote, fruit, fennel tea, Humana Still Tea, milk desserts and bulgur pilaf increased their milk production.

Table 7. Distribution of Mothers' Responses Regarding How Long They Are Planning to Breastfeed

Duration of Breastfeeding in Months	n	%
12- 18 Months	31	20.7
19-25 Months	116	77.3
25 Months or Longer	3	2.0
Total	150	100

As Table 7 demonstrates, 77.3% of the mothers want to breastfeed their babies up to 19-25 months of age, 20.7% until the end of 12-18 months and 2% of them are planning to breastfeed for 25 months or longer.

Their answers vary as follows: *"I do not plan to breastfeed once my baby turns 18 months old (M.22)", "I will stop breastfeeding when my*

child is 2 years old (M.35)", "I want to breastfeed my baby until she is 3 (M.53)", "I will breastfeed until 2 years old because it is the right thing to breastfeed until then (M.103)", "I intend to breastfeed until my son is two and a half years old (M.115)", "Until 2 years of age, I think (M.4)"

It was observed that a great number of mothers wanted to breastfeed their babies until 19-25 months, and this finding might suggest that mothers were quite knowledgeable about the optimum duration of breastfeeding. In addition, it is noteworthy that some mothers wanted to breastfeed their babies until 12-18 months. The reasons could be related to mothers' desire for their babies to consume complementary foods, their employment status and health conditions. Kaya (2009), Vaaler et al. (2010) and Bostancı (2013) also reported that general breastfeeding period for most mothers is up to 24 months.

Another question asked to mothers during the interviews was: "*How long did you exclusively breastfeed your baby?*" and, their answers indicated that more than half of the mothers (53.4%) fed their babies exclusively for the first 6 months, and 45.2% of them fed their infants only breast milk for less than 6 months. This might be caused by factors such as insufficient breast milk, desire to introduce baby to a variety of new flavors, the newborn's refusal to breastfeed and the people around giving the baby complementary foods. The reasons why mothers insist on breastfeeding more than six months could be related to baby's refusal of foods other than breast milk and mother's desire to breastfeed exclusively. In the study conducted by Bostancı (2013), it was seen that 90% of the mothers gave only breast milk to their babies for the first six months, while Gökduman (2009) stated that 75% of the mothers thought their babies should be breastfed exclusively for the first six months, but 65% of the mothers could not do this. The present study also revealed that some participating mothers gave only breast milk to their babies for less than six months. These findings correlate fairly well with those of Tuncel et al. (2006), Kaya (2009) and Vaaler et al. (2010), who reported that majority of the mothers in their studies breastfed their babies exclusively for less than six months.

Table 8. Distribution of Mothers' Responses Regarding the Time to Start Complementary Foods

Time to Start Complementary Foods	n	%
1st Month	1	0.7
2nd Month	3	2.0
3rd Month	10	6.6
4th Month	22	14.7
5th Month	15	10.0
6th Month or Later	99	66.0
Total	150	100

According to Table 8, more than half of the mothers started complementary foods besides breastmilk at six months or later, while 34.1% of them introduced complementary foods before the first six months.

Some responses of mothers are as follow: *"I started at 3 months because my milk alone was not enough for my baby (M.2)". "I started complementary foods when my baby was 5 months old (M.21)". "I started at 4 months so that my baby could get used to new foods (M.40)". "I started complementary foods when my baby was 2 months old (M.55)". "I gave complementary foods starting from the sixth month (M.88)". "For the first 8 months, I did not give any foods other than breast milk. I started complementary foods at age 8 months (M.116)". "I started at 6 months of age since it is the time to start solid foods (M.132)*

It was found that more than half of the mothers (66.0%) started giving foods other than breast milk at sixth months or later, and the reason could be that these mothers had prior knowledge about the timing of the introduction of complementary foods. It was also seen that 34.1% of the mothers started complementary foods before six months. This may be for such reasons that mothers want to make their baby become used to complementary foods earlier, they might think their babies are hungry due to insufficient breast milk and there might be people around offering their babies other foods. In addition, mother's employment status, their use of medication and the lack of knowledge that complementary feeding should

be started at six months could be given as some other rationales for starting complementary feeding before six months. There are studies in the literature (Atmaca, 2008; Yetim, Yetim, & Devecioğlu, 2015) reporting that the majority of mothers started complementary feeding at six months.

"What are your reasons for giving your baby foods other than breast milk?" Answering this question, 38.6% of the mothers said they gave complementary foods other than breast milk due to insufficient breast milk supply and 36.7% reported that they did so because it was time for complementary feeding.

The results of the study carried out by Önay Derin and Erdoğan (2018) to examine the breastfeeding practices of mothers demonstrated that 31.7% of the mothers thought they did not have enough milk, 20.1% thought complementary foods were necessary, and 16.3% said their breastmilk dried off. Ata Yüzgüllü (2017) and Gözükara (2012) reported that insufficient breast milk was the major reason why a large number of mothers started complementary feeding before six months. In addition, Yılmazbaş, Kural, Uslu, Sezer, and Gökçay (2015) found that insufficient breast milk supply, mother's belief that her infant still seems hungry after feeding, refusal by the infant to take the breast and allowing the infant to experience new foods and tastes are the underlying reasons why mothers introduce complementary feeding early.

Table 9. Distribution of Mothers' Responses Regarding the First Five Complementary Foods Introduced To Infants

Foods Preferred	**1st Preference**		**2nd Preference**		**3rd Preference**		**4th Preference**		**5th Preference**		**Total Score**
	n	%	n	%	n	%	n	%	n	%	
Soup	45	35.7	30	23.8	30	23.8	14	11.1	7	5.6	500
Yogurt	45	32.8	51	37.2	26	19.0	8	5.8	7	5.1	530
Cheese	2	3.1	3	4.6	11	16.9	27	41.5	22	33.8	131
Fruit Puree	22	17.5	31	24.6	30	23.8	27	21.4	16	12.7	394
Egg Yolk	6	5.7	11	10.4	18	17.0	36	34.0	35	33.0	235

Formula With Biscuits	-	-	6	23.1	2	7.7	7	26.9	11	42.3	55
Pot Liquor	-	-	2	6.1	8	24.2	8	24.2	15	45.5	63
Boiled Meat	-	-	-	-	1	50.0	-	-	1	50.0	4
Vegetable Puree	11	25.6	5	11.6	9	20.9	8	18.6	10	23.3	128
Custard	6	26.3	1	4.5	2	9.1	3	13.6	10	45.5	56
Rice	-	-	-		-	-	-	-	1	100.0	1
Ground Rice /Formula	4	44.4	-	-	2	22.2	1	11.1	2	22.2	30
Kefir	2	33.3	-	-	1	16.7	-	-	3	50.0	16
Boiled Grape Juice	-	-	-	-	-	-	1	100.0	-	-	2

As seen in Table 9, the most preferred complementary foods were yogurt (530P), soup (500P), fruit puree (394P), egg yolk (235P) and cheese (131P) while the least preferred ones included rice, boiled grape juice, boiled meat, kefir and ground rice. Yetim et al. (2015) carried out a study to examine the breastfeeding practices, thoughts and experiences of mothers with babies aged 20-36 months old. They found that the most preferred two complementary foods were homemade yogurt (67%) and ready-made fruit yogurt (47%) whereas vegetables and fruit puree were not among the first preferred complementary foods.

In their study, Monterrosa, Pelto, Frongillo, and Rasmussen, (2012) found that mothers most of the time fed their children with liquid/ semi-liquid foods and fruits, but gave vegetables, meat and legumes less often. Aktaç (2012) reported that the first complementary foods were vegetable puree (24%), soup (21%), fruit puree (20%) and pudding (12%). Schwartz et al., (2013) examined complementary feeding attitudes and experiences of mothers and found that mothers generally introduced vegetables or fruits as first complementary foods.

In addition, regarding the way complementary foods are given to children, 56% of the mothers in the present study reported that they gave

complementary foods using a spoon.

Table 10. Distribution of Mothers' Responses Regarding the Food/Foods Not Given Within the First Year.

Any Foods Not Given Within the First Year?	n	%
Yes	113	75.3
No	37	24.7
Total	150	100

As it can be seen from Table 10 that 75.3% of the mothers said there were foods that they did not give to their baby in the first year, yet 24.7% of them reported otherwise.

Some responses provided by mothers are; "*There were no foods I didn't give; I gave them all. (M.2)", "Yes, there were foods that I did not give (M.11)". "My mother-in-law recommended me to give all kinds of food so that my baby could get used to them, so I gave all of them (M.29)". "I usually let my baby taste every food (M.35)". "Of course, I did not give risky foods (M.44)". "Yes, there were. (M.59)". "Yes, I avoided giving some foods (M.62)". "No, there weren't (M.78)". "I did not give foods that cause allergies (M.82)".* In connection with this issue, mothers were asked to tell about the foods they did not introduce to their babies during the first year of infancy and explain the reasons. The answers are presented in Table 11.

Table 11. Distribution of Mothers' Responses Regarding What Food/Foods They Did Not Give Within the First Year

Foods Not Given	n	%
Honey	33	29.2
Solid Foods	24	21.2
Egg White	14	12.3
Cow's Milk	11	9.7
Strawberry	8	7.1
Tomato	8	7.1
Other Foods (Fish, Eggplant, Orange Etc.)	15	13.4
Total	113	100

According to the data in Table 11, 29.2% of the mothers did not give honey to their babies in the first year, and 21.2% said they did not introduce solid foods to their babies. 13.4% of the mothers excluded foods such as fish, eggplant and orange from their baby's diet. Some

other foods not given the children in the first year included egg white (12.3%), cow's milk (9.7%), strawberry (7.1%) and tomato (7.1%).

Some of the responses given by mothers are as follows: *"The food I did not give was honey (M.1)", "I did not give egg white (M.14)", "I did not give solid foods (M.23)", "I never gave fish up until one-year-old (M.37)", "I am careful not to give cow's milk (M.41)", "I did not give strawberries (M.57)", "I did not give cow's milk because it was hard to digest (M.88)", "I did not give tomatoes (M.118)", "I did not give oranges (M.127)", "I did not give carbonated drinks (M.134)", "I did not give eggplant (M.138)", "I did not give chocolate (M.144)"*

Answers of the mothers to the question "*Why did you not give these foods within the first year?*" indicated that 53.1% of the mothers did not give these foods because they feared they might cause allergies. 28.3% of them reported they avoided these foods in the first year upon the advice of health personnel. The risk of choking was another reason reported by 13.3% of the mothers. Also 5.3% of the mothers believed these foods would be harmful for their babies. Consequently, fear of allergy was the most common reason for avoiding foods. Based on these findings, it could be suggested that while mothers have enough knowledge about the risks of honey consumption in infants under 12 months of age, they are not much knowledgeable about the foods that should not be given such as egg white, cow's milk, tomatoes and strawberries.

Taken together, the findings of this study suggest that health personnel can provide more information and support to both mothers and people in their close circle about the significance of breast milk as the first food and the early initiation of breastfeeding. This can help increase the rate of breastfeeding as baby's first food. Before and after the delivery, parents can be encouraged to join a training program on the importance of exclusive breastfeeding until around the age of six months and then continuing breastfeeding for up to 24 months together with complementary feeding. Parents can also be trained on the importance of providing the right complementary foods at the right time and how to prepare them appropriately. Detailed trainings on complementary feeding can be given to mothers before the feeding process, and they can receive counselling services on regular basis once they have started complementary feeding. Counseling can also be offered to the mothers who think that their breast milk supply is insufficient and therefore have problems about when to begin complementary foods. The training to be

given to mothers should not be limited to the hospital; a nutritionist or dietitian can support them through home visits or phone calls after hospital discharge. It would also be helpful to provide in-service trainings on recent developments for health personnel who train mothers.

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Chapter 16

Related To Patterns of Attachment between Pairs Family Counseling Practices

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INTRODUCTION

The family, which has been the smallest unit of society since the past, has a very valuable place in society. For this reason, the healthy functioning of the family, and therefore of the marriage, is of great interest to the society. A healthy family union can be an indicator of a healthy marriage. Harmony and bonding between couples are also important in terms of raising healthy generations. The foundations of harmony and attachment within the family are laid in the very early years. Attachment, which can be explained by the behavioral systems approach and examined with the interaction dimension between mother and baby, is expressed as a process that affects the whole life of the individual starting from early ages. Attachment can closely affect interpersonal relationships and harmony in future life. Interpersonal expectations are also closely related to attachment and are very important in terms of experiencing close emotional relationships in marriage (Maclean, 2001; Sağlam, 2016).

According to Bowlby (1969), internally activated interpersonal schemas are the basis of the interaction of individuals. According to this idea, harmony or conflict can be experienced among family members according to individual attachment patterns (Horowitz et al., 1993; Uluç, 2005; Tuzun 2006). It is emphasized that the problems experienced in early attachment lie on the basis of many of the problems experienced between couples in adulthood.

In the studies conducted on this subject, Işınsu (2003) determined that in the couple relationship, women are attached with an avoidant and fearful attachment style, while men are attached with a secure attachment style. Marchand (2004), on the other hand, in his study in which he

examined the variables of attachment, conflict resolution behaviors, depression and adjustment, in his own study, drew attention to marital adjustment and attachment patterns and suggested that the differences between the attachment patterns of married men and women should be addressed. Rothbaum et al. (2002) drew attention to the evaluation of family system theory and attachment patterns, which bear significant similarities, as well as to the cultural differences of spouses.

Family counseling also focuses on marital adjustment, marital satisfaction and marital integrity in order to ensure the continuity of marriage. From this point of view, family counseling examines family members' communication and interactions with each other and attachment patterns, as well as solving problems while supporting family members. At the same time, it also supports the development of awareness in family members by addressing the effects of family members' attitudes and behaviors on the sustainable harmony of the family (Demirbilek, 2016).

In family counseling, it is important to define the problem in the intervention process and to determine the perspectives of individuals about the problem. In this context, different application principles and approaches are used in family counseling to meet the needs of family members (Liles, 2007). While one of the family counseling practices related to attachment patterns can be applied effectively in some intervention processes, more than one family counseling practice is needed in some intervention processes (Tönbül, 2019). Among the family counseling practices related to attachment patterns that can be used in some intervention processes; structural family therapy, psychoanalytic family therapy, cognitive behavioral therapy, solution-focused short-term family therapy, schema therapy. In this study, information about marital adjustment, marital satisfaction, marital integrity, and attachment will be given before explaining family counseling practices related to attachment patterns, and then family counseling practices related to attachment patterns between couples will be explained and discussed.

MARRIAGE HARMONY, MARRIAGE SATISFACTION, MARRIAGE INTEGRITY

Marriage is an institution that is strengthened by law and ensures the continuity of generations and the maintenance of a lasting union. During the marriage process, it is aimed for two people to share, become a family, and gain a permanent sense of belonging. The maintenance of social, moral and cultural continuity in society is possible through

marriage. There is a strong connection between marriage and the family system. The continuity between spouses in the marriage process can also support the strengthening of the family (Duman, 2012). The environment in which individuals are brought up in marriage and the language of communication they learn in their root families help individuals to evaluate their marital adjustment. In this case, establishing and maintaining communication, which individuals learn from their families, affects marital adjustment. Marriage, in which communication has a strong effect, is also important in terms of attachment styles. Bowlby (1969), in his attachment theory, emphasizes that the attachment styles that individuals form with their parents in the early period are closely related to the interpersonal relationship styles in their future lives (Sağlam, 2016).

In marriage, different concepts such as marital quality, marital satisfaction, marital happiness, marital harmony are used as alternatives to each other (Fincham & Bradbury, 1987). It is seen that the concepts of marital adjustment, marital satisfaction and marital integrity are used to emphasize the quality and quality of the marital relationship (Spainer, 1979).

Marriage adjustment is about individuals being solution-oriented and preferring to feel happy and peaceful in their union. Marital adjustment is affected by the families of the couples, their social and cultural perspectives, and the past lives of the couples. For this reason, marital adjustment is closely related to the childhood of the couples and the upbringing of their families (Doğan, 2010). The environment in which individuals are brought up in marriage and the language of communication they learn in their root families can help individuals to evaluate their marital adjustment. In this case, the way individuals learn to communicate and maintain communication from their families affects marital adjustment (Fincham & Bradbury, 1987).

Hekimoğlu and Uluç (2019), in their study examining the role of interpersonal schemas in marital adjustment and attachment patterns, found that married individuals with insecure attachment patterns had lower marital adjustment than those with secure attachment, and couples with avoidant attachment patterns were found to have lower marital adjustment than anxiously attached couples. When the relationship between insecure attachment and marital adjustment was examined, it was determined that the role of the intimacy axis (friendship and hostility

interpersonal schemas) was effective.

Marriage satisfaction, which is defined as reflecting the general evaluation of individuals' marriage (Celenk & Van de Vijer, 2013), constitutes the cornerstone of maintaining a successful family life for couples along with individual development. It is stated that marital satisfaction levels are positive when the family is healthy and functional. For this reason, it is emphasized that there is a significant relationship between marital adjustment and marital satisfaction, and marital satisfaction is effective in maintaining healthy functionality in the family. The interaction between life satisfaction and marital satisfaction in marital life is also remarkable. The fact that there is a one-to-one relationship between the quality of life of couples and their marital adjustment shows how important marital satisfaction is. In the studies conducted, it was determined that conflicts, coercions, problems, and unrealistic expectations between couples in marriage affect marital satisfaction negatively (Hünler & Gençöz, 2003), and perceived spousal support predicts marital satisfaction and education level (Çağ & Yıldırım, 2013). While it is seen that there are problems in a marriage that feels insatiable, it is seen that there is no problem in a marriage that feels satisfied. In a marriage with problems, dissatisfaction takes the first place, while in a healthy marriage, satisfaction takes the first place. It is stated that individuals' social identity is related to their psychological and physical well-being processes and marital satisfaction (Bradbury et al., 2000). At the same time, the feelings of satisfaction and happiness of individuals vary according to their thoughts on marital satisfaction.

Apart from marital harmony and satisfaction, it has an important place in the integrity of the family system. The sense of wholeness in the individual is a feeling that should evolve from the perception of "me" to "us" from the specific to the general. The sense of integrity expresses the necessity of increasing the sharing of individuals with their married couples over time. The sense of unity in marriages is considered necessary for resolving conflicts and maintaining family harmony (Antonovsky & Sourani, 1988). In order to ensure family integrity, communication skills between spouses, levels of stress management, and conflict resolution skills should be used effectively (McCubbin, 1979). Social support has an important place in the sense of family unity to support marriage. In addition, social support can positively affect the relationship of spouses by making a positive and protective contribution

to the stress management of individuals. It is seen that married couples who receive social support can manage stress more easily and solve problems faster than couples who do not receive social support (Yıldırım, 2007).

ATTACHMENT

Attachment is expressed as a process that can be explained by the behavioral systems approach and affects the whole life of the individual starting from an early age. According to Bowbly (1969), attachment is the first and basic emotion regulation system, and it is a process that is innate in the organism and necessary for its survival. He stated that the attachment between mother and child emerges through mother-infant interaction. It is seen that the effects of this interaction continue with the system of consistent behaviors throughout life. The effects of lifelong attachment form the basis of mental images of individuals and facilitate close relationships in later ages (Keçeli, 2015). As a result of her research, Terzi (2014) concluded that lying is often effective in relationships between adults, and financial limitations and touchy behaviors are the least effective. Attachment theory is expressed as unilateral caregiving in infancy, and in adulthood, it is expressed as the development of the individual's sexual behavior with the mutual interaction process. With this aspect, attachment maintains its continuity with different variables in the life of the individual from infancy to adulthood (Hazan and Shaver 1987). Infancy attachment and adult attachment are similar in behavioral system dimension, and in adulthood, when the individual is close to the attachment figure, the stress level decreases (Karataş, 2017). Adult attachment, which has awareness as well as similarities, is expressed as secure attachment, preoccupied attachment, fearful avoidant attachment, and dismissive avoidant attachment (Keçeli, 2015).

Secure attachment ensures that individuals' self-models develop with a positive perception. This process is seen as loved, happy, reassuring, supportive and well-intentioned in the behavior of individuals (Bolattekin, 2014). The secure attachment style of the individual ensures that the level of anxiety is low and does not need approval and acceptance when interacting with other people. Securely attached individuals can be successful independently and with positive thoughts (Bartholomew & Holowitz, 1991).

In obsessive attachment, individuals see other people as worthy of love, not themselves. Although obsessively attached individuals have

negative thoughts about themselves, their interest in other people is always positive. This is due to the low self-esteem of individuals. This idea highlights the tendency of obsessively attached individuals to prove themselves (Hazan & Shaver, 1994). Individuals with obsessive attachment experience extreme closeness at the level of dependency in their relationships with their spouses. Individuals who are attached to their spouses at the level of dependency constantly tell their spouses about themselves. They bond very quickly with their spouses, they can break up abruptly in a very short time. When the past lives of obsessively attached individuals are examined, it is seen that there are deficiencies in their relationship with their parents, in the transfer of love, in the sense of approval. It is seen that there is an out-of-balance process related to the expression of love and rejection of love in the parental attitudes of these individuals (Bolattekin, 2014).

In fearful avoidant attachment, individuals avoid close relationships. They consider themselves worthless and unlovable. They prefer to stay away from emotional relationships. Fear of abandonment, rejection, and disapproval. In particular, the fact that the individuals they want to establish a relationship with are unreliable prevents them from establishing relationships (Fraley & Shaver, 2000).

In dismissive-avoidant attachment, individuals feel inadequate in other people's feelings of worth and lack in the sense of lovability. It is seen that these individuals have a low level of trust and a lack of belief that a loving relationship can exist. In this situation, it has been observed that individuals with dismissing avoidance have a high level of self-esteem, but show an avoidant, worthless negative attitude towards other individuals with whom they interact (Hazan & Shaver, 1994).

FAMILY COUNSELING PRACTICES RELATED TO ATTACHMENT PATTERNS

Problems experienced within the family, which is the smallest institution of the society, can affect both the family system and the society. Family counseling can be effective in solving these problems within the family. Family counseling is a system that allows to evaluate the family system and the interactions between individuals within the family and the factors that cause problems in the family system. Although family counseling benefits from counseling theories, it differs from individual counseling practices. Family counseling, which examines the contributions of individuals to family interactions in solving the problems

that arise in the family, is thought to strengthen family functionality because it is a system that deals with the family holistically. Family counseling plays a major role in strengthening family relationships, adapting family members to change, maintaining family functionality and continuity, and understanding family members' expectations (Demirbilek, 2016).

Attachment, which is effective in family functionality, close relationships or romantic relationships, is also among the important topics of family counseling. In their study, Hazan and Shaver (1987) examined the secure, anxious-anxious and anxious-avoidant attachment styles revealed by Ainsworth in romantic relationships. . From this point of view, structural, psychoanalytic, cognitive and solution-oriented short-term family therapy and schema therapy applications have been started to be used in family counseling. Family counseling practices related to attachment patterns are explained below.

STRUCTURAL FAMILY THERAPY

Structural family counseling theory, which is one of the frequently used theories in family counseling, accepts the entire family system as a client. Family counseling focuses on the family, not the individual. The participation of the whole family in the counseling process is considered important. In the counseling process, which takes place with the participation of the whole family, it is questioned "why" such an interaction process is experienced. From this perspective, structural family counseling deals with how family members bond with each other, but does not focus on individual work (Demmit, 1998).

Structural family counseling, developed by Salvador Minuchin in the 1960s, has taken its current form with the work done with delinquent children and their families. Minuchin, the founder of the structural school (1965-1981), continued to work with families living in rural areas of cities. In these studies, he determined that the hierarchy among family members, which forms the basis of the structural family counseling theory, is different. This irregular hierarchy within the family and the determination of the unclear boundaries of the individuals reveal the main purpose of the theory. The basic point of view of this theory is to carry out studies on the structural change of the family. The theory takes its name from this point of view (Özabacı and Erkan 2013).

In structural family counseling, the aim is to focus on the present and the present, not the past of the family. For this reason, structural family

counseling focuses on the current understanding of the family (Özabacı & Erkan, 2013). Transactional patterns within the family that express the present are important in structural family counseling. These patterns are used jointly by family members. These common patterns organize communication between family members. Communication organizations have an important place in the functionality of the family and in the development of bonding between individuals (Gladding, 2011).

In structural family counseling, the functionality of the family is examined through systems. These systems are important in terms of their effects on the functionality of the family, independent of family members. It is stated that when there is a problem that couples cannot solve through "coalition", which is one of the important concepts of the approach, the problem can be solved with the help of a third party (Nichols, 2010). With the coalition of the third person, the family reduces the burden of individual responsibilities where the problem is experienced. In the coalition process, it is seen that family members include children in triangulation and parents try to attract their children to their side (Gladding, 2011).

In structural family counseling; There are three systems: the peer subsystem, the parent subsystem, and the siblings subsystem. Each system determines the role of family members in the systematic communication organization. In order to ensure continuity in the family structure, family members respect each other in a healthy sub-spousal system and can protect their boundaries. They can live in mutual harmony. Spouses can activate each other's active and passive sides (Gladding, 2011).

While ensuring the continuity of the family through this system managed between spouses, the bonding process continues to develop. Structural family counseling can focus on the present and the present, and in the counseling process, it can identify the strengths and weaknesses of the family in accordance with its purpose and guide the couples to a solution (Demmit, 1998).

PSYCHOANALYTIC FAMILY THERAPY

Psychoanalytic family therapy was developed by being influenced by psychoanalytic theory. Unlike other approaches, this therapy focuses on the theory of psychoanalysis and tries to resolve the conflict that causes the problems of individuals from childhood to the present. Psychoanalytic family counselor focuses on the interactions of family members with each

other (Nichols & Schwartz, 1998).

In psychoanalytic family counseling, it is stated that the interaction between couples and between parents and children is "closed interaction" in the problems experienced within the family. In this case, it is thought that couples have unresolved problems before marriage. With these problems, the problems continue to increase when the marriage is realized. When children join the family, it is expected that the children of the couple will experience what they cannot live, but the fact that the children's own wishes are not fulfilled causes a vicious circle. If this problem is not resolved, this process can continue from generation to generation (Fenell and Weinhold, 1989).

Psychoanalytic family therapy aims at conscious thinking that will enable family members to share a holistic life with each other. It helps family members get away from their past and realize how to live in the present. With psychoanalytic family therapy, the counselor helps family members express their defense mechanisms and suppressed needs. It is stated that the problems will be solved when the clients begin to accept the realities of the process (Nichols & Schwartz, 1998).

Psychoanalytic family therapy emphasizes analytical thinking. He looks at the problem expressed by the family analytically. The counselor focuses on neurosis among family members. This neurosis can cause conscious or unconscious interactions between family members. Therefore, transference is an important reflection in psychoanalytic family therapy.

COGNITIVE BEHAVIORAL FAMILY THERAPY

Cognitive behavioral family therapy is applied with behavioral approach applications. The behavioral approach takes its theoretical and practical basis from Albert Bandura's social learning theory (Fenell & Weinhold, 1989). Cognitive approach; It refers to a process by the counselor that focuses on changing the client's behaviors, ways of thinking, and beliefs about the problem. Cognitive behavioral family therapy has content in which two different studies are integrated with strong practices. The theoretical basis of the approach is learning theories. Learning theories in family counseling offer a systematic application in the evaluation step of individuals' behavior change and treatment of symptoms (Barkers, 1992).

The interaction between family members is greatly influenced by cognitive factors. Cognitive behavioral approach focuses on managing

positive and negative behaviors of individuals' family communication and interactions (Akdemir & İlkgün, 2013). In this approach, family members' schemas and individual cultural beliefs are evaluated with cognitive meanings and interpretations, and the family counselor helps family members to change their own wrong thoughts within the family system during the counseling process carried out with this approach. In this therapy, it is supported to turn the wrong thoughts of family members into behaviors and to see the negative effects of individual behaviors of family members on communication with other family members (Nazlı, 2011; Akdemir and İlgün 2013).

In the cognitive-behavioral approach, participatory sessions can be held in order to realize the positive and negative contributions of communication and understanding of family members to the family system, both individually and as a group. In these sessions, the counselor enables family members to discuss and evaluate their behaviors and thoughts in the same environment (Özabacı & Erkan, 2013). The counselor can manage discussions and evaluations with classical conditioning, extinguishing, progressive behavior shaping, token economy, phases with positive reinforcement techniques. Apart from these techniques, making mutual agreements between individuals, systematic desensitization, taking breaks, preparing job cards, record keeping, role playing, modeling and stress management techniques can also be used (Akdemir and İlgün 2013). The counselor applying the cognitive-behavioral approach can reflect the basic features of this approach to his interviews and carry out a counseling process with active participation with family members.

The cognitive-behavioral approach is structural in that the interviews are planned in accordance with the agreement between the counselor and the client, and it is an active process in terms of ensuring that the counselor and the client participate in the session at a constant and high level. The fact that the entire session is led by the counselor explains the directive nature of the cognitive behavior approach. Cognitive-behavioral approach is theory-based in terms of using techniques that focus on the treatment of cognitive and behavioral-based mental disorders. In the counseling process, the techniques used can be changed in accordance with the needs of family members and homework can be given (Nazlı, 2011).

The client encourages family members to develop methods of coping

with problems and stress. In this respect, the approach is short-term and time-limited (Akdemir and İlgün 2013). The counselor has a feature that not only focuses on the present during the application, but also provides solution strategies so that family members can solve problems on their own after the counseling process is over (Savaşir & Batur, 2013).

The techniques used in the application of the cognitive behavioral approach contribute to the counselor's ability to manage his sessions. For this purpose, the approach uses the techniques of discussing irrational thoughts, positive reinforcement and making contracts. These are briefly described below:

Discussing Irrational Thoughts: A-B-C method, which is the basic technique of cognitive behavioral therapy, is used to change the thoughts that cause the individual to produce negative behaviors (Nazlı, 2011). ABC method consists of three components: A (Event), B (Thought), C (Reaction). Through this technique, the differing perception and interpretation styles, emotions and reactions of individuals regarding the real situation are determined (Kalkan & Ersanlı, 2008).

Positive Reinforcement: Rewarding the individual with positive reinforcements as a result of changing the behaviors of family members that cause negative experiences and experiences (Özgüven, 2014).

Making a Contract: During the counseling process, the text or articles of the agreement, which are formed by family members expressing their expectations from each other, discussing this expectation by other family members, asking questions, are prepared in the form of a contract. This contract is signed by all family members. With this technique, behavioral flow can be achieved by solving the problems between family members (Kesici et al., 2013).

SOLUTION FOCUSED SHORT TERM FAMILY THERAPY

Solution-focused short-term family therapy has the perspective of producing solutions to problems in a short time. Solution-oriented short-term family therapy, whose problems are resolved in a short time, is preferred more especially in the West. The rapid resolution of family therapy distinguishes solution-focused short-term family therapy from traditional therapies (Nichols, 2010). Solution-focused short-term family therapy was influenced by strategic family counseling and focused on the individual's experiences, perspective, and communication with his social environment (Özgüven, 2014). Solution-focused short-term family therapy; It supports individuals to focus on themselves and to develop

questioning, thinking and coping methods about their families. From this point of view, therapy aims to improve the awareness of individuals by focusing on the strengths and weaknesses of their lives from past to present (Nichols, 2010).

Philosophical foundations of solution-focused short-term family therapy; it is based on not repairing it if it is not broken, applying the solutions that work, and not insisting on the solutions that don't work. In the counseling process, individuals are given the opportunity to produce their own solution suggestions for the problems they experience, and studies are carried out on repairing it if it is intact. By providing the individual to focus on what he has achieved, the individual is guided to repeat his successes, and it is ensured that he finds workable solutions. Despite all unsuccessful attempts, individuals are guided to make new attempts and not to give up until they succeed, and efforts are made not to insist on solutions that are not working (Nazlı, 2011).

In solution-focused short-term family therapy, techniques such as problem creation, secondary changes, praise, hints, picks, focus on exceptions, and miracle questions are used. These techniques are briefly explained below (Nazlı, 2011):

Creating the problem is the basis of solution-focused short-term family therapy. The first step in this technique is to ensure the cooperation of the counselor and the family. When the counselor and the family cooperate, a solution-oriented adaptation process develops in the counseling process, and this adaptation process ensures that the counselor and the client agree on the definition and solution of a problem. Secondary changes are a technique that strengthens and highlights the functional aspects of the family. It suggests finding different solutions to a problem and moving forward with differences. This technique aims to change the whole order of the family and the reasons for negative life. With the secondary exchange technique, qualified solutions are produced for the problems of family members and alternatives are created. Praise strengthens the communication and interaction process by increasing positive expressions among family members. The use of "yes" statements in the family is increasing, and individuals are motivated by praise for each step taken towards the solution of the problems and a new formation realized. The praise and feedback planned during the counseling process nurtures communication and family. Family members are also encouraged to praise each other.

Hints are solution-oriented ideas given to family members by the counselor. Whether these ideas will be used as clues by individuals is evaluated during the session processes. Maymuncuk, contributes to change the perspective of the family. In order to change this point of view, the counselor asks questions and focuses the attention of the family on solving the problems. With these questions expressed as "Maymuncuk", the family remains dynamic. Thus, it is easier to solve the problems. Focusing on exceptions is a technique by which the organisms that form the basis of the family can be activated. It aims to activate the family by bringing up the experiences of the family. Miracle questions are the ones the counselor asks so families can solve their problems. This technique is used after the counselor has information about the family.

SCHEMA THERAPY

The schema therapy model, which was developed by being influenced by the cognitive behavioral therapy approach, is a systematic therapy model developed to treat the personal or chronic problems of individuals. Schema therapy, developed by Young et al., is a functional therapy because it is a model that can integrate different therapeutic approaches (Young et al., 2003).

On the basis of the schema therapy model; cognitive behavioral therapy, Gestalt therapy, constructivism, attachment model and psychoanalysis. This diversity has caused schema therapy to be accepted as a more developed version of cognitive behavioral therapy. In this respect, schema therapy is considered as a powerful approach in terms of using emotion-focused methods, client-patient interaction, and incompatible coping methods for the solution of psychology-based problems in childhood and adolescence (Young, 1990; Young et al., 2003).

Schema therapy is closely concerned with individuals' early childhood and attachment patterns. In schema therapy application; emotional deprivation, abandonment, insecurity, abuse, social isolation, imperfection, failure, addiction, vulnerability/harm and vulnerability to illness, fascination, rejection, self-expression, suppression of emotions, high standards, vindictiveness, inadequate self-control, seeking approval, pessimism, punishment schemes are emphasized. The problems of couples have an important place in the selection of schemes and scheme modes. In the interviews, the processes of affecting the marriage of the sub-dimensions of schema therapy are intervened. Schema therapy

applied to couples includes treatment approaches for the continuity of romantic relationships and resolution of conflicts. In this respect, schema therapy tries to understand couples, to identify conflicts and problems, and to deal with this process in a natural flow with couples.

The aim of schema therapy applied to couples is to carry out individual therapy and couple therapy in parallel, and to ensure that couples meet each other's needs. After the needs are met, the areas where the couples are incompatible are determined and these areas are emphasized in order to ensure the couple's harmony. Then the consultant; couples' schemas, coping styles, modes, and the need to be a partner are trying to prevent the problems that arise through the equation. From this perspective, the counselor designs a plan for the systematic progression of this equation and all the cycles by integrating the couples' experience with their root families. In the application of schema therapy to couples, the needs and responsibilities presented by the counselor, both individually and as a couple, should be accepted by the couples. This acceptance can be seen as a joint responsibility by the couples as it focuses on the solution. The stage where couples have problems and apply to the counselor is usually the stage where maladaptive schemas occur (Young et al., 2003).

Incompatible schemas bring up the inadequacies that negatively affect the couple's relationship, marital adjustment and marital satisfaction. This situation reveals the early childhood attachment of couples, their inadequacies in this process, and their attempts to be compatible. Studies have shown that childhood attachment problems affect relationships in adulthood and that there is a close relationship between behavior and attachment (Mikulincer & Shaver, 2007). For this reason, schema therapy cares about and emphasizes the attachment patterns of individuals in couple therapy practices. Relationship and attachment needs between schemas in early childhood schema therapy, in maladaptive relational processes between couples; Modes emerge when couples trigger each other. When couples experience constant disharmony in their relationships, schema modes are examined and intervened. With the help of studies on mods, couples can have a happy relationship again.

The concept of "chemistry" comes to the fore in the applications of schema therapy for couples. Beyond the friendship component, chemistry is expressed with the passion component for love. This can be explained as the feeling of sensuality and sexual desire when couples are together in

romantic relationships, and the strengthening of their feelings for each other when the couples are apart. Chemistry is a situation that strengthens the bond between couples according to schema therapy. The consultant studies schema chemistry according to the schema modes of the couples (Young et al., 2003).

In schema therapy, couples are taught the steps of schema chemistry to provide a healthy chemistry-based communication and relationship, and the counselor advances by integrating cognitive behavioral therapy, Gestalt and attachment approach to therapy (relational approach) and integrating tips. In schema therapy, the counselor can convey how couples will carry out permanent adjustment processes and can enable couples to work with a successful functional result (Young et al., 2003).

In his study to examine the extent to which early maladaptive schema domains and dysfunctional parenting styles predict attachment styles and infidelity tendency in married couples, Çıkıt (2017) examined the schema sub-areas, which is the mediating application for the tendency to cheat, and found that the only attachment style that can be considered as the mediating variable model. It was concluded that he had an avoidant attachment style. Considering the predicted mediator variables related to the tendency to cheat, it was determined that disconnection, impaired autonomy, and other-directed schema domains had direct effects. The schema domains expressed for the results obtained in the research have inferred that there are full mediation effects in the relationship between avoidant attachment and infidelity tendency.

CONCLUSION

There are different therapies and approaches based on different theories of family counseling. The dimensions of the counseling and client relationship differ for each approach. Based on sustainability in the structure and content of the interviews, it is seen that the couples or all individuals in the families should be in close contact. The level of marital experiences of the spouses revealed the situations related to the management of the feelings, thoughts and experiences of the couples regarding marital adjustment, marital satisfaction and marital integrity over time.

When the harmony and conflicts of the couples regarding their marriage are examined, it is seen that the situation is related to the past of the individuals as much as it is today. The fact that each family counseling approach looks at the family system from different

perspectives shows the strengths of the solution-oriented approach to couples' conflicts. Each individual adds new experiences to the marriage process with the experiences he has been affected by in his past life. In particular, it is stated that there is a relationship between the attachment patterns of individuals in early childhood and their attachment. It is seen that couples continue their marriage processes with factors related to adult attachment. Family counseling approaches include practices in which adult attachment in individuals' romantic relationships comes to the fore. While some approaches are directly concerned with the attachment of individuals in the counseling process, some approaches are indirectly involved by using different techniques. While all family counseling approaches guide individuals to resolve their current conflicts, it is seen that they attach importance to the awareness of their practices and that they can resolve their own conflicts after the counseling process throughout their marriage.

If couples have traumas related to early childhood, it is important to follow up the practices related to individual attachment processes and to raise awareness of individuals on this issue. It is necessary to raise the awareness of the couples about the methods and practices regarding the counseling process by the counselor, and to convey to the couples what the advantages of the process management are when there are children included in the family, and that the records in their root families can be effective in the emergence of the problems experienced by the couples. This awareness is important to realize that when couples have children, they will also be included in their attachment and upbringing records. It is thought that this situation will also increase the state of well-being transferred from generation to generation and that traumatic lives may positively affect the transference process for children by parents. It is seen that cultural structure and childhood experiences are among the factors that affect individuals other than individuals, which are emphasized in solution-priority family counseling approaches in the attachment focus. When the literature on this subject is examined, it is seen that there are a limited number of studies focused on multidimensional cultural interaction. It is recommended that studies on this subject and its sub-dimensions include the relationship between attachment and cultural transfer.

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Chapter 17

Supporting Children with Autism Spectrum Disorders at Home

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INTRODUCTION

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that occur early in development characterized by persistent impairments in social interaction and social communication, and limited repetitive behaviors. The symptoms of ASD may vary according to the age of the individual; however, these persist throughout life (American Psychiatric Association 2013). The prevalence of ASD in the United States is estimated at approximately one in 54 children, while the overall incidence is approximately one percent of the world's population (Maenner *et al.* 2020). While the cause of autism is not yet known, there is consensus that autism arises during pregnancy as a complex neurodevelopmental problem supported by differences in brain connections affected by genes and factors. It is thought that the processes that cause problems in individuals with autism are similar to the processes that cause other neurodevelopmental disorders. (William and Roberts 2015). ASD is a disorder whose symptoms begin to appear before the age of 3 years. While symptoms can improve over time, disorder continues throughout a person's life. The symptoms can be first noted in infants aged 8–12 months, but it becomes more evident as the child approaches 18–24 months. Although 25–35 % of children with ASD can appear to develop normally until 12–24 months at which point they regress in both language and social skills. Studies have shown that 35-50 % of families detected the problem in their children before the age of 1, and 80-90 % of them noticed it at the age of 2 years (Johnson 2004).

GENERAL CHARACTERISTICS OF CHILDREN WITH AUTISM

Autism is noticed through behavioral reflections, so it is important to know the behaviors that can be considered as clues. Although diagnostic criteria highlight certain behavioral conditions, individuals affected by autism seem to have difficulties in communication, social interaction, affective disorders, games and behaviors. The most common situations in the field of communication are significant differentiation from peers in language development. Difficulties in using gestures, short attention spans and difficulties in deciphering the meanings of words attract attention. Inadequacies in social interaction skills are manifested in situations such as lack of attention, difficulties in making friends, making eye contact. Affective disorders occur as individuals' unresponsiveness to pain, sensitivity to sound and other stimuli (Karasu 2020). It is necessary to know that these symptoms are noticed from the first developmental period and clinically affect the social and other important aspects of the functionality of individuals (Skoufou 2019). Autism spectrum disorder also has different developmental and behavioral features that they exhibit in the pre-school and school period (Kayıhan 2019). It is essential for the development of children with autism that families know these characteristics and support their children accordingly.

Difficulties in language and communication, one of the diagnostic criteria of autism spectrum disorder (ASD), are one of the important variables that determine the severity of autism. Children with ASD show very different levels of language development. While some children with ASD can't communicate verbally at all, others can show language development at the same level as their peers (Ökcün-Akçamuş 2016). Lack of proper gaze, absence of warm, cheerful expressions in the gaze, lack of successive vocalization patterns between infant and parent, not recognizing the mother's (or father's or caregiver's) voice, not responding to sounds from the environment, delayed babbling after 9 months, little or no pre-speech gestures (nod, pointing, showing), no expressions such as ‘oh oh’ or ‘huh’, is among the difficulties experienced in non-verbal communication (Johnson and Myers 2007). Johnson (2004) suggested that about 40 % of children with ASD are non-verbal while, 25-30 % acquire language at 12 to 18 months but then later regress, and that the other 30 % of children experience delays in their speech. Additionally, children with autism may show significant language deficits with

vocabulary and grammar difficulties in comparison to typically developing peers of the same-age group.

Body language is an important communication tool for people to share their feelings, thoughts, dreams, wishes and needs with other people (Sani-Bozkurt 2020). Gestures, on the other hand, are expressed as movements performed for communication purposes by using the hands, fingers, arms, facial expressions and body positions of the individual in general (Iverson and Thal 1998). It is seen that children with ASD experience difficulties in the use of gestures when compared to children with normal development as well as children with other developmental disabilities (Ökcün-Akçamuş 2016). In this regard, Çiftçi (2006) examined the problems that affect the performance of children with autism in the scientific dimension of language use and the difficulties that these problems cause in communication. As a result of the research, it has been found that children with autism have deficiencies or nonfunctionalities such as not being able to use verbal acts for communicative purposes or giving place to wrong verbal acts. In addition, it has been observed that children have difficulties in using the communicative skills necessary for effective and healthy communication, cannot use words according to the context, and do not include non-verbal communication.

Children with autism spectrum disorder (ASD) have limitations in their ability to imitate, and these limitations distinguish children with ASD from children with other developmental delays (Ökcün-Akçamuş and Turan 2016). Many researchers state that the earliest signs of autism are evident in the area of imitation and in the development of gestures. Experts, who state that even a normal newborn baby can stick out his tongue as a response to his mother, indicate that the ability to imitate does not develop significantly in children with autism (Korkmaz 2017). Children with autism also have significant deficits in their ability to spontaneously imitate others' gestures and play actions (Ingersoll and Gergans 2007). When the games of children with ASD are examined, it will be seen that they often play games that are repetitive and devoid of creativity and imitation (American Psychiatric Association 2000). Similar results were obtained in a study by Charman et al. (1997). In the study, the imitation skills of 20-month-old children with ASD, developmental delay and normally developing were compared; It has been concluded that children with ASD have lower imitation skills than children with both

normal development and developmental delay.

The speech of children with autism is often 'echolalia' (repeating the words spoken with the same tone of voice). Children who can not speak have difficulty in understanding others and expressing themselves, and as a result, they often avoid establishing relationships with other people (Koçbeker and Saban 2005). When children with autism reach the age of 5, it has been observed that speech does not develop in 50-75 % of children, and that although speech develops in the remaining 25-50 %, there is a specific pattern of speech. They show the characteristics of not using pronouns appropriately, talking about themselves in the third singular person, repeating exactly what is said (echolaly), meaningless repetitions (perseveration) and making up words (neologism), monotonous, one-way and pedantic speech (Şevketoğlu 2009). In the study of Tager-Flusberg (1993), it was found that children with autism showed the same development as children with normal development in the early stages of language acquisition, but regressed in later periods. Apart from this, it was observed that the sentences spoken by children with autism included simple responses, routine words and repetition, rather than the complex grammatical structures acquired by normal children, and the vocabulary was quite limited.

Children with autism have difficulty in performing simple social skills such as making eye contact, responding to a smile, responding to his name, doing 'bye-bye', and peekaboo. They seem to be indifferent to the outside world. While a normally developing three-year-old child plays such as playing house, children with autism have difficulty in doing these. They are more interested in objects than people. They have excessive difficulty in understanding and questioning the feelings of the other party (Görgün 2018). Common interest is very important in the development of social skills among children and in establishing social interaction with other people (Ülker 2013). While children with normal development use common interest in establishing social interaction in the 12th month, children with autism spectrum disorder have difficulty in establishing this process (Sani-Bozkurt 2020).

The majority of individuals with autism have IQ scores below 70. High functioning autistic individuals with average to above-average IQ's make up only about 20 % of individuals with autism. Generally, cognitive performance remains relatively stable from middle childhood to adolescence (Mesibov and Handlan 1997). In comparative studies, it is

accepted that autistic children have mental strength that can exceed the average in some areas, as well as an observable gap between their skills and inadequacies. Recent studies indicate that the main problem is in the field of mental development, and discussions on this issue focus on the fact that intellectual disability primarily causes language and communication problems, and secondly, it causes behavioral and emotional difficulties (Savahil 2016).

It is stated in different research results that children with ASD gained the skills of throwing and holding the ball at the age of 14-15 months, and that they were able to balance on the board at the age of 3-4 years. It is seen that some movements such as jumping rope, dancing and swimming that require the use of gross motor skills are learned slower, depending on their little or no imitation skills. Fine motor skills such as cutting paper, throwing cubes into boxes and stringing beads are also seen to be quite weak. It is also stated that some autistic babies, who are physically ready to acquire many skills during their normal developmental periods, can not acquire these skills due to their indifference to their environment, and they sit and walk at later ages (Darıca *et al*. 2011).

Behavioral difficulties and abnormal socialization in children with ASD are critical issues because they are often limiting factors in their ability to integrate into society, live independently, and function successfully in employment (Williams 2001). It is observed that individuals with ASD have behavioral problems such as unexplained tantrums, unusual interests and attachments, unusual movements (moving arms like flapping wings, swinging), and difficulty in coping with change (Aile ve Sosyal Politikalar Bakanlığı 2014).

It is important that the above-mentioned characteristics of children with ASD are known by their families and that they accept their children as they are. Parents who accept their child's situation provide the necessary educational needs to make up for her deficiencies. Although specialists and teachers are the ones who plan and implement the education of children according to their situation, the child's reaching the targeted level is only possible with support at home. For this reason, the most important task in the continuation of the development of children with ASD falls to their parents.

HOME CARE OF CHILDREN WITH AUTISM

To support the emotional well-being of individuals with Autism Spectrum Disorder; increase their freedom, spontaneity and flexibility;

promote their personal autonomy; develop their instrumental skills and symbolical abilities; improve cognitive and attention skills; increase their understanding of human interactions; improve learning skills, to reduce the behaviors that cause discomfort both in the individual and in his/her environment; improve communication skills, and increasing their capacity to know how to interpret the world in a meaningful way is among the main purposes of their life-long support (Tamarit 2020).

Since ASD (Autism Spectrum Disorder) is a disorder that first appears in early childhood and manifests itself in almost all areas of development of the individual, it is very important to consider the symptoms that appear from birth to the 24th month for early diagnosis of ASD and early intervention (Şahin 2018). During these periods, the family should make a very good observation, notice the changes and convey the information regarding these observations to the relevant persons and institutions as soon as possible.

Considering the studies, it is concluded that children diagnosed with ASD are not a homogeneous group; we can see that each of them has features that need to be dealt with separately. Although individuals with autism have different characteristics and different levels of socialization, all of them should be supported. It should be ensured that all individuals with ASD lead an active life without being dependent on others. Therefore, integrated support units should be established according to the needs of individuals with developmental disorders and they should be assisted in social adaptation throughout their lives (Kostin 2019).

Parents' Support of Their Child with Autism Spectrum Disorder

The family is an organization that has a very important role in supporting the development of children in terms of providing a safe home, healthy nutrition and rich educational opportunities (Swanson and Elison 2020). One of the most common problems faced by families is the communicative difficulties experienced by their children diagnosed with ASD. It is seen that there are great difficulties in communicating even while meeting their simple needs (Warreyn *et al*. 2014). They should be sensitive to all kinds of communicative attempts of children and respond with positive feedback (Yılmaz 2021) Alternatively, it is seen that early intensive treatment programs make a significant contribution to improving social communication skills in young children with autism through practices such as parent training (Warreyn *et al*. 2014).

Carrying out early childhood intervention programs through parents has a positive effect on the adaptation of children with special needs to their lives and their families (Ekici *et al.* 2019). There are studies that show that the applications made in the natural environment of children through the education given to the parents by experts in the field have positive results (Rickards *et al.* 2009; Zaghlawan and Ostrosky 2015; Velez 2016). In such intervention programs, parents are supported by using written materials, face-to-face training, modeling, application visuals, role playing, and performance feedback in the education of parents (Yılmaz 2021).

Children with autism need external support in their ability to perceive and express emotions, unlike children with normal development (Saymaz 2008). In this field, a method known as interactive shared book reading, which includes applications aimed at improving the language and literacy skills of young children, which adults can use while reading with children, can be used to support parents in this area. This method is one of the interventions that can be used by parents and has proven effectiveness (What Works Clearinghouse 2015). For this reason, parents should be given tactical training on this method. E.g; ‘What is this ?’ Using question patterns such as, reinforcing the answers given by the child with a question, repeating what the child has said, giving clues to the child when necessary, following the child's interest and talking about the subjects that interest him, and expanding the child's words, interactive shared book readings can be done (Zevenbergen and Whitehurst 2008).

According to developmental theories, imitation is one of the first communication that a child establishes in terms of the environment-individual relations (Soorya *et al.* 2003). In order to support imitation skills at home, it is important for the family to have knowledge of what imitation skills are and how to teach them. Parents can do imitation exercises using object with their children. For instance, pushing the child's truck back and forth, combing the baby's hair, making phone calls can be given. Motor imitation has a significant effect on the acquisition of both social and motor skills in children with ASD (Lidstone and Mostofsky 2021). Motor imitations involve imitating gross and fine motor skills that we do with body movements. For example, high-five, wave, clap, move your fingers. In sound imitations, the sounds of animals, vehicles and nature are imitated. Wind-rain sound, cat-dog sound, car-train sound etc. These activities can be done at home, with or without

tools.

Another issue in children with ASD is situations such as overreacting or not responding to touch, poor tactile discrimination, lack of body awareness that delays gross and fine motor skills and affects the progress of daily living skills, and functional impairment in social interaction. These features are among the behavioral definitions of sensory integration. Parents can support their children with ASD in accordance with whichever behavioral definitions are appropriate. For example, sensory activities can be applied to calm the child through activities such as creating a routine, shaking the child with back and forth movements, letting him suck on a frozen food (Yılmazer 2016).

The arousal level of the individual is regulated by ergo-therapy approaches that include the parents' intervention to sensory integration. These aproaches increases individual's attention and abilities, reduces distraction, reduces anxiety, increases comfort in the environment, positively facilitates communication with adults and peers, strengthens communication, improves skill diversity performance, increases independence (Kayıhan 2019). When we take these benefits into consideration, necessary arrangements for families to support activities based on providing sensory integrity at home can be made with expert support. For a child with a high sensory threshold for touching, parents should use hard brushes in the bathing, select highly textured socks and underwears, provide different surfaces for play and serve food with varied temperatures. Parents, having children with low visual sensitivity, can choose bright and contrasting clothes for children, place mirrors at floor level for playing, provide bright lights for lighting. With more intensity of sensory input, these children can respond to the stimuli in the environment with more intensity during daily life activities. (Dunn 2007).

The utilization of assistive technologies has been very supportive in realizing the skills that individuals with special educational needs need to show in their daily lives (Gierrach and Stindt 2009). These technologies makes a significant contribution to the learning, self-confidence development, independent living skills and quality of life of individuals with special education needs (Reed 2007). Among these, mobile learning is widely used as an assistive technology for people with autism. Electronic assistive technologies such as mobile phones, smartphones or tablets provide an advantage in terms of being easily accessible. For example, puzzle game can be downloaded to smartphones to help

cognitive, social and motor skills of children with autism (Daud *et al.* 2018). If parents learn to use these technologies, they will support the areas their children need.

By planning routine play activities, parents can play games such as playing with blocks or trains, jumping, spinning ribbons with their child. The most important point here is that parents can get to know their children and find the activity they like (Pişkin-Abidoğlu and Sevinç 2017). For individuals with autism who often exhibit unusual responses to sight, hearing, smell, taste, and touch, the simple process of relating to objects without having to perform specific tasks can help them safely explore and test the limits of their sensory sensitivity. Bags with different textures can be preferred with or without material inside. The design of the house can be arranged according to the child with autism. A larger area and soundproofing for activities involving large body movements such as jumping, long- jumping, and dancing can be offered as suggestions for support at home. (Brand and Gaudion 2012).

Sibling' Support of Child with Autism Spectrum Disorder

For most children, a sibling is one of their first playmates. The structure and functioning of a family system often revolves around children and how these siblings get along with each other. Early sibling relationships foster learning and development for both children. Sibling relationships develop with interactions between children in the family, and these interactions enable siblings to gain emotional, cognitive and behavioral gains. As siblings grow, their activities doing together increase and they interact more (Steuer 2019). They create an identification model for each other and learn social relations such as sharing, exchanging ideas, developing empathy and helping each other (Yavuzer 2012). In addition, children use sibling relationships as a kind of learning ground on which they develop and implement social interaction strategies, including interactions with their peers (Macdonald and Parke 1984).

One of the biggest deficiencies seen in children with autism is playing games. Siblings have a very important role in the development of these play skills, which are insufficient in children with autism. Initially, children with autism should be given the opportunity to play with suitable toys. However, it should be careful that the educational toys chosen for the purpose are structured even when used in a free play environment. Nested boxes and find-and-build type toys are very important play-teaching materials. These materials, which young children like very

much, should also be provided to children with autism and taught how to use them. For instance, the child should not consider climbing the stairs in the park as a muscle movement, but should be able to evaluate this activity as a way to overcome an obstacle or as a part of a game (Pişkin 1993).

CONCLUSION

ASD is a disorder that continues throughout the life of the individual and causes serious effects in development areas. Although it is possible to cope with the limitations of the disorder, it must be admitted that it is a difficult process. Intensive training is the most important way to control and correct the process. In terms of efficiency and continuity of training, it is important that it is given in the family environment. Like all children, children with ASD spend most of their lives with their families. Compared to parents of healthy children, it may be a little more difficult for parents of children with ASD to fulfill these tasks.

Children with ASD, who spend or have to spend most of their time at home for various reasons, need great support from their parents and siblings. Individuals with ASD need the support of their families to overcome their inadequacies in communicating, living independently, creating diversity in interests, and social interaction. The first step in supporting children with ASD at home is to ensure that parents and siblings have sufficient knowledge, skills and a positive approach. Instead of providing this support by the family alone, the joint action of all relevant individuals, institutions and organizations of the society will make a great contribution to parents' support for their children. It will be easier to create happier, healthier family environments. With this article, we tried to draw attention to the importance of the issue and to make some suggestions about how parents should support their children at home. In addition to the trainings provided at schools and education centers, the support of children with autism at home by their parents and siblings will enable them to reach the targeted development in a shorter time.

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Chapter 18

The Digital Identity of The Z Generation and Their Use of Digital Technology

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Introduction

Technology and the digital world started to go to the farthest corners, to influence many people and to turn heads in the 1980s and continued this power at the same speed. Under this power, to increase the quality of time by enabling the digital world to perform information or transactions, quickly to have a pleasant time, to take imaginary or real people in the digital world as role models, especially in resolving identity crises of adolescents, to carry out educational activities faster, to get to know people from different geographies in the world and communication factors. Social networking sites that are connected online facilitate communication, enable the sharing of experiences in any field by different people, and become a tool for sharing hobbies, feelings and thoughts (Fire et al., 2014). Sharing such activities causes individuals to create a new identity, and by combining the simulative environment with the real environment, the individual creates his/her digital world and digital identity. Although the formation of digital identity is important for all ages and individuals, it is also very important for the Z generation young people who are in adolescence. Because the young people in the Z generation want to be more active and meet different people due to their developmental characteristics (URL,1), which is known today as the digital world. In fact, young people are so integrated with their digital identities that they are interested in this activity every moment and every period they have the opportunity and this interest soon brings them to the level of education (Işıklı, 2020; Öner and Arslantaş, 2018). This addiction

can leave irreversible traces in the youth's world. It is known that after addiction develops, which can have negative consequences on the physical, psychological and social development of the young person, it is very difficult, if not impossible, to eradicate it (Kwan et al., 2013). In order to prevent these negative situations and to help young people who will shape the future, it is necessary to know the characteristics of the Z generation as well as the effects of the digital world on them. Based on this requirement, this section, it is aimed to get to know the Z generation, to examine how the Z generation creates their digital identities and how they use digital technology. In this direction, first of all, the characteristics of the Z generation will be explained, then digital identity, digital technology, digital addiction and how the Z generation use digital technology will be examined and suggestions will be presented on how the Z generation can cope with the potential problems of digital addiction in school life.

Generation Z

Internet generation, gen Z, digital natives, deeply emotional, post-millennial, always online, hometown generation, Google generation, Z generation also called zero generation, have similar characteristics. The most important feature of these is that they are individuals who use the digital world and digital technology very well (Adıgüzel et al., 2014; Kırık and Köyüstü, 2018; Levickaté, 2010; Monoca, 2018; Taş and Kaçar, 2019; Yelkikalan et al., 2010).

It is considered important to give information about the concept of generation and other generations before including the characteristics of the Z generation. Generally, individuals who have the same social structure, who have similar problems, who have similar responsibilities, who occur in similar periods in which the society lives, are in the same generation. The classification of the concept of generation is done in different ways by different researchers, and because of this difference, individuals living in the same period can be named with different names. Although there are differences in this nomenclature, it is seen that the classification according to the date of birth is often used. Examples of these generations are the silent generations (1925-1946), the Baby Boomer (1946-1964), Generation X (1965-1979), Generation Y (1980-1998) and Generation Z (1995-2009) (Goh and Lee, 2008). Although it is specified as the date between 1995 and 2009 for the Z generation, according to some scientists, this period is the years 1995-2012 (Kitchen

and Proctor, 2015), and some scientists include the generations born in 2000 and later into the Z generation (Hatipoğlu, 2014). After the Z generation, the next generation that is most emphasized today is the children who were born in 2013 and are expected to be born until 2030, which constitutes the alpha generation (Bağcı and İçöz, 2019). Among these generations, it is thought that it will be beneficial to understand the Z generation, especially to include the characteristics of the generations before the Z generation. For this reason, Baby Boomer, X, Y generations will be discussed first, and then the characteristics of the Z generation will be discussed.

Baby Boomer Generation and its Characteristics: It defines the children born after the decision to increase the number of children in all countries for the decreasing population after the end of the Second World War. Since one million children were born all over the world during this period (1946-1964), they are called by this name (Erden and Ayhün, 2013). Individuals in this generation, it is defined as a generation that is self-confident and emotional, has a high sense of commitment, uses technology and digital world when necessary and in a way that works for them, and is connected to traditions and cultures (Arslan and Staub, 2015). The individuals in this generation generally show a feature that is closed to innovations. For this reason, they are individuals who work in the same workplaces for a long time, adopt the concept of "living to work" as their principle, and think that it is necessary to work even after retirement (Acılıoğlu, 2015). The individuals in this generation are also defined as the generation that has left its mark on history due to the high number of individuals and the importance they attach to work (Aka, 2018).

Generation X and its Characteristics: Generation X (1965- 1979), also called the Transition Generation, refers to individuals who are between the baby boomer and the Y generation. Therefore, it can be considered as a generation that is more original than the baby boomer generation that preceded it, but also incorporates more traditional features compared to the Y generation (Senbir, 2004). It is stated that individuals of the X generation generally prioritize individualism, are sensitive to social problems, have a fighting spirit, can think globally, are sensitive to cultural diversity, and know how to balance their work and private lives. Individuals in the X generation also use technology and the digital world when as needed, just as in the previous generation (Altuntağ, 2012; Erden

and Ayhün, 2013; Karaaslan, 2014; Toruntay, 2011), but instead of the working understanding of the previous generation, it is seen that the understanding of “working to live” is dominant (Özer et al., 2013).

Generation Y and its Characteristics: Generation Y (1980- 1998) is also called “Why generation”. The main reason behind this naming is that they question and scrutinize every aspect of life and criticize the obligations given to them (Aka, 2018). This generation is able to use technology and the digital world better than the previous generations, individuals in the Y generation, who have very little patience and waiting ability, prefer a democratic environment in the working environment, can better adapt to flexible working hours, and get jobs that will satisfy them spiritually rather than their income, focuses on occupations (Çetin- Aydın and Başol, 2014; İşçimen, 2012). Individuals in this generation can change jobs frequently, gain a place in the technological world and create their digital identities with these features (Serçemeli et al., 2015).

Z Generation and its Characteristics: Generation Z (1995-2012) displaying a different appearance compared to their previous generation is in a very dominant position in the digital world. Since individuals in the Z generation were born in a period when the digital world is used extensively (Aral and Doğan- Keskin, 2017; Taş et al., 2017) they can communicate with individuals in a different geography of the world within seconds (Gümüş, 2020). Individuals in the Z generation actively use social media to communicate, do research and have fun (Hidvegi and Klamen- Erdos, 2016; Sarıoğlu and Özgen, 2018) and play interactive computer games intensively (Bassiouni and Hackley, 2014), they shop online and live in a virtual world by disconnecting from real life. It is even stated that this generation easily shares their own information, in other words, their digital identity on social media (Çaycı and Karagülle, 2014). As a matter of fact, in a study conducted by the Turkish Statistical Institute (2020), it was determined that 90.7% of individuals have internet access at home, 79% of individuals frequently use the internet, and 36,5% of them order products over the internet. In another study conducted with individuals in the Z generation, it was determined that the Z generation frequently used social media networks such as Facebook and Instagram to initiate and maintain peer communication (Kılıç and Karadayılı, 2017). Considering the birth date of the individuals who make up the Z generation, the fact that this period coincides with adolescence and young adulthood is also thought to explain the reason for these behaviors.

During adolescence, the young person cares very much about his peers and pays special attention not to miss any situation in order to continue his communication and interaction with them. In this context the desire of the adolescent to prove himself by creating a new environment and to be liked by the people around him is at the forefront (Aral and Kadan, 2018). One of the features that gives this opportunity to the adolescent is seen as the digital world and the young person is always trying to take part in the digital world (Bağcı and İçöz, 2019). In the later Young Adult period, the search for identity still continues the youth intensely experiences the state of indecision, turns inward and may experience indecisive feelings. As a result of such situations, the search for a new environment continues and such a situation may result in trying to prove itself in the digital world and ends with the frequent use of digital technology, just like in adolescence (Santrock, 2016). These situations open the way to digital or technology addiction, and the individual frequently uses technology at home and at school. Frequently used technology may result in the development of digital identity by Generation Z.

Digital Identity

Identity is a concept in which the individual asks himself the question of who am I, but is also considered as an important element that constitutes the cognitive, psychological and social aspects of personality (Avcıoğlu, 2011). At the same time, identity is defined as one of the most important forces that help the individual participate in a society in a healthy way (Naggy and Koles, 2014). Today, although the concept of identity still maintains its importance, the concept of identity evolves into digital identity in parallel with the developments in technology and digital world.

When the definitions of digital identity are examined, it is seen that digital identity consists of information transmitted and recorded in digital areas (Sullivan and Stallo- Bourdillan, 2015), information shaped by the preferences and attitudes of people who receive online personalized services that can exist on mobile devices, in workplaces and in many other areas (Phini et al., 2011), and that smart identity technology features such as biometrics are based on more advanced data that it is defined as personal information that carries applications and is encoded in social and content networks (Feher, 2019). No matter how different digital identity definitions differ an important feature is that personal information

becomes visible in the virtual environment (Bozkurt and Tu, 2016). Although digital identity is an identity that identifies the person in the digital world (Gill et al., 2015), important information can spread in the digital world. As a result of this feature, it is stated that the digital identity formed by the individual in a very early period seriously affect his life a garment that defines the individual (Kilbey, 2019). Although it carries serious risks, it is another issue that is frequently mentioned that digital identity is included in videos on Youtube and that this identity is an important force that ensures the survival of the individual (Davison, 2012).

Digital identity is evaluated under different dimensions and each dimension contains different features in its structure. The first dimension of digital identity is the special dimension, the part that ensures identity is the special dimension, the part that ensures which data can be shared with whom and in the hands of the people. In the second dimension, called portability, it is the part that specifies the openness of personal information to access from anywhere through different methods. In the third dimension, called the permanence dimension, it emerges as the identity structure that follows the individual from birth to death. In the fourth and last dimension, it is stated that it is only personal and sharing is not allowed (URL, 2). In addition to these sub-dimensions of digital identities, it is stated that the transition is not limited to only one dimension, and the transition is rapid in different sub-dimensions (Bertino et al., 2009; Shibuya, 2020). It is frequently emphasized that if the sub-dimensions expressed in digital identities are used correctly, they help individuals to present online, provide ease of use in many different fields, and contribute to the economy (Kavut, 2020). Digital identity also consists of a number of identifiers and continues to develop in a desirable or undesirable direction according to these identifiers. These are described below:

Social media accounts: Social media accounts are used by a single known user. However, it is also possible for the person to create their own digital identity with different user names from different social media accounts.

User- controlled blogs, websites or forums: With these identifiers, it is possible for a person whose identity is unknown to the other party or a commercial/private company to access areas such as a blog, forum, websites and information in these areas can be obtained by both the

entrant and the other party.

Blogs, websites and forums owned by the moderators: Unlike the previous platform, unknown people are prevented from entering, sharing and commenting on these sites.

e-mail: Here, especially by logging into multiple e-mail accounts, information can be stolen. Although, it is a personal platform and defines the digital identity, it may be possible to steal the digital identity in inappropriate situations.

Online comments: It is a platform where institutions providing services in areas such as shopping, education, health and tourism open their products to the public. However, it is also possible for the digital identity to be taken over by others.

Retail accounts: For online purchases, shopping sites require their customers to create a user profile that will contain their private information (name- surname, contact information, phone number, etc.). The created user profile, on the other hand, can create the digital identity of individuals in the customer position. As a result of theft of these shopping sites for any reason, digital identities become accessible to others.

Telephone: Telephone numbers can also be captured by different people for different purposes.

Online storage: Especially if the passwords or digital identities are the same other information can be accessed once the digital identities are obtained by the suspects.

Uploaded photos: It is stated that all photos uploaded via social media platforms, e-mail, blogs are added to the digital identity regardless of their content.

These stated situations clearly show that the digital identity will stay with the person for a lifetime and even follow him (Kilbey, 2019). Although all these are important for individuals of all ages, they are much more important for young people in the Z generation who are trying to establish their identity.

Establishing a healthy identity structure during adolescence and young adulthood is vital. A healthy structuring of identity in this period will also complete the rest of life (Santrock, 2016). Individuals in the Z generation can be under the influence of their peer group while forming their identities, and they try to create a new identity for themselves, especially by choosing people to be role- models in social media.

However, while doing this, he can leave his digital identity in these environments as long as he stays in the digital world or as long as he does not control for a long time increases the possibility of cyber bullying, neglect and abuse (Durmuşoğlu and Saltalı, 2015; Kelleci, 2008; Uzunay and Koçak, 2005). Inappropriate attempts to prove himself in his developmental period follow the individual in the following processes and create a great obstacle in reaching his goal (Kilbey, 2019). In addition to these negatives, the increase in the duration of stay in the digital arena facilitates the transition to digital addiction depending on the area.

Digital Addiction

As a result of the use of technology and the digital world in a high intensity and at the same time unconsciously, addiction also develops rapidly. Without explaining the concept of digital addiction, the concept of addiction should be discussed and explained. Addiction, in the most general way, is the ability of the individual to make the interaction with any object permanent over time. The person searches everywhere for the object with which he interacts over time, feels uncomfortable when this object is not present, and intense psychological and behavioral problems may occur (Aydoğdu, 2013a). At the same time, addicted people cannot control what they do or how much they are with that object (Gusinac, 2020). Loss of control affects not only the addicted individual but also the people around him (Eryılmaz and Deniz, 2019; Kırcaburun, 2016).

Addiction is examined in two dimensions in psychological addiction which is one of these dimensions, the individual becomes restless by being under intense stress when his interaction with the object of addiction is interrupted or cannot reach the object, and he uses the object to which he is addicted in order to get rid of this disturbing emotional state (Aydoğdu, 2013a). Physical addiction, which is another dimension, express the change in the adaptation process of cells through neurons in the brain cells leads to physical consequences such as fatigue and exhaustion when the individual cannot reach the object (Aydoğdu, 2013b). Addiction is examined in various types. These are (Kızılok, 2021):

- Exercise addiction
- Work addiction
- Love and relationship addiction
- Sexual addiction

    - Pornography and cybersex addiction
- Shopping addiction
    - Online shopping addiction
- Kleptomania
- Food addiction
- Gambling addiction
    - Online gambling addiction
- Internet and technology addiction
    - Smartphone addiction
    - Online game addiction
    - Social media addiction
        - Twitter addiction
        - Instagram addiction
        - Facebook addiction

As seen in the classification, it is seen that the types of addiction are generally realized with digital tools. In the light of these points, digital addiction is the fact that the concept of time is almost destroyed and lived in a virtual world instead of biological life determined almost all of the day (Eryılmaz and Çukurluöz, 2018). In particular, this situation causes the Z generation, who opened their eyes to the technological environment, to use technology and digital tools 24 hours a day, and as a result, to experience addiction (Ezgi, 2013). In short, digital addiction is defined as the inability of an individual to live without digital tools (Arslan, 2019; Güney, 2017). Some symptoms are important in digital addiction. These symptoms are given below (Griffiths, 2005; Kuss et al., 2013):

Clarity: In digital addiction, although the individual cannot be actively together with technological tools, he makes plan for it to be used as soon as possible.

Mood change: The individual feels happy when combined with digital tools.

Tolerance: The individual initially coexists with digital tools for shorter period of time, but this time increases over time.

Withdrawal: It is the situation in which symptoms such as terror, restlessness and irritability occur as a result of the individual being away from digital tools.

Conflict: Individuals who develop digital addiction experience conflict with the individuals around them at a high rate.

Relapse: After cessation of using digital tools, he starts using digital

tools again and violently.

Today, digital addiction appears in the form of intense digital game addiction. Digital game addiction is the inability of the individual to constantly prevent the impulse to play games in digital environments. There are three important criteria for the diagnosis of gaming disorder. These are (Doğan- Keskin, 2019):

- There is a loss of control in the beginning, frequency, intensity, duration, termination and fulfillment of daily activities related to the game.
- The priority given to the game increases and daily activities become impossible.
- Playing continues despite significant disruptions in personal, familial, social, educational and professional areas.

Digital gaming disorder is examined in two areas. The first of these is internet gaming disorder. In internet gaming disorder, the game is played via the internet and the desire to play cannot be stopped. Gaming disorder, on the other hand, defines the game that cannot be stopped in online or offline environments (Kuss et al., 2017). It is also emphasized that digital gaming disorder is quite common in Z generations (Gentile, 2009; Kaess et al., 2014; McGonigal, 2011; Noyan et al., 2015; Tarhan and Nurmedov, 2013; UNICEF, 2017; Yalçın- Irmak and Erdoğan, 2016).

As a result of digital addiction, the young people in the Z generation spend the rest of the day with their mobile phones, tablets, computers, often share their photos and videos, and want to check how much their shares are liked by their followers. The young people, who is constantly trying to increase the number of its followers, also plays digital games when it is not on social media. This situation becomes such that after a certain period of time, it results in young people constantly struggling to take part in the digital world at school, at work, at home and even in the toilet. In the researches it has been determined that problems such as loss control, a social behavior, physical health problems, identity crisis, academic failure, inefficiency in business life, depression as a result of digital addiction are encountered (Agotstor et al., 2017; Aktaş and Yılmaz, 2017; Arıcak, 2009; Arslan- Durna, 2015; Aydoğan, 2017; Han, et al., 2010; Kaess et al., 2014; Noyan et al., 2015; Öner and Arslantaş, 2018; Patchin and Hinduja, 2006; Stockdale and Coyre, 2018; Taylan and Işık, 2015; Tsitsika et al., 2014). Despite the disadvantages of digital tools, it is also known that the digital world is used for different purposes

in individuals who make up the Z generation.

How Does Generation Z Use Digital Technology?

The individuals who make up the Z generation use technology and the digital world very comfortably because they open their eyes to a technological world. Individuals in the Z generation show interest in more than one subject at the same time, and they have the highest motor skill synchronization for hand, eye and ear. As a result of these features individuals in the Z generation in the digital world create activities and produce products by using their creativity. It performs socialization in the digital world and performs fast shopping and consumption in this arena (Berkup Baysal, 2014). This feature of them also creates new business areas by activating market researchers (Artemova, 2018). The fact that Z generations do their shopping with the technological world makes them important consumers in the market, and they use this market not only on their own behalf but also on the names of their families. The Z generation focuses on the price and the features of the product in their online shopping, enters the sites that offer any product they want of better opportunities and completes their shopping (Torlak, 2016). Moreover, if they are not satisfied with the service they have received, they can easily express this on social media on different platforms (Duygulu, 2018). This expressed feature of the Z generation leads to the revival of the sector and the revitalized sector to products that will make its users more dependent (Budacı, 2014; Bulut et al., 2017; Karaca, 2013).

Individuals in the Z generation spend most of their time in online networks that offer more alternatives and are more tolerant of diversity (Desai and Lele, 2017). Individuals in the Z generation, depending on each other, carry out their communication with digital tools that are hand-held or tied to their clothes. It is seen that they usually communicate with applications such as FaceTime, Twitter or Snapchat (Robertson Associates, 2013).

As a result of the active use of social media by the Z generation, different social platforms, especially Youtube, have started to emerge. Examples of these platforms, are platforms such as Instagram, Snapchat, Twitter and Linkedin (URL, 3). As a result of the individuals in the Z generation taking videos and uploading them to social media, they both increase the number of followers by watching their posts and become an empowering, tool in the branding and advertising process (Achmad and Hidayad, 2018).

It is thought that the best use of technology by the individuals in the Z generation will also result in the emergence of professions of the future, which are not so many today, and at the same time, resulting in specialization in these professions. Examples of these professions are informatics, software and coding engineering, digital media expertise, artificial intelligence engineering, space technologies, “youtuber” and “influencer”. The common feature of all these professions is that they are positioned in the digital world (URL, 4). As a matter of fact, the fact that this generation has more than one area of the interest, more flexible ways of thinking, using a technological language, seeing more than what is available, wanting and thinking together with their creativity, constitute the infrastructure of the most important professions of the future (Taş and Kaçar, 2019). All of these features can also cause Z generation to learn differently at school.

Generation Z in School Life

The interest of the individuals who make up the Z generation in the digital world is also reflected in their academic lives. Young people can be interested in digital tools even during the lesson. Such a situation may result in the youth not being able to focus on the lessons and failing, and all these situations may result in the deterioration of classroom management and, as a result, the decrease in the motivation of the teacher and the prevention of education (Arslan, 2019; Güney, 2017). Especially the changes in the learning status of the young people in this generation compared to the older generations and individual differences can cause problems in education. As a matter of fact, it is known that the people who provide education services to the Z generation are generally from the Baby Boomer, X and to a lesser extent Y generation. However, apart from the Y generation, individuals from other generations attach less meaning to technology and the digital world, and may prefer reading from books, researching and traditional methods more. This situation reveals on understanding that is diametrically opposite to the understanding of learning and reading of the individuals who make up the Z generation (Aka, 2018).

It is stated that individuals who make up the Z generation combine their innate digital abilities with the ability to learn with a large number of screens at the same time, to think in four dimensions, and to be realistic and mature in approaching events wisely (Lalorgo, 2016).

These features of them necessitate an education system in which the

digital world is used instead of the traditional approach. The teacher's combining the innate potential of the Z generation with education will increase the motivation of the student (Yaşaroğlu, 2018). Increasing motivation will prevent students' behavior problems, prevent the emergence of problematic behaviors in the classroom, and a more positive classroom climate will be created. In effective classroom management, it is necessary for the teacher to organize the classroom environment according to their needs, to use effective lecture methods and to know their students very well (Aral and Kadan, 2020), besides this effort of the teacher, the students who are in the position of learners also need to fulfill their responsibilities. While students' motivation, listening to the lesson carefully and participating in the lesson affect the classroom management positively, students' playing games with their mobile phones or browsing social media in the lessons (Arslan and Bardakçı, 2020; Soyöz- Semerci and Balcı, 2020; Yalçın and Beritz, 2019) can cause problems in management.

Apart from these features of the Z generation, the fact that teachers or school principals are in different generations can also cause them to not understand Z generation. The generations before the Z generation are not as component as the Z generation is using digital technology, and their learning motivations are also different (Somyürek, 2014; Taşlıbeyaz, 2019). At the same time, individuals in the Z generation read more slowly or less than the generation of teachers and school principals, and did not pay attention to the materials given in the course as in previous generations. This situation expressed is the thoughts that are diametrically opposed to the thoughts and views of the generations that provide education in the traditional education system or perform the administration in this way (Karadoğan, 2019). At the same time, the knowledge of technology trusting and using technology in communication and interaction of the Z generation, who have the capacity to use the digital world very well, can also cause problems (Loveland, 2017; Rickes, 2016; Seemiller and Grace, 2016; Twenge, 2017). All these reasons lead to failure in education, cause conflicts between generations, and make classroom management difficult. In order to prevent these situations, especially active learning experiences and practical studies should be structured (Karadağ and Kılıç, 2019).

Suggestions for Coping with Problems in the Digital World

The digital world should be treated as a future as well as a risk. For this reason, besides providing the necessary information about the digital world, it is necessary to raise the awareness of the Z generation on digital literacy and to organize educational activities at school. In this context, suggestions for the digital world will be examined under two headings below.

Digital Literacy

The first step to be taken in coping with the problems in the digital world is the need to develop the concept of digital literacy from very early times. Digital literacy is defined as researching information in the digital world, benefiting from digital technologies, evaluating the information obtained, using information and communication technology correctly and effectively, using digital tools and the digital arena is accordance with laws and ethics (Avcı, 2020; Özerbaş and Kuralbeyava, 2018). Thanks to digital literacy it becomes possible to use social media effectively and to decide on the security of information on the internet (Çubukçu and Bayzan, 2013).

Recognizing the content encountered in the digital environment and developing appropriate strategies are of vital importance in terms of protecting the psychological and physiological health of the young people in the Z generation who are trying to form their identity, and structuring their identities correctly. Digital literacy shows individuals what harmful content is (Yurdakul et al., 2013), thus minimizing the negative effects of the digital world. The model proposed by Ng (2012) in gaining digital literacy is referred to in the literature. Ng (2012) mentions that technical, cognitive and social- emotional dimensions should interact with each other in the development of digital literacy. In the technical dimension, the necessity of making sense of the digital world in order to use it in learning and daily activities is mentioned. In the cognitive dimension, the features of effectively understanding and evaluating the digital world, producing and choosing new messages are discussed, while in the social-emotional dimension, there are features such as communication, socialization and taking on the responsibilities of the digital world. In researches on digital literacy, it has been found that individuals who are component in the field of digital literacy use social media more effectively do not encounter negative content, do not suffer from cyber

bullying, and do not develop addiction (Gür- Erdoğan et al., 2019; Kaya and Durmuş, 2008; Kazan, 2018; Mocanu, 2018; Ocak and Karakuş, 2019; Yaman, 2019). Considering all these situations, young people in the Z generation should be informed about how the digital world can be used, how they can be interpreted, how they can be protected from harmful content, and their photo or video sharing should be added to their digital identities and they will be watched all their lives, in other words, digital literacy should be gained. One of the important forces in gaining digital literacy is teachers. Teachers and school management should be aware of the characteristics of the Z generation and carry out their educational activities.

Suggestions for Solving Problems at School

A positive school eliminate is very important for the success of education. Teachers, who have the potential to shape the future, need to provide the physical and psychological environment required by the educational environment (Akan et al., 2016; Aydın, 2013). Individuals in the Z generation usually take pictures of the presentations instead of listening to the lesson in the classroom environment, prefer short, visual perceptions instead of reading the textbooks, texting on their mobile phones during the lesson, and surfing the internet on social media. Considering these factors, teachers have to make updates in their education programs based on the individual characteristics and interests of children (Arabacı and Polat, 2013). In this direction, teachers and school administrators can do the following (Aral and Aysu, 2021; Erstad and Zounek, 2018; Kocaman- Karaoğlu et al., 2020; Parlak, 2017):

- An understanding of education should be adopted anytime and anywhere.
- Visual learning method should be adopted instead of traditional learning methods in education.
- Arrangements should be made in the learning environment for students' individual abilities and interests.
- The curriculum should be combined with adoptive personal training, game and scenario- based learning methods.
- Educational programs that can be shaped according to students' own interests and wishes (such as hybrid learning style, classless learning, learning with their own devices) should be implemented.
- In connection with the curriculum, it should be ensured that the

subject of the lesson is produced in cooperation with the teacher and student.

- In addition to receiving in service seminars from education experts on how to ensure this cooperation, it is necessary to provide an environment where they can reach the experts at any time.
- The training program should be combined with augmented reality applications.
- It is among the applications that can be recommended to benefit from the principles of project- based learning while teaching the subjects.

In addition, teachers and school management should change their traditional understanding, listen to and consider their students, respect differences, and not miss opportunities for digital literacy. Using technological and active learning principles, giving importance to inquiry-based educational activities will help create a positive climate in the classroom, emotional and behavioral problems will be prevented, and as a result, education will be able to take place in the desired direction (Karadoğan, 2019).

Conclusion

Technology and the digital world entered human life at a dizzying pace in the 1980s and have come to the present day at the some speed. Technology and digital world have brought many conveniences in human life, the efficient use of time has enabled distances to be brought closer, and new business areas have been created in the market. The digital world, which affects individuals from all walks of life, is an important phenomenon and is also effective in shopping life. With the development of the digital world, many new concepts have entered the literature and have led to changes in human life. In this direction, the identify that determines the place of the individual in society has turned into a digital identity, and individuals have started to take place in the digital world with their digital identities. In particular, individuals in the Z generation, who opened their eyes to the technological world, have started to communicate most of their time in the technological world. The members of the community, considering of individuals born in the same period and having the same characteristics, are in the same generation. Among these generations, the baby boomers and the individuals in the X generation have been individuals who use technology and the digital world properly, and the Y generation has been more involved in the digital world than the

previous generations. Generation Z, on the other hand, has been the generation that shaped and effected the digital world the most compared to previous generations. Young people in the Z generation have made smart phones, computers and tablets the focal point of their daily lives at school, at home and at work. However, this situation has also brought the road to addiction. Digital addiction can harm the academic success and social emotional development of the young person, and it can also cause problems in the continuation of education by preventing classroom management. Therefore, taking some precautions becomes a necessity. Based on this thought:

- Young people in the Z generation should be told that the digital world and digital identity are as much a threat as they are a chance, and necessary precautions should be taken for healthy use and the formation of a healthy digital identity.
- Children should be given information about digital life from an early age.
- Considering the developmental characteristics of the Z generation in educational activities at school, these characteristics should be respected and active educational activities should be carried out.
- In this context, teachers and school administrators, need to determine from where they view the digital world and shape this view according to the conditions of the day.
- It can be suggested to develop a common understanding in all schools about what teachers can do for effective classroom management.

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Chapter 19

Inclusive Education

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INTRODUCTION

Children with special needs are children who are significantly different from their peers in terms of their individual characteristics and educational needs. Educational services which are planned for these children are called special education (Aral and Gürsoy, 2011). Special education is planned and applied systematically, taking the individual characteristics of children into account, in order to support children with special needs (Aral, 2011). While planning special education services, the principle of least restrictive educational environment is taken into consideration, and in this context, inclusive education becomes prominent (Batu, Çolak & Odluyurt, 2012). Inclusive education is the education of children with special needs in the same environment with their non-disabled peers (Aksoy, 2016). In the Regulation on Special Education Services of the Ministry of National Education, inclusion is defined as "*special education practices based on the principle that individuals in need of special education continue their education together with their peers without disabilities by support education services in public and private pre-school, primary, secondary and non-formal educational institutions*" (MEB, 2006).

The history of inclusive education dates back to old times. In the 1900s, when the idea that children with special needs should receive education in special education schools was widespread, some ideas on inclusive education attracted attention (Baykoç, 2012). Inclusive education gained importance in the 1960s although it started in the 1950s, but was made applicable literally in the 1970s. In inclusive education, especially the 1960s and later years are denominated as the period in which educational practices developed rapidly and became widespread throughout the world (Emam, 2016; Tamayo, Rebolledo & Besoain-Saldano, 2017). Inclusive education around the world have been included

in the laws of many countries since 1970s. In the *PL 94-142 Education Law for All Handicapped Persons*, which came into force in the United States in 1975, inclusion was mentioned for the first time as the concept of *"least restrictive educational environment"*, and it was put into practice in the 1977-1978 academic year (Sucuoğlu & Kargın, 2006). Inclusive practices have developed in different ways in different countries and have been included in the education system with legal regulations in many countries (Özokçu, 2016).

Inclusive education in our country started with the Law No. 2916 on "*Children with special educational needs*" enacted in 1983, and it has started to be applied widely with "*Decree Law on Special Education*" No. 573 enacted in 1997 and the *"Special Education Services Regulation"* that came into force in 2000 (Metin, 2018). Today, inclusive education is supported by laws in our country, and it is carried out as a mandatory requirement. The right of individuals with special needs to receive education in the same institution as their peers is stated in the special education principles of the Ministry of National Education (MoNE) as follows (Gök & Erbaş, 2011).

- Children with special needs have the right to receive education in the same institution as their peers without disabilities.
- In accordance with the educational performance of children with special needs, priority should be given to education with other individuals by making adaptations in purpose, content and teaching processes (Gürgür & Yazçayır, 2019).
- Special education services should be planned and carried out by taking into account individual differences, developmental characteristics and educational needs, without separating children with special education needs from their social and physical environments as much as possible, including the process of interaction and mutual adaptation with the society.
- Based on the programs followed by the children, an individualized education program (IEP) should be prepared in accordance with their educational performance and needs.
- According to the type of disability, educational performance and needs of children who continue their education through inclusion, necessary measures should be taken and arrangements should be made in measuring and evaluating tools and materials, educational materials, teaching methods and techniques.

- The integration of children with special needs into society should be ensured through inclusion practices (İlik & Sarı, 2017; Metin, 2018; Yaşaran, Batu & Özen, 2014).
- The cooperation of family, school and teachers is essential in making and implementing the inclusion decision.
- Inclusive education should be started as early as possible. The difficulties experienced by children with special needs can be prevented or reduced with early education. For this reason, it is crucial to diagnose the child at an early stage and to start the education process early.
- Cooperation should be made with institutions and organizations so that children with special educational needs can continue their education at all types and levels.
- Necessary arrangements should be made for children who continue their education through inclusion to receive support services in education (Engelbrecht, Savolainen, Nel, Koskela & Okkolin, 2017; Öz, 2015, Özgür, 2015).

The general aim of inclusive education is not to normalize the child, but to enable the child to use his/her interests and abilities in the best way and to facilitate his/her acceptance in the society (Eripek, 2009). It is the fundamental right of all children to receive education in the same educational environment. The fact that children are in the same environment and learn from each other prepares them for life (Diken & Batu, 2015). Inclusive education contributes to the improvement of the relations of children with special needs with out-of-class individuals and their independence and productivity. It also enables children with normal development to accept people as they are, help them and be open-minded in the future (Meyer & Ostrosky, 2016).

In recent years, the concept of integration has come into prominence more than the concept of inclusion. Integration is a dynamic concept that expresses a process that actively and uninterruptedly progresses step by step, being influenced by the change and development of needs, possibilities and opportunities, and constantly expanding and renewing within this framework (Çuhadar, 2016). The main purpose of integrative education practices is to integrate the child into the classroom, school and society with the necessary arrangements and adaptations, rather than discriminating the child due to his/her special needs (Sucuoglu,

Bakkaloglu, Demir & Atalan, 2019).

Types of Inclusion

In our country, inclusive education is implemented in three different ways as full-time inclusion, part-time inclusion and reverse inclusion (Yazıcıoğlu, 2018).

Full-time inclusion: Children with special needs receive full-time education with their peers in regular classrooms. It is the least restrictive educational environment for children with special needs. Education programs are implemented individually, and the education program applied in the school where the child is registered is followed. Children with special needs are placed in classes in equal numbers or not exceeding 2 students in each class, taking into account their developmental characteristics (Özgür, 2015). However, sometimes this number can be increased within the scope of the combined classroom application. Children are supported by a support training room, special equipment and educational materials. The child receives education in the general education classroom, accompanied by a classroom teacher, but benefits from the support education room, especially in the field that needs support. He/she works with a special education teacher in the support education room (Yaşaran, Batu, & Özen, A. (2014). It is also crucial that teachers pay the necessary attention to children with special needs as well as children with normal development and not to disrupt their education.

Part-time inclusion: The registration of the child with special needs is in the special education class. Special education classes consist of 10 children in pre-school and primary education, and 15 children in secondary and non-formal education. However, the class size of children with autism spectrum disorder is at most 4 children. The child mostly receives education in a special education class, but in some lessons he/she meets his/her peers with normal development (Kargın, 2016). The child's general education curriculum is implemented within the *Individualized Education Program* (Aral, 2011). Children with special needs should receive support education in a resource room, counseling and research center and a special education institution in order for part-time inclusive education to take place (Howard, Willams & Lepper, 2011).

Reverse inclusion: It is a practice in which children with typical development receive education in special education schools. This

application is used to support the social development of children with special needs. However, it is crucial that the classes are structured. In our country, it is observed that there is no definition of reverse inclusion in the Special Education Services Regulation of the Ministry of National Education, but the way of implementation is specified. 23rd article of the Special Education Services Regulation contains the following statement: *"Inclusion practices can be applied in special education schools and institutions that implement primary education programs, through the education of students without disabilities in the same class as students with disabilities, or by opening separate classrooms for students without disabilities within these schools and institutions."* (Eripek, 2019; Özokçu, 2016).

Placement Process in Inclusive Education Environment

Applications for children with special needs are carried out as a three-step process: orientation, placement and monitoring.

Orientation: It covers the process of preparing committee reports on the diagnosis and planning of educational needs of the child who is thought to have special needs.

Placement: The most appropriate school where the child can receive inclusive education is determined by *the Special Education Evaluation Board* in the Counselling Research Centers (CRC).

Monitoring: It includes the stage of placing the child in a school for inclusive education and following the next development process. The developmental follow-up of the child is carried out in cooperation with the special education services board, the counseling and research center, schools and the family (Çuhadar, 2016; Gürsel, 2008; Kargın, 2016).

Preparation Studies for Inclusive Education

Inclusive education includes the placement of students with special needs in the regular classroom, as well as various arrangements and preparations. These preparations are listed below (Üçüncü and Kütükcü, 2017).

Preparing the children with normal development for inclusive education: The teacher must inform the children with normal development about the child with special needs who will come to the classroom before inclusive education. It is absolutely necessary to explain why the child with special needs is different and how he/she should be

treated. Otherwise, children do not know how to treat a child with special needs and do not want to be friends with him/her. (Aral, 2011; Özokçu, 2016). Some activities that can be done by classroom teachers in order to prepare children with normal development for inclusive education includes to inform them about their special needs and characteristics, to share their opinions and thoughts by organizing regular meetings, to do exercises to put themselves in the place of individuals with special needs (animation), to share their experiences by inviting a guest speaker to the class, to make assignments and to take the advantage of using peer teaching so that normally developing children can feel as part of inclusion (Diken & Batu, 2015).

Preparing the children with special needs for inclusive education: Children with special needs may experience problems in behavior management and control. Therefore, it is of great importance to eliminate these problems first. For this, children with special needs should be taught about the classroom rules, how to behave in the classroom and what to pay attention to (Aral & Gürsoy, 2011). To know the individual with special needs participating in inclusive education, to know what skills they have and at what level are among the primary missions of the classroom teacher. It is especially important to have information about the health status of the child. Moreover, one of the keys to an easier and more effective adaptation process is that the teacher meets the child with special needs before and spends time together for a while, as in all children. The child who knows and trusts his/her teacher is ready to come to the classroom, which is prepared as an organized environment with suitable materials (Metin, 2018).

Preparing the teacher for inclusive education: The teacher's attitude, behavior, interest and desire towards inclusive education are very important for the success of inclusive education. The teacher is supposed to treat all children in the classroom equally and supportively. This attitude of the teacher plays an important role in children's approaching each other with love and respect and accepting differences (Aral, 2011; Peterson & Hittie, 2003). It is also important for teachers to have knowledge about inclusive education, children with special needs and their individual needs, to receive in-service training, to provide the materials and support they need, to determine the problems they experience by holding meetings at certain times and to offer effective solutions, and to have special education teachers work with teachers in

terms of developing a positive attitude (Aral, 2011; Özokçu, 2018).

Preparing the educational environment and educational program: The classroom environment should be physically organized (Emam, 2016). Considering the size of the classroom, seating areas should be determined, the materials to be found on the floors and in the cabinets should be carefully considered and the cabinets should be fixed. Integration should be ensured by making appropriate adaptations to the needs of children with special needs in order to ensure integrity in the classroom environment. The program should also be planned considering the needs of the child with special needs (Recchia & Lee, 2013).

Preparing the school staff for inclusive education: School counselors should guide teachers, students, families and school administrators within the scope of preparation for inclusion practices. School administrators are important in terms of which classes and which teacher the inclusive students will be placed for, the arrangement of the classroom in terms of light, sound and view, the supply of equipment and materials, the safety of the physical environment of the classroom and some necessary physical arrangements in the school (Çuhadar, 2016). In addition to all these, they should make the necessary arrangements for all staff working in the school to work in cooperation, play a facilitating and supportive role in the number of children with special needs to be given to the classes, the preparation of the physical environment, the availability of the necessary materials and the assignment of the special education teacher (Aral, 2011).

Preparing families for inclusive education: It is crucial to inform parents about the situation of the child by holding regular meetings with them, to inform them about the content of the application, to get their opinions, to offer suggestions for success with concrete examples, to reduce the anxiety of parents and to make them feel confident. In addition to the parents of children with special needs, it is necessary to prepare the parents of children with normal development. Parents of children with normal development generally do not want their children to be in the same classroom with children with special needs (Gök & Erbaş, 2011; Öz, 2015). Such a situation also affects children who take their parents as role-models and may result in children with normal development behaving negatively towards their friends with special needs. Considering all these situations, parents of children with normal development

characteristics should also be prepared for inclusive education. For this reason, it should be ensured that individuals with special needs have a positive attitude by holding meetings with their families, and by giving importance to their opinions (Aral, 2011).

Advantages of Inclusive Education

Inclusive education has positive effects on individuals with special needs, individuals with normal development, parents with individuals with special needs, and classroom teachers.

Advantages to individuals with special needs: It supports the social, emotional and academic development of individuals with special needs (Eripek, 2009). Since children with special needs have the opportunity to observe their peers with inclusive education, they can imitate many behaviors accepted by the society. Therefore, social acceptance, harmony and interaction of the child increase. Feelings of appreciation, courage, responsibility, being useful and achieving a job increase. It contributes to the development of social skills, increases their courage to participate in activities (Aral. & Gürsoy, 2011).

Advantages to individuals with normal development: Children with normal development become aware of individual differences with inclusive education and learn to be tolerant of these differences (Aksoy, 2016). Their collaboration and helping skills increase. Their prejudices against children with special needs decrease. They find the opportunity to get to know their friends with different characteristics better and to help them. They learn to share the same environment and live together (Kargın, 2016).

Advantages to the parents: They actively participate in education. They understand strengths and weaknesses of their children better, and they get the opportunity to get to know their children better. They learn new methods and techniques on how to help their children (Özgür, 2015). They get the opportunity to communicate with each other, and they can share their experiences and knowledge. Families of children with special needs and normal development cooperate. Families of children with normal development have the opportunity to teach their children individual differences and to respect these differences. As the development of the child with special needs is noticed with inclusive education, the anxiety of the families decreases. The family will have a healthier communication with their child (Metin, 2018).

Advantages for the teacher: Teachers gain new experiences during inclusive education studies. They gain knowledge of preparing the program. Patience and tolerance develops. They gain interdisciplinary working experience. Their confidence and experience in meeting the needs of all children increases (Gürsel, 2008). They have knowledge about using various teaching or working methods appropriate for the needs of children and making adaptations in activities. Their awareness about working in the inclusive class increases. They make the necessary arrangements for the effective participation of families in education through establishing effective cooperation with families. Their recognition and evaluation of children skills improve (İlik &Sarı, 2017).

CONCLUSION

While the first environments where the education of individuals with special educational needs were carried out were separate special education boarding/day schools within the historical course, inclusive education is more accepted and adopted all over the world and in Turkey today. Inclusive education is defined as children with special needs receiving education in the same class with their normally developing peers. Children with special needs can receive full or part-time inclusive education in the same environment with their peers without disabilities. Children with special needs continue their education in the general classroom with their peers in full-time inclusive education. Also, they can take advantage of special education support services, special tools and training materials. In part-time inclusion, the child with special needs attends some lessons with his or her peers who do not have any disabilities, and continues some lessons in the special education class. There are many factors affecting the success of inclusive education. It is crucial to prepare children with special needs or normal development, the teacher, the program and the classroom environment, school staff and families for inclusive education in order for inclusive education to be successful. A successful inclusive education has many advantages for children with special needs and normal development, teachers and families.

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Chapter 20

The Healing Power of Therapy with Stories[1]

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Introduction

Story is defined as "the event told in detail" (Turkish Language Institution https://sozluk.gov.tr/). In stories like games, it is one of the important tools in communicating with children. The characters in the stories become models and have a point of view both at the conscious and unconscious level (Pernico, 2021). Legends, fairy tales, stories have been one of the tools used to give information and teach since ancient times. Stories that allow traveling to dream worlds allow the individual to discover experiences that have not been experienced before, by drawing them into their magic world. It is the product of a dynamic and flexible change. It comes out by reflecting the experiences from our inner world. The therapeutic messages given in the stories should be remembered and created in such a way that a theater actor always plays his own parts in the same way. Stories change, develop and differ according to the listener and the narrator (Burns, 2019). Types of stories are literary, educational and preparatory. Stories are classified as real life and metaphorical stories. Literary stories do not have a teaching purpose, they are prepared for aesthetically laughter purposes. Educational stories are educative, instructive and informative. The purpose of writing preparatory story is to prepare children for an event, experience or difficulty that will be experienced in the next life. The event to be experienced can be situations such as separation, a new sibling, divorce, medical intervention or relocation. Real life stories are used to reevaluate a recent challenge. Metaphorical stories, on the other hand, are stories that aim to improve the traumatic experience or difficulty that children are currently experiencing by using metaphors (Teber, 2020). Metaphors and stories are used to present possibilities, gain perspectives, and reorganize

[1] This study was produced from the Master's Thesis of the author.

cognition (Pernico, 2021).

Metaphorical Stories

Metaphorical stories are stories prepared to heal children's traumatic experiences and all kinds of psychological difficulties (Davis, 1989; Teber, 2020). In these stories, symbols or metaphors are used to represent the traumatic experience. For example, if the child has a problem with impulsivity, a story about a raving horse can be envisioned. Or, for an abused child, polite and vulnerable animals such as rabbits, deer and puppies can be identified as the main characters (Davis, 1989). Metaphors will help make creative connections by concretising both negative and positive experiences, thus rebalancing the situation for the listener. In the story, the plot leads to "imbalance" and back to a healthy, positive (guilt-free) resolution (Perrow, 2008). In order to determine the change process of the negative experience of children, the history and causes of the problem, the necessary processes, skills, resources and difficulties to reach a positive result should be determined (Burns, 2017). However, the internal and external resources used by the characters in the story should show parallelism with the resources used by the child. At the end of the story, the character's first difficulties should be depicted through unsuccessful experiences, not magical success (Cook et al., 2004). Thus, metaphorical stories help restore balance or integrity in situations where behavior is somehow unbalanced. Metaphor and storytelling are used, for example, to see possibilities, create meaning, offer alternative views and reconstruct cognition. Storytelling, just like games, communicates with children on multiple levels. Stories and their characters serve as models, teach values and skills, and provide insight at both the conscious and unconscious levels (Perrow, 2008). The solution in a therapeutic story is the last but most important part because it provides children with workable coping strategies and restores balance in their lives. It is important that the decision is positive and forward-looking and not guilt-inducing. An ideal therapeutic story should contain positive therapeutic messages and present them indirectly, like metaphors. Stories should describe the process of using available resources to face and overcome a problem, and the process should be designed to be compatible with the child's own problem and treatment process (Liu, 2017). Children identify with story characters; they reveal painful memories, emotions and also seek solutions to their problems. Stories prepare the ground for the child towards change and form a springboard.

Metaphors and stories can be used in any theoretical orientation, including child-centered, cognitive-behavioral, Adlerian, narrative, family, Gestalt, Jungian, psychoanalytic, object relations, and psychodynamics (Pernico, 2015).

Mills and Crowley (2014) were influenced by Erikson's perspective on metaphor and the unconscious; expressing that children are influenced by stories and the magical world of metaphors, they defined therapeutic stories as "metaphorical stories". Davis (1989) defends Erickson's view that the use of metaphors in the therapeutic process is an important resource that can be used when working with children, and that metaphors and stories convey the intended message directly to the unconscious. He has prepared therapeutic stories for children for many therapies, emotions, behavioral problems and mental problems and stated that they can be used in such as individual or group therapy.

Perrow (2008) shows how metaphorical stories can be used for children with learning difficulties to develop their self confidence through the creation of a puppet show with characters, and can also be beneficial for youth and adults with developmental impediments. The storybook 'The Proud Peacock' in Perrow (2008) Stories Healing Compulsive Behaviors; written for use in a group where one member interrupts the other group members' conversation and brings each conversation back to their own problems. The group members were disappointed, but none of them dared to confront the issue. The story allowed each of the group members to discuss ways in which they had difficulty being a good listener or paying positive attention to others. Group members then gave feedback on their behavior and made suggestions for change. They discussed whether they were like the character in the story, and then they counseled a puppet and painted the feathers of the main character in the story; the peacock. The story has been useful in individual and group therapy in helping attention-seeking, emotionally needy patients learn pro-social ways to relate to those around them.

Pernico (2021) states that metaphorical stories are used in clients with learning difficulties, in special education classes for the development of self-perception, in group therapies, andin adults and adolescents with developmental delays. Rhue & Lynn (1991) used the storytelling technique while working with the abused child. In the story, they presented the trauma experienced by the child with an indecisive dilemma that he coped with as best he could in difficult, conflict and quarrel

environments. Interacts with imaginary characters in situations similar to those of the abused child, advises them, and helps them not to blame themselves. Examples include conveying the idea that getting rid of guilt is like getting rid of germs and that children who recover from having their tonsils removed need time to heal, just as abused children need time to recover from the effects of abuse.

Cook (1993, 1994) describes success in the treatment of problems such as anger control, grief, fears, depression, tantrums, inconsistency, problems related to attention deficit-hyperactivity disorder, sibling rivalry problems, encopresis, and many other childhood problems (as cited in Painter, 1997; Cook, 1993, 1994).

When the studies are examined, it is seen that metaphorical stories are an effective therapeutic tool in improving any traumatic experience and psychological difficulty.

Metaphor and Metaphoric Stories in Therapy

The first experimental studies on metaphors began to emerge in the 1970s, which is when the use of metaphors in therapy started to appear in clinical and theoretical writings. There are two main approaches to metaphor in clinical theory: interpretive and communicative. The interpretative approach especially follows the work of Freud and Jung, and tries to interpret ones use of metaphor through the connotation that is thought to be derived from the unconscious mind of the person (Long & Lepper, 2008). Metaphors have been used in counseling and psychotherapy since the time of Freud and Jung. The use of metaphor and expressive therapies has improved therapists' ability to enter the child's world, understand problems more clearly, and respond effectively (Robert & Kelly, 2011).

At the center of Carl Jung's structures are symbols. The symbol, like a metaphor, actually conveys more than it seems. According to Jung, symbols mediate our mental world. Through symbols, our selves show all aspects. Jung's definition of symbol overlaps with metaphor definitions (Parker & Wampler, 2007). Psychoanalytic metaphors are not clear and understandable. They arise from protracted creative dynamic processes aimed at expressing oppressed or never-before-expressed self-states. They find their sources in bodily and relational experiences in the present and in the past, and in fantasies that are dynamically reawakened by analogical, affective, transferential or daily experiences (Rizzuto, 2009).

Psychiatrists think that metaphors strengthen technical definitions

and diagnoses, by building a bridge between sense and image. It is also used in practice as a way to make their clinical condition understandable for patients (Rosenman, 2008). Metaphors embody abstract concepts by providing a rich verbal context that evokes thoughts, feelings, and behaviors similar to those evoked by the client's real situation. The story-like nature of metaphors has the advantage of providing instructional lessons rich in emotional and perceptual detail, imitating direct contact with the environment, and making the experience more memorable.

Metaphors create a verbal world where clients can explore new behaviors and explore new possibilities for themselves. Metaphors also draw attention to the salient features of a situation that may not be noticed in the real world environment, and free them from the cage formed by language (Burns, 2019).

While Freud and Jung, the representatives of psychoanalysis, interpret the client's subconscious with metaphors, Erikson sees metaphor as a tool that facilitates communication with the subconscious (Long & Lepper, 2008). Erikson aims to communicate directly with the unconscious of the client through stories that resemble the client's problem as a metaphor but are not directly related (Morgan, 1988). The mental power of metaphor is unpredictable (Arogno, 2009). Similar to cognitive structures formed in unconscious processes, metaphor functions out of consciousness (Modell, 2009). Milton Erickon, who followed a method including metaphorical stories, used symbolic and metaphorical communication to activate unconscious processes (Long & Lepper, 2008). Metaphors are also used in hypnotherapy studies. Dr. Milton Erickson frequently used stories, metaphors, or anecdotes to promote healing after establishing an empathetic relationship with his patients (Ring, 1987).

Every story in psychotherapy can be called a therapeutic story, because they all contribute in some way to the client's therapeutic changes (Liu, 2017). The therapeutic use of stories, based on psychoanalytic theory, breaks the resistance in the child's conscious level and stimulates the healing resources of the unconscious by providing insight (Carlson & Arthur, 1999). Storytelling has been incorporated into Cognitive Behavioral Therapy as a therapeutic technique (Liu, 2017). Metaphors and stories are ways that cognitive behavioral therapists can communicate and reach their clients. They allow difficult issues and problems to be discussed gently (Friedberg & Wilt, 2010). However, the use of stories is

not exclusive to the cognitive behavioral approach (Blenkiron, 2005). Metaphor, a literary technique used in many psychotherapy conceptual frameworks, is used in narrative therapy, hypnosis, mindfulness, neuro-linguistic programming, dialectical behavior therapy, cognitive behavioral therapy, play therapies, expression therapies, and solution-focused approaches (Perrow, 2008). It can be used in almost all psychotherapies because speaking in metaphorical language is a form of communication as opposed to the technique associated with a particular form of therapy (Levitt et al., 2000). Play therapy (Crenshaw & Stewart, 2019; Davis, 1989; Kagan, 1982; Pernico, 2015;); in cognitive behavioral therapy (Aydın & Yerin, 1994; Blenkiron, 2005; Friedberg & Wilt, 2010; Gelo & Mergenthaler, 2012; Grave & Blissett, 2004; Hu et al., 2018; Mathieson et al., 2015; Mooney & Padesky 2000; Otto, 2000; Rosenman, 2008;Samantaray et al., 2019; Sumathipala, 2013;); in hypnotherapy (Kirmayer, 1988); in art therapy (Parsons, 2010); in cinetherapy (Sharp et al., 2002); in mindfulness therapy (Burrows, 2014); and in sand therapy (Russo et al., 2006). Many therapy approaches such as stories or metaphors are used.

Metaphor in Metaphoric Stories

Storytelling has an impact beyond what is known in the personal and interpersonal domains. The choices made by the characters in the stories can help children discover alternative solutions (Gladding & Drake Wallace 2010). Young children organize their feelings into conceptual and perceptual metaphors (Modell, 2004). Using metaphors is a gentle and non-forceful way of conveying information and influencing children positively (Friedberg &Wilt, 2010).

Metaphors are used in metaphorical stories (Teber, 2020). Metaphors can indirectly convey intense emotions that can be too painful to express directly (Lyddon et al., 2001). Metaphors and stories can be used to change children's knowledge processing. Effective metaphors make the best use of children's language (Heiney, 1995).

Metaphors used in metaphorical stories help the child to solve their problems or develop new solutions by establishing an indirect and implicit relationship with the child. The therapist can help the child find solutions to emotional problems by talking about how a roaring angry lion can calm down and the steps he can take to achieve this. Anecdotes, proverbs, fairy tales and other communication tools can be used for such metaphors. The feature that distinguishes therapeutic stories from other

metaphorical narratives is that they are created in accordance with a specific purpose and have healing and therapeutic properties. Saying angry like a roaring lion does not mean that the person is like a lion, but it does show similar behavior and attitude with the lion. It is these symbolic links that give metaphors a healing effect (Burns, 2019).

Burns (2019) offered tips on using metaphors effectively in his book '101 Therapeutic Stories for Children and Adolescents'.

• Metaphors should be memorable by the audience.

• The character of the hero to be used in the metaphor should be suitable for the child's characteristics. The process should be similar to the problem and situation experienced by the child.

• The story should be interesting and gripping, but exaggerated and unrealistic endings should be avoided.

• Metaphors should be appropriate to the audience. For young children, identification can be facilitated by using concrete metaphors.

• Metaphors suitable for the age of the character should be chosen. While fairy tale heroes and animals can be interesting for the preschool age group, computer game heroes and cartoon heroes can be interesting for school age children.

• Gender compatibility is another point that needs attention when discussing metaphors. For school-age children and adolescents, they may not be able to relate to a character of the opposite sex.

• The metaphor to be used should therapeutically improve the child and achieve the desired result.

• The fact that the metaphor is suitable for the interests of the listener will facilitate identification. For this reason, while choosing a metaphor, it is necessary to obtain information about the cartoon character that the listener likes, his favorite lessons, and the things that make him happy.

Why Metaphoric Story in Child Therapy?

Tales, legends, stories from ancient times are used as an instructive, informative and effective tool used to describe life experiences (Burns, 2019). Stories show the universality and normality of human life conditions. Storytelling is a very old tradition. Aesop's Fables, fairy tales and Native American legends provide unforgettable lessons (Pernico, 2015).

Bibliotherapy is a useful technique by which children and adolescents can learn to cope with the emotional problems they face. It becomes a therapy method when children and adolescents experiencing emotional

stress, anxiety or incompatibility identify with the events experienced by the characters in the book (Afolayan, 1992). For example, in the Harry Potter novels written by J.K.Rowling, the main character's struggle to cope with the power of jealousy and anger, loss and guilt is depicted. Harry Potter novels can be used to develop some therapeutic approaches to treatment because they provide implicit and metaphorical stories (Noctor, 2006).

For young people, stories offer a way of understanding situations and working through emotions (Hanney & Kozlowska, 2002). Storytelling has the potential to help children regain their emotional or behavioral balance (Liu, 2017). Because of their implicit indirectness, metaphors can be powerful tools to reach even the most fearful, rigid, suspicious child. When direct communication is not effective, metaphors can be used as a tool for therapeutic communication or as motivational tools to promote positive change when working with children (Fazio, 1992). Editing can provide an important tool for managing powerful unconscious pressures and conflicts. It is a fundamental tenet of psychodynamic theory that the unconscious acts as a powerful determinant of behavior. Because repressed emotions often consist of traumatic or negative experiences, their effects tend to be negative or maladaptive. Children's literature can provide this important psychological function. It activates the imagination, enables the child to develop his/her intelligence and express his/her feelings, adapts to their worries and aspirations, recognizes their problems, and also suggests solutions to problems (Lake, 2003).

Stories are powerful tools to connect with children and keep their attention focused on the story teller. When they are well chosen and adapted to the children's situation, they have many benefits. By regulating children's thoughts about their problems, they reduce mental confusion and defense, thus allowing children to better sense alternatives to the problem (Bergner, 2007). The audience shares their feelings by identifying with the imaginary hero as they travel to the world of dreams. Stories for effective communication, thanks to its interesting feature, they teach, destroy resistance, reveal and develop creativity, and improve problem solving skills.

Stories, although instructive, do not arouse defense in the individual. It allows the individual to externalise a problem and examine it objectively (Otto, 2000). The story of The Wizard of Oz was told in a study of individuals who survived a natural disaster. This metaphor

helped the individuals in the group to see the healing processes of their traumas and to share and remember important information (Carmichael, 2000). As therapeutic teaching tools, stories teach effectively, nurture the imagination, and reveal meaning-seeking processes in the listener. They develop problem-solving skills, create results and invite independent decision making (Burns, 2017). Children watching their own problems through the eyes of the hero and the hero's analysis of the events gives the child the opportunity to apply the events to their own life (Pardeck, 1990b).

Therapeutic storytelling allows the child to express the thoughts and feelings experienced as a result of trauma. Thanks to therapeutic stories, the child can more easily express the situation that he has difficulty in expressing with a metaphorical event. Although therapeutic storytelling is a therapeutic method, it is also an assessment tool for expressing children's problems and determining the problem (Mukba et al., 2019). Painful emotions due to trauma, therapeutic stories and the child will be able to feel positive emotions by listening empathetically to the events of the hero who experienced similar traumatic emotions. Traumatic memories can be healed with therapeutic stories. The child can recognize alternative perspectives against trauma through therapeutic stories (Kress et al., 2010). The stories told by the therapist and the child's negative defense mechanisms can be replaced with positive ones. Along with giving a conscious awareness to the child with metaphors, it can also offer alternative solutions (Russo et al., 2006). It is possible for the child to externalise his or her problems by naming the situation and by the social support he has gained in his emotional world (Montgomery & Maunders, 2015).

There area few examples in the child psychotherapy literature where therapeutic storytelling is used systematically and independently of other psychotherapeutic techniques. Therapeutic storytelling constitutes an important activity of the psychodynamically oriented child therapist (Brandell, 1984). Stories often used in hypnotherapy move the listener into a state of vulnerable, insightful readiness. Young children respond to the imaginary aspects of metaphorical stories as if they were real (Pernico, 2015). The therapeutic process has three components. In the first stage of identification and reflection, the child identifies with the hero in the story. The next stage is catharsis. Children express their feelings verbally or non-verbally. In the last stage, the child gains insight

and integrates with the character in the story ((Pardeck, 1990a). Therapeutic stories are an effective tool to establish the therapeutic relationship with children. The heroes in the stories sometimes experience our problems and sometimes carry our characteristics, so we begin to be affected by their emotions, behaviors and values. Stories are a way to touch and reach children (Burns, 2019). Metaphor and storytelling are tools through which a therapist can access the child's inner world and use this understanding to help the child make sense of their world and change their thoughts, feelings and behaviors. Metaphors assist children in recognition and acceptance of their problems faster (Perrow, 2008).

Burns (2017) states that at a conference on the use of stories in therapy, he told a story in addition to narrating his narrative on a slide. He argues that while people love stories, they are also storytellers, that experiences, hardships, joys and victories are shared through stories. When working with children in a therapeutic setting, the world should be viewed through the eyes of children. Children's communication language is games, stories and pictures. For this reason, it should be improved through an environment where children feel comfortable and safe. Stories can be used to prepare an environment conducive to recovery for children with traumatic experiences and problems (Carlson & Arthur, 1999).

Healing Process with Metaphorical Stories

Metaphorical language is a tool we automatically use to better express our experiences about ourselves and our lives. In addition to helping to express, metaphors can fulfill many functions during psychotherapy (Levitt et al., 2000). A story or a message is given to the conscious mind, the unconscious mind may indirectly receive another message. This message can be delivered intentionally or unconsciously. Children's ability to move freely between imagination, fantasy and reality allows them to explore the metaphorical meaning in a story. They offer options beyond the child's immediate experience and are more effective when cognitive systems are intact (Fazio, 1992).

Metaphors and metaphorical stories appeal to the right hemisphere of the brain. The right hemisphere is more specialized in holistic understanding of complex relationships (Ring, 1987). The right hemisphere gives importance to the meaning of an event and the emotion it creates. It specializes in emotions, sensations, images, and memories. It is influenced by the lower brain areas that allow acceptance and interpret emotional information coming from the body by managing inner voices

and instinctive emotions (Sıegel & Bryson, 2018). Metaphorical analyses activate neural network that includes the hippocampus and amygdala, and this system overlaps with the comprehensive problem-solving network. The therapeutic metaphor has a strong semantic encoding and has the potential to produce longer preservation and a good intervention effect. This potential, metaphorical analysis can trigger a creative cognitive process by activating widely separated areas of long-term memory and combining normally unrelated concepts (Hu et al., 2018; Jiang et al., 2016; Yu et al., 2019). Psychoanalytic theory postulates that children engage in identification and reflection when exposed to stories that reflect their unconscious struggles. Children then experience emotional relaxation, abreaction (a repressed event coming to consciousness), and catharsis. Finally, they gain insight and integration through increased self-awareness and understanding. As a result, it reflects neurodevelopment, including emotion regulation, cognitive function, and interpersonal competence capacity (Pernico, 2015). Dr. Van Der Kolk, director of the Trauma Center at Harvard University, and his colleagues (1995) used neuroimaging when examining volunteers with past recall and found that the right hemisphere of the brain, which is responsible for managing emotions and imagery, is highly active during past recall. In contrast, they found that the left hemisphere of the brain, which is responsible for reasoning and speech, and which allows victims to describe their experiences, is completely shut down. This research shows that therapeutic histories targeting the functions of the right lobe of the brain have an important place in the treatment of victims. Metaphors and symbols form the center of therapeutic stories (Mills &Crowly, 1986; Rosen, 1982 as cited in Davis, 2013).

Results from the literature show that the effectiveness of stories facilitates the resolution of problems in the right hemisphere through symbols or metaphors (Carlson & Arthur, 1999; Cooke et al., 2004; Noctor, 2006; Perrow, 2008). Metaphorical stories are a brain connection that results in neurobiological change when considered from this point of view. Narratives usually emerge from implicit (emotional or sensory) memories that are long forgotten and difficult to process, but contribute to a rigid or disorganised coping situation. Thus, a cohesive, empathetic therapist can help the client cope with the event in a more holistic way (Pernico, 2015).

Metaphorical Stories in Child Development

Metaphor is the language of children. Metaphors and stories integrate the brain, and when used during therapy, drive change through non-cognitive, sensory, and emotional processes. By identifying with the characters and story themes, it invites the child to better understand himself and others, through cognitive restructuring and behavioral change (Pernico, 2015). According to Piaget's theory of cognitive development, he argues that direct, active experience is necessary in creating schemas for young children (Silvern et al., 1986). However, in a study on children's understanding of metaphor, Wamick (1983) and Winner (1988) stated that children can understand metaphors in storytelling in the preschool period. The first author also found that this ability increases with age (Cited by, Painter, 1997; Wamick (1983) and Winner (1988). Although the ability to understand metaphor is present at an early age, this finding shows that metaphors for young children should be easy to understand. The schemas that emerge over the years are derived from experiences with stories and the world in general. Overall, these findings suggest that children as young as four can understand therapeutic storytelling and fairy tales. However, four and fiveyear olds have limited and complex experiences with story schemas and life. They may understand metaphors and symbolic content less compared to their developmental stages (Painter, 1997). Therefore, metaphors that are less complex for preschool children are suitable for children's cognitive development.

Psychotherapy is often an unusual and sometimes daunting experience for children. Stories make the therapy world more comfortable as they are essential parts of a child's culture. Metaphors and stories in cognitive behavioral therapy with children make therapeutic methods more accessible and facilitate collaboration (Friedberg & Wilt, 2010). Engaging children with fictional stories can help overcome psychological connections that are often neglected (Holyake, 2013). Metaphors and stories used in therapy show children's perceptions of the problem, reveal the intensity of their anxiety, cognitive coping styles, feelings about themselves/others, and their capacity for emotional expression in the face of control. Such stories can address coping skills, avoidance, decision making, the courage to move forward, and barriers to change. Later in treatment, selected stories can be challenged, elicit painful emotions, create new coping strategies, and positive change (Pernico, 2015).

Storytelling helps develop and clarify a child's view of their world. Storytelling consciously presents alternative options for the child's hidden beliefs and feelings. By presenting maladaptive behavior in a way that the child will find unacceptable, it encourages the child to try adaptive behavior. Storytelling helps a child find a solution to an event that he or she has difficulty in coping with (Kagan, 1982).

As a result of all these findings, metaphorical stories in the development of children; it can be considered as a powerful and effective tool in communicating with children and supporting emotional development, making the therapies more effective by helping them cope with their emotions and changing their emotions, while realising the difficulties they are experiencing and enabling them to look at the problem from their own perspective.

How Should Effective Metaphorical Storytelling Take Place?

Storytelling carries traces of the warmth of family life, like stories heard on a grandfather's lap (Kirmayer, 1988). There are three important variables to effective storytelling. The first is the narrator, the second is the audience, and the third is the communication process between the two people. The narrator should use his own enthusiasm when telling the story. They should tell the story in a lively and exciting manner. When asked about the most important variables of therapy, Milton Erikson, the master of metaphor and story therapy, said "observation, observation, observation". Children should be observed while they are being narrated to. Observing what attracts their attention and where they are distracted can be a guide for the next story to be prepared (Burns, 2019). The therapist's professional qualifications must have a basic understanding of child development in order to use metaphor and storytelling. The therapist's child should be able to evaluate attention span, language ability, cognitive development and emotional understanding because the story should be matched with the development of the child (Pernico, 2015). The power of storytelling is its power to absorb and fascinate. Magical performance is gestural storytelling. The common point of the magician and the storyteller is the creation of an imaginary reality in collaboration with the audience. But the magician goes beyond the storyteller by conspiring with the audience to forget his role in fabricating the truth. That's why the magician's story is experienced as real. Erickson's work shows that he was a word wizard who invents truth using language and then indirectly covers his tracks. Erikson's narrative is the

use of plain language with self-criticism or scientific explanations (Burns, 2019).

There are different perspectives in the literature on the narration of metaphorical stories. Therapeutic storytelling has been practiced in many forms, from stories told by the client to stories read by and told by the therapist (Painter, 1997). Different therapeutic approaches involving storytelling vary in how storytelling is initiated. It is more common for therapists to initiate the storytelling process, although in some approaches children are encouraged to spontaneously tell a story. Therapists select, adapt or create a story suitable for the child and present it to the child at an appropriate time according to the child's situation (Liu, 2017). Cook et al. (2004) believes that the counselor should ensure that the child receives the therapeutic messages embedded in the story as intended and guide the child in how to use the messages to cope with him/herself. Bergner (2007) argues that in the therapeutic process for children, after the stories are told, they should be explained in detail in order to enable the child to understand the story. In this approach, it is important and critical for the therapist to explain the story. In mutual storytelling, a technique developed by Gardner (1970) the child first tells a story. Then the therapist tells the same or a similar story. However, the therapist's story ends with a solution-oriented and harmonious ending. Liu (2017) argues that the therapist should not explain the story. Because children should have the right to understand and interpret a story in the way that suits them best. The story should be designed as it may not create the most appropriate change for the children if they accept the explanation of others unconditionally.

Pernico (2021) states that he does not comment on the story except to get permission from the client to read the story in therapy, and that he determines what will happen after the session according to the client's reaction. Davis (1989) argues that therapeutic stories should not be interpreted by therapists according to their personal wishes. He claims that therapeutic stories have a subtle effect on children, using metaphors and symbols to influence their minds. The healing message in the story is addressed primarily to the intuitive and unconscious parts of the listener's mind, and the explanation may cause children to resist the message the therapist wants to convey. In fact, some children may even change in the opposite direction due to their rebellious attitudes, and in this case, the therapeutic value of the story is lost, he argues. Teber (2020) states that

after the metaphorical stories are told, no comment will be made about the story, but the child can be asked questions about his feelings. He also argues that not understanding the metaphor means that it will be solved unconsciously.

For storytelling, sound is an important and essential tool for conveying the therapeutic message. Storytelling is supported by effective use of tone and tempo, as well as pauses and changes in gestures. The aim is to make the story attractive and memorable so that the child can apply the message to his own life (Otto, 2000). The most appropriate story should be told at the most appropriate time according to the child's situation. In order not to lose attention or interest, a language suitable for both the age and cognitive development of the child should be used (Cook et al., 2004). The potential for change then becomes open to the unconscious, trusting that the child will find the strength, method, and time to change (Davis, 1989). Although it cannot be determined in advance which aspects of the stories will resonate with the child, the child will find what he/she needs (Kres et al., 2010).

An Eclectic Approach to Therapy with Stories

In the telling of therapeutic stories, many creative techniques are used so that children can externalise the problems (Mukba et al., 2019). Therapeutic stories are also suitable for use in any type of therapy (Davis, 1989). Many authors and researchers state that additional techniques are used in therapy along with storytelling. For example, Pearce and Pearce (1998) state that figures and animation techniques can be used in storytelling. Pernico (2010) states that in his work with children, he recommends the use of puppets to enact the story or uses puppets after reading the story. The therapist may ask the puppet questions (or a puppet may ask the child questions) to personalise the details of the stories. The child can "help" the puppet with his problems, or the puppet may "help" the child (Pernico, 2010). Davis (1989) states that metaphorical stories can be told with puppets, pictures and videos. Brandell (1984) states that puppets and toys can be used as metaphors so that the problems experienced by the child can be embodied with objects. He also states that storytelling can sometimes be used with psychodrama, which is used in the psychotherapeutic treatment of children. Burns (2019) states that with the metaphor to be used in drama, the child can find the opportunity to externalise their problem or traumatic experience, and with drama, the child can find a model that can struggle with the problem and identify

with it. Tools such as puppets, toys, and sand can make it easier for children to externalise their traumatic experiences, and with such objects, children can create their own stories about their problems. The use of therapy with stories together with other techniques will create an environment where children can express their feelings more easily, and will also provide an opportunity for them to discover themselves (Mukba et al., 2019).

Therapy with stories is an intervention technique that is complementary to play therapy. Similar to play therapy, stories can contribute to the therapeutic process by enabling children to express their feelings. Therapy with stories can provide healing in children with a history of trauma, emotional and behavioral problems. Stories can help children gain self-esteem and exemplary role models, help children with limited expressive language skills and enable them to express their feelings. The narratives can also facilitate in solving their problems, and enable them to develop emotionally (Carlson & Arthur, 1999). Storytelling and play therapy make a valuable addition to other structured activities and opportunities for a child to engage in therapeutic play. The therapist can use these activities to help children communicate their fears and anger both verbally and nonverbally (Kagan, 1982). Play therapy has a theoretical orientation; teach or model concepts to discover, change or create meaning, see change, change schemas, change behavior, use the child's language and themes, induce hypnotic trance, access unconscious processes, strengthen parent-child relationships; uses metaphors and stories to change or build personal narratives or reduce defense and resistance. Sometimes the character in a story includes a therapy technique for the child's learning and practice (Pernico, 2015). Pernico (2015) presented behavioral rehearsal in play therapy to a 6-year-old boy with phobias and separation anxiety to relax using metaphors and stories in coping skills, role playing, cognitive restructuring and exposure to feared situations. Because he was afraid of flying, he chose a story about buying tennis shoes to walk to Tennessee, reducing exposure, cognitive restructuring, and anxiety. After reading the story, he taught relaxation and breathing skills with the eagle puppet and practiced with the puppet. He discussed the risks and benefits of flying and made the eagle take off from the ground and ensured a successful flight. Later, the boy tried to be brave, using Hulk gloves to touch things he was afraid to touch and roared to show his 'strength'. Their parents reported that they observed a

large reduction in avoidance and phobic behaviors, and an increase in confidence in previously feared situations.

When the literature is examined, although metaphorical stories are used with many methods and techniques, they are used as a complementary technique in some psychotherapy methods.

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Chapter 21

Opinions and Suggestions of Family Doctors and Pediatricians on Pediatric Diseases: Sample of Kırşehir Province*

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1. Introduction

Disease is abnormal changes in tissues and cells. The disease occurs when there are symptoms (symptoms) that are not a disease on their own, but one or more of them are seen in the case of the disease and this situation disturbs the person (Acar, 2017). The child's need for adult support in terms of developmental characteristics requires it to be addressed primarily in terms of health. In addition to factors such as mother's health, family health, socio-economic status, family's lifestyle, culture, traditions, habits, support of the environment, social support, genetics (Törüner & Büyükgönenç, 2011), accidents can also affect child health (Erik et al., 2019). In order to prevent emerging diseases, the causes of pediatric diseases should be determined regionally and intervention programs should be carried out with interdisciplinary studies (Blair and Hall, 2006). Although there are studies about the causes of

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pediatric diseases investigating the causes of chronic cough (Yıldız and İğde, 2017), injuries in children aged 7-14 years (Çalışkan, 2018), and diarrhea (Lakshminarayanan & Jayalakshmy, 2015), there is no interdisciplinary study covering all diseases at the regional level. The studies were mostly retrospective and planned in a single center (Çiçek et al., 2019; Haytoğlu, 2018; Kendirci et al., 2011; Konca et al., 2015; Orhan, 2012; Yılmaz and Alemdar, 2019) and all were carried out in the field of medicine. For this reason, it is important to determine the causes of the diseases through the doctors working in the institutions within the scope of primary and secondary health services at the regional/provincial level. Further, intervention programs related to disease determinants, management and intervention strategies, and preventive strategies should be established at regional and specifically interdisciplinary levels regarding the causes of disease (Lakshminarayanan and Jayalakshmy 2015; Michael et al., 2015; Ruggieri and Bass, 2015). Thanks to such studies on health protection, it will be easier to reach the goal of a society that is healthy and able to maintain its well-being (Basan and Bilir, 2016). At the point of interdisciplinary studies, it is thought that determining and interpreting the causes of pediatric diseases by integrating them with the field of child development will be a pioneer for future research. Based on these considerations, it was aimed to determine the opinions and suggestions of family doctors and pediatricians about pediatric diseases at the provincial level.

2. Method

In this study a qualitative method was adopted and interview technique was used (Yıldırım and Şimşek, 2009). Interview technique, one of the qualitative research methods that focuses on understanding and reflecting the perspectives of family doctors and pediatricians, is a method used to reveal people's perspectives, experiences, feelings, and perceptions (Yıldırım & Şimşek, 2009). The acceptable size of the qualitative study group also increases the quality of the research (Başkale, 2016). In this context, a total of 31 doctors, including 20 family doctors working in family health centers in Kırşehir city center and 11 pediatricians working in the pediatric outpatient clinic of Kırşehir Training and Research Hospital, were included in the study voluntarily. 6 of the family doctors and 2 of the pediatricians did not participate in the study due to their intense work and leave. In the study, a Semi-Structured Interview Form developed by the researchers and arranged in line with

expert opinion was used. In the semi-structured interview form prepared by the researchers and finalized as a result of expert opinion, there are questions about determining the opinions of family doctors and pediatricians about pediatric diseases and their recommendations on this issue.

First of all, the purpose of the research was explained to the family doctors and pediatricians, they were asked whether they wanted to participate in the study, and face-to-face interviews were conducted after the written consent of the doctors who voluntarily agreed to participate in the research was obtained. Written and recorded responses in the interviews were grouped according to predetermined themes (Yıldırım & Şimşek, 2009). An expert review, which is a method used in qualitative research and increases credibility, was conducted (Başkale, 2016), in this context, an expert review was requested from an independent researcher who had general knowledge about the research topic, had no contact with the participants included in the study, and could make adequate judgments about the comments. Firstly, themes were formed from the data obtained from the Semi-Structured Interview Form study group, and the views of doctors were evaluated with descriptive analysis.

3. Finding

The findings of the opinions and suggestions of the family doctors and pediatricians regarding the causes of pediatric diseases are presented below.

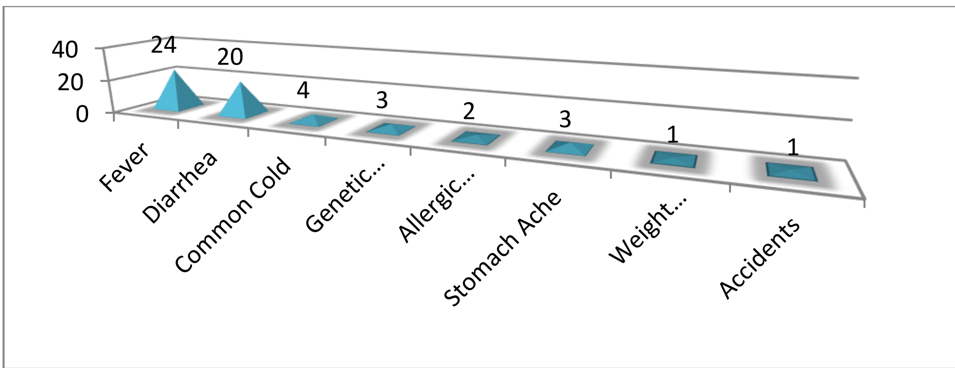

Figure 1. Distribution of the Responses of Family Doctors and Pediatricians to the Question "What Complaints Do Sick Children Come With?"

“What complaints do sick children come with?” was asked to the family doctors and pediatricians included in the study. When Figure 1 is examined, 24 of the family doctors and pediatricians stated that children come with fever complaints and 20 of them indicated that the children come with diarrhea complaints. In addition, it was also stated by doctors that children came because of the common cold (4), genetic diseases (3), allergic complaints (2), stomach ache (3), weight problems (1), and accidents (1).

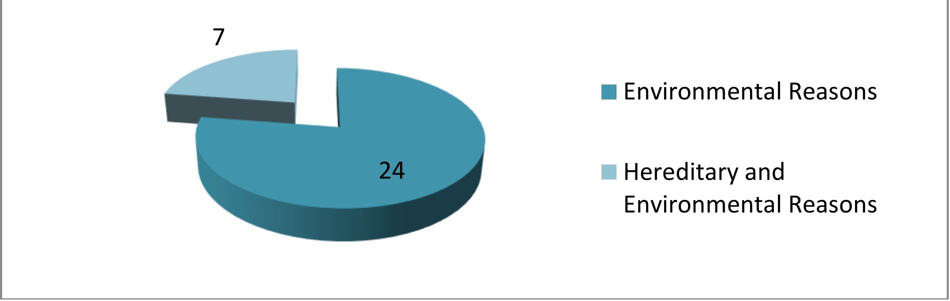

Figure 2. Distribution of Responses to the Question: “Why Do Children Get Sick?”

When the question “Why Do Children Get Sick?” was asked to the doctors within the scope of the research, almost all of them (24) stated that children got sick due to environmental reasons, while 7 doctors stated that hereditary causes were the cause of the disease along with environmental reasons.

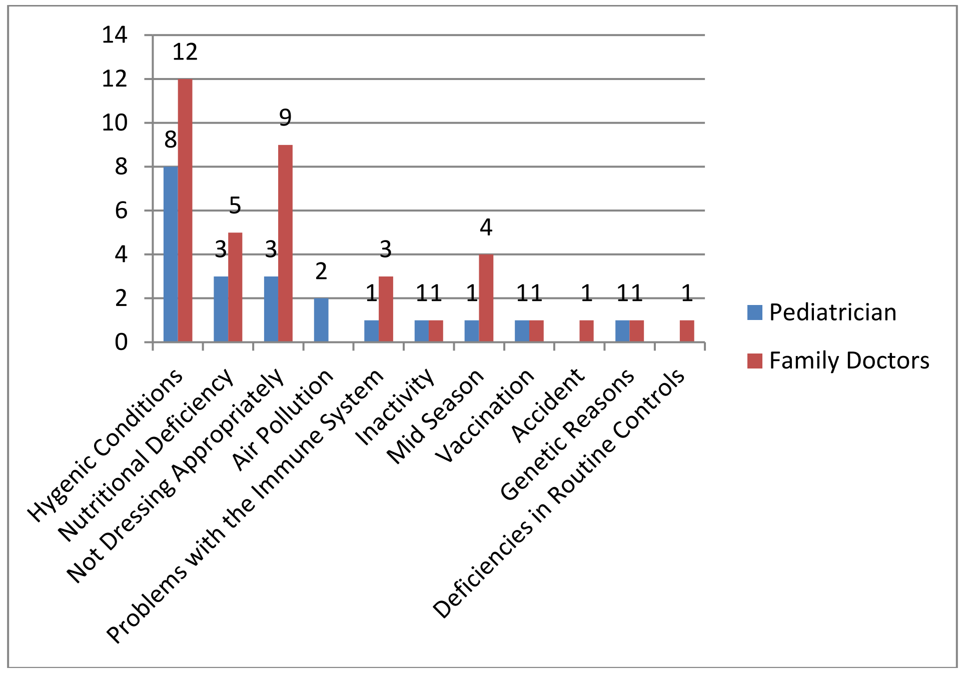

Figure 3. Opinions of Family Doctors and Pediatricians on the Causes of Pediatric Diseases

When Figure 3 is examined, it is understood that the majority of family doctors and pediatricians stated that diseases occur due to inadequate hygienic conditions for children. While this response of the family doctors was followed by not dressing appropriately (9), the responses of the pediatricians were as follows: not dressing appropriately (3) and the nutritional deficiency (3).

When the other responses given by family doctors are examined; besides the problems related to seasonal changes (4), weak immune system (3); it was determined that the ratio of doctors who stated that inactivity (1), vaccination (1), genetic reasons (1) caused children to get sick were equal to each other. When other responses given by pediatricians were examined, it was stated that air pollution (2) caused children to get sick. In addition, it was seen that the ratio of pediatricians who responded immune system problems (1), inactivity (1), seasonal changes (1), vaccination (1), genetic reasons (1) was equal to each other.

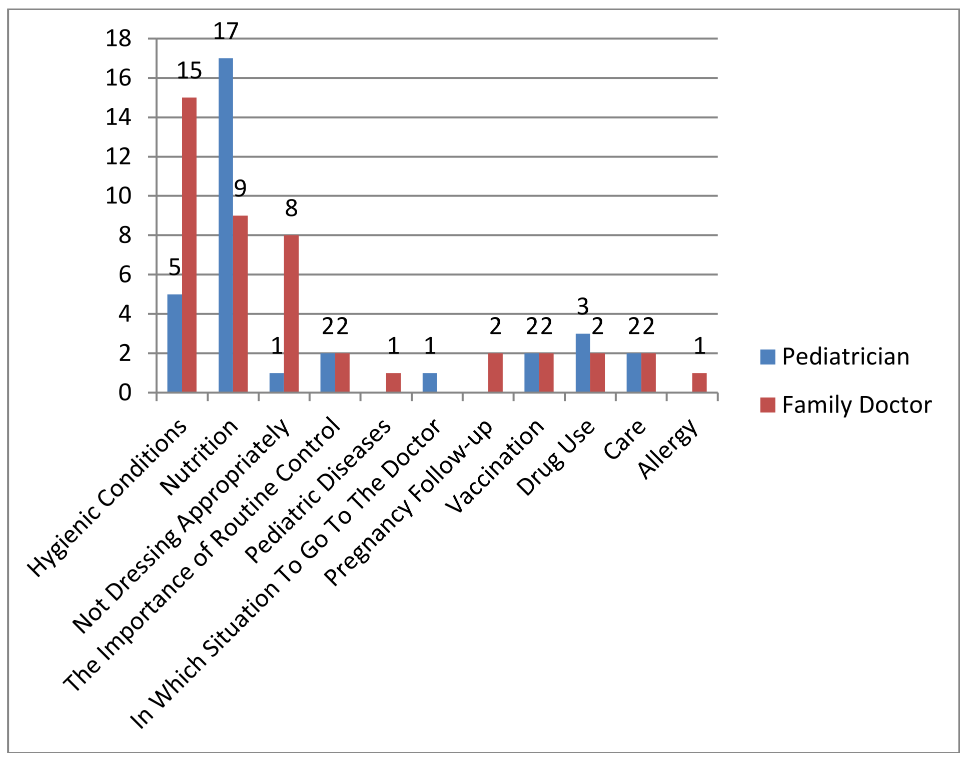

Figure 4. Suggestions of Family Doctors and Pediatricians to Mothers to Prevent Children from Getting Sick

According to Figure 4, it is seen that pediatricians mostly respond nutrition (17) in their suggestions to mothers to prevent their children from getting sick. When the other responses are examined, it was found that the ratio of doctors who gave their opinion on besides the importance of hygiene conditions (5) and conscious drug use (3), the importance of routine control (2), vaccination (2), correct care practices (2), dressing appropriately for the season (1) and when to go to the doctor was equal to each other. When the responses of the family doctors are examined, it is seen that the response of hygiene conditions (15) is followed by the response of nutrition (9) and dressing appropriately for the season (8). It was found that the ratio of family doctors who responded the importance of routine controls (2), pregnancy follow-up (2), vaccination (2), correct care practices (2) was equal to each other. A family doctor made a recommendation regarding allergy. All of the family doctors and pediatricians within the scope of the research stated that families should be informed about these issues in order for these recommendations to be

implemented.

4. Discussion

When the question "What complaints do sick children come with?" was asked to the family doctors and pediatricians included in the study, they stated that children came because of fever, diarrhea, common cold, genetic diseases, allergic complaints, stomach ache, weight problems, and accidents. Fever, vomiting, diarrhea, gas pains, and stomach ache are among the most common complaints in children (Acar, 2017; Lakshminarayanan & Jayalakshmy, 2015). Among these, fever is a condition that causes anxiety in all families and is considered as a finding (Halıcıoğlu et al., 2011; Koturoğlu, 2018, Yalnızoğlu Çaka et al., 2015). Although the majority of families prefer antipyretic drugs in the treatment of high fever (Araz, 2013, Halıcıoğlu et al., 2011), it is known that antipyretic drugs are not used in appropriate doses (Araz, 2013;); mothers' general knowledge about fever is insufficient and there are sometimes wrong attitudes and behaviors to reduce fever (Kılıçaslan et al., 2018), the education level of the mother and the income level of the family have a significant effect on the level of knowledge about fever (Halıcıoğlu et al., 2011), and mothers need education (Özkan & Öztürk, 2013). Further, diarrhea is one of the most important causes of morbidity and mortality in childhood and is associated with many conditions (Lakshminarayanan & Jayalakshmy, 2015). In the study of İnce et al. (2018), it was found that children whose mothers are younger than 29 years of age, who have a low parental education level, and who live in families with a low socioeconomic level are at risk for diarrhea. In terms of the value of health, it is recommended that the needs of the family should be taken into account while monitoring the health of the child and family (Cox et al, 2002). Despite the responses such as cold, genetic diseases, allergic complaints, stomach ache, weight problem, accidents; the fact that diarrhea and fever are the most common findings indicates the need for training of families on both intervention and protection regarding fever and diarrhea.

When the question "Why do children get sick?" was asked to the doctors within the scope of the research, almost all of them stated that children got sick due to environmental reasons. In addition, 7 doctors stated that hereditary causes were the cause of the disease along with environmental reasons. The factors that cause the disease are divided into two as hereditary causes and environmental causes (Akyıldız, 2000,

Erdem, 2011). Inherited features that people inherit from their parents through genes regulate the emergence of all the features and structure of the organism (Acar, 2017). It has been emphasized that heredity, which has been determined as the cause of many diseases in recent years, plays a major role in life (Akyıldız, 2000). In diseases due to genetic causes, the child carries the disease when s/he is born, and symptoms of the disease may appear shortly after birth (Er, 2006). Being a whole with his/her environment causes an individual to be affected by the negativities in the environment, pollution, disease-causing factors, in short, the good or bad environmental conditions. In this sense, while children experience their developmental stages in order, they may get diseases later due to various accidents or diseases (Acar, 2017).

When the studies were examined, high frequency of getting sick was found in the first 3 years of age (Erkinovna et al., 2007) of children living in neighborhoods with a low socioeconomic level (Gürarslan Baş and Karataş, 2013; Konuk Şener and Ocakçı, 2014) and children of younger mothers. Frequent illness is a very common complaint in pediatric clinics. Although this complaint upsets the families, about half of these children are completely healthy. Very few of them have immune system deficiency or chronic disease (Sütçü et al., 2018).

The prominence of environmental factors related to the causes of diseases brings preventive health services to the agenda. Preventive health services include taking the necessary precautions to prevent diseases, providing counseling to the patient and their relatives on combating infectious diseases, hygiene, post-illness rehabilitation, providing education to the society on disease and health issues, preventing diseases by changing nutrition and lifestyle. In short, it is the whole of health services that prioritizes prevention before treatment. In preventive health services, accompanied by clinical intervention, importance is also given to behavioral and social interventions, and service is carried out at the community level (Basan and Bilir, 2016). The child and family should be informed about appropriate health care needs and resources, such as vaccinations, nutrition, hygiene, how to get medical services when necessary, and even health insurance (Cox et al, 2002; Michael et al., 2015).

The fact that this study covers the entire Kırşehir city center will provide a source for preventive health services to be made for the society at the provincial level. In addition, the interpretation of the study from a

child developmental perspective shows the importance of child development experts who provide services to the individual, family, and society in family trainings to be made within the scope of behavioral and social interventions related to diseases and the necessity of using them more effectively.

The majority of family doctors and pediatricians included in the study stated that diseases occur due to the lack of hygienic conditions for children. The response about hygiene is mostly given by family doctors, which can be explained by the speed at which the improved hygiene conditions affect health positively after the application to the family doctors. Improved health with the improvement of hygienic conditions prevents the accumulation of patients and the progression of diseases, from family doctors to pediatricians, who work in hospitals.

When the other responses given by family doctors are examined; they stated that seasonal changes, weak immune system, inactivity, vaccination, genetic reasons cause children to get sick. Also, only family doctors gave the responses regarding the accidents and deficiencies in routine controls related to the causes of children's illness, because families apply to the emergency services of hospitals in case of an accident, and routine measurements and practices such as vaccination and head stage are widely carried out in family medicine.

When the other responses given by the pediatricians were examined, responses such as air pollution, problems related to the immune system, inactivity, seasonal changes, vaccination, genetic reasons were given. When the responses are examined, it is seen in detail that the reasons for the children's illness are mostly due to environmental reasons, and these reasons mainly focus on the hygiene response. With this finding, this study also provides a gradual determination of the causes of illness in children. In schools, which are the most important environment where children are together and get sick, teachers' knowledge about health such as recognizing common infections (Gündüz, Çizmeci, Kanburoğlu, 2013; Sakar & Açkurt, 2019) and health-related trainings such as hygiene given to children (Balaban, 2011; Köse, Güven, Mert, Eraslan, Esen, 2011; Çelik and Yüce, 2019; Griebler et al., 2017) are also considered important.

Pediatricians mostly responded nutrition in their recommendations to mothers to prevent children from getting sick, and their opinions were also expressed on hygiene conditions, conscious use of drugs, the

importance of routine control, vaccination, correct care practices and dressing appropriately for the season, and paying attention to when to go to the doctor. When the responses of the family doctors were examined, it was seen that hygiene conditions, nutrition, dressing appropriate for the season, the importance of routine controls, pregnancy follow-up, vaccination, correct care practices, allergy responses were given. All of the family doctors and pediatricians within the scope of the study stated that families should be informed about these issues in order for these recommendations to be implemented.

Nutritional deficiency is an issue that needs to be emphasized in the growth and development of children. Adequate and balanced nutrition is necessary for the prevention and treatment of diseases and for increasing the quality of life. Adequate and balanced nutrition is to get enough of each of the energy and nutritional elements according to factors such as age, gender, physical activity, genetics, physiological characteristics, disease status. It is also being able to process and consume the foods that are the source of energy and nutritional elements without losing their nutritional values and making them harmful to health (Şanlıer, 2017). In the study conducted by Ekemen et al. (2019), it was observed that iron, zinc, and vitamin A deficiencies are significant even in healthy children. Many diseases can be prevented with a correct and programmed diet and habits. Pre-school education has an important place for regular eating habits and it is emphasized that the nutrition of children attending pre-school education institutions is scheduled (Kobak and Pek, 2015).

In the study of Kobak and Pek (2015), It has been found that, in nutritional deficiency, children attending pre-school education institutions are more advantageous in parameters such as; time to eat unaided, parents' method of feeding, the method applied when not eating, the type of vegetables that s/he likes, the meat group, the choice of bulgur/rice, the sugar/fat group, the duration of meals, the number of snacks, the reason for leaving leftovers, the habit of brushing teeth and its duration, frequency of diarrhea, constipation, and illness. It can be said that the nutrition (Erdem, Özel, Çınar, Işıkhan, 2017; Aktaç, Kızıltan, Avcı, 2019), and first aid (Şayık, Açıkgöz, Musmul, Ulukuş, 2016) that will be given to mothers in younger children, babies and even during pregnancy will prevent diseases and protect health.

Family doctors and pediatricians reported that families should be conscious of drug use. While 119 (59.5%) of 200 parents within the scope

of the study conducted by Güngör (2019) took their children to the doctor when they got sick, 81 (40.5%) stated that they started medication (antibiotics, antipyretic, cough syrup) first, and the rate of starting medication in mothers without going to the doctor. (42.9%) were found to be higher than fathers (31.8%). In the same study, it was found that as the duration of education increased, the rate of starting medication without going to the doctor decreased significantly. It is emphasized that families need to be informed more about drug use (Bülbül et al., 2014; Güngör, 2019).

One of the important problems affecting child health is the care given to the baby or child. Yiğitalp and Gümüş (2017) determined that in addition to non-harmful practices in baby care, traditional beliefs and practices that are harmful to health are also important, and the rate of traditional practices is higher for women with low education and income levels.

5. Result and Suggestions

As a result of this study, which was carried out in order to determine the opinions and recommendations of family doctors and pediatricians regarding pediatric diseases at the provincial level; most of the doctors stated that children come with complaints of fever and diarrhea, environmental factors are effective in their getting sick, and diseases occur especially due to the lack of hygienic conditions. Further, doctors recommended that mothers should follow the hygiene rules, give importance to dressing appropriately for the season, and give the child the right eating habits. In line with the findings obtained from the study, the following can be suggested;

- Supporting families, children, and teachers at schools with health education regularly and ensuring free access to these trainings,
- Organizing regional studies at the provincial level on child health and development of all employees working for children in different disciplines,
- Giving more importance to preventive health services,
- Carrying out studies in which the active participation of the family and the child is ensured and determining their effect,
- Planning studies to determine the thoughts of families on child health and development,
- It may be suggested to carry out studies on the subject in different provinces.

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Chapter 22

Covid-19 Pandemic and Children

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The Covid-19 pandemic, which is the common agenda of the whole world as of January 2020, can be described as the most serious and dangerous disease of the 21st century (Küçükşen, 2020). In the current period, it is a matter of curiosity how the virus, which is an abstract concept, has an effect on preschool children (Yüksek Usta & Gökcan, 2020).

The coronavirus has caused great changes in the social lives of individuals by showing its effect in all economic or political fields, especially in health. Family members have to stay away from their school or work during this period. Thus, they had to adopt an unusual lifestyle (Özyürek & Çetinkaya, 2021).

The Covid-19 pandemic has harmed the health, social and material well-being of children all around the world (Thevenon & Adema, 2020). Children and adults who continue their normal lives around the world have come face to face with an unprecedented pandemic process. In this process, children and adults had to go out of their normal routines. Every state has made a number of sanctions mandatory for its own people (Pisano, Galimi & Cerniglia, 2020). With the emergence of Covid-19, rapid changes have occurred in the lives of both adults and children. In this process, changes and restrictions in children's daily routines have caused children to experience negative social, physical and psychological situations.

Social Effects of the Covid-19 Pandemic Process on Children

Social phenomenon such as family, education, economy and politics in the society are in interaction with each other and these can be adversely affected by all kinds of disasters and pandemics that may occur in the society (Güngörer, 2020).

It is seen that individuals react differently to changes over against

human life and adapt to changing conditions. The emergence of the pandemic in the world has caused changes in social, economic, cultural and educational dimensions in most countries. This change has caused the routine processes in people's lives to change suddenly (Tarlakazan & Tarlakazan, 2021).

As the coronavirus has become widespread in the world, isolation measures have begun to be taken depending on the existing health policies in many countries. Prevention of the spread of the pandemic is aimed by starting to use applications such as social distance and home isolation. As a matter of fact, the implementations have led to many important differences in the flow of individual and social life and these implementations have affected individuals in all parts of the society in different ways (Akoğlu & Karaaslan, 2020).

While many countries in the world are facing with the Covid-19 pandemic, people's lives, education processes and especially social interactions have been rearranged. With the Covid-19 pandemic, many restaurants, cafes, cinemas, etc. closed and people were quarantined (Hughes, 2020). The pandemic is a universal crisis and it is predicted that the effects of this crisis will be encountered in children for life. This effect of the pandemic will change according to the environmental conditions and the economic situation of the country and will not have the same effect on all children. It is stated that the establishment of international solidarity is essential in order to eliminate all negative effects (unsdg.un.org, 2020). In addition, the need to raise awareness of people about infectious diseases has emerged with the sudden emergence of covid-19. Parents and other individuals in the community need to access exact information and resources about infectious diseases from authorized institutions and their sites instead of unreliable sources such as the internet or social media. Apart from this, parents have another important task. During the pandemic process, parents should inform their children about infectious diseases. Families should help in teaching hygienic practices to protect children from Covid-19 (Li, et al., 2020).

It is necessary to learn what children know and think about Covid-19 and to convey the right information to children. It is of great importance for children to know that they will be provided with environments where they can express themselves and ask questions freely. In addition, children should not be forced to speak unless they feel ready and they do not want to. If children under the age of six have incomplete information

on this subject, informing them about the details of the subject may cause them to worry unnecessarily (Ercan et al., 2020).

Children who have been in quarantine for a long time have been deprived of their friends and playgrounds. This situation has adversely affected the social development of children in developmental age. The changes in the behavior of children who had to spend their time at home and in restricted areas for a long time, were observed more clearly by the educators when they returned to school. Recognizing that children experience negativities at different levels in this process, necessary support should be provided.

Physical Effects of the Covid-19 Pandemic Process on Children

The Covid-19 pandemic process, which affects the whole world, has also directly affected the lifestyle of all humanity (Başaran & Aksoy, 2020). The pandemic has affected the whole world, primarily in the field of health, economy, education, agriculture and socio-cultural life (Başaran & Aksoy, 2020; İnce & Evcil, 2020; Küçükşen, 2020; Onyema et al., 2020; Thevenon & Adema, 2020; Zeybekoğlu Akbaş & Dursun, 2020). Covid-19, which has affected all humanity in the world, is described as the most different disease and pandemic in the history of medicine (İnce & Evcil, 2020).

After the first coronavirus case was seen in Turkey in March and the first death occurred, extensive measures were taken in social, economic, political, administrative, legal, military, religious and cultural areas (Küçükşen, 2020). Coronavirus is a large family of viruses that can cause disease among humans and can be encountered in some animals (cat, camel, bat). Coronaviruses transmitted between animals can change over time and gain the ability to infect humans and in this way, people begin to show Covid-19 symptoms. It can be said that the virus has become a threat to humanity after it has become contagious from person to person (Arslan & Karagül, 2020).

The virus, called Covid-19, causes respiratory diseases in humans. Symptoms associated with the virus can be mild, severe or fatal. Due to the increase in the spread of the Covid-19 virus at close range, taking measures to protect against the virus by increasing the social distance in order to decrease the spread is the main item of the precautionary policies implemented by all countries (Kara, 2020). While the sudden decision to close schools, social distance and quarantine practices, malnutrition among children during the pandemic increase the risk of children being

exposed to domestic violence and of their anxiety level and stress, these decisions reduce access to family and care services as well (Thevenon & Adema, 2020).

Determining the reactions of children in risky situations is of great importance in terms of meeting their needs appropriately and quickly (Akoğlu & Karaaslan, 2020). Due to reasons such as the continuation of the education process of children from home, spending time of children in front of the screen, the lack of social activities and the differences in the lifestyles of children along with the Covid-19 pandemic process can lead to long-term effects on the health of children. The fact that children continue to take calories instead of consuming energy may cause risky situations in terms of obesity in the future (Tar & Atik, 2020).

As a result of the study conducted by Öztürk et al (2021), it was observed that the anxiety level of the parents changed with the emergence of the Covid-19 pandemic, and this situation also affected the children's eating patterns. In the study, it was observed that the anxiety level of parents who were young and had a low level of education was higher.

This negative situation should be prevented by informing the parents about the situations that the children may face in accordance with their level, and also this situation can be prevented by the families paying attention to the diet of the children at home.

Psychological Effects of the Covid-19 Pandemic Process on Children

The Covid-19 pandemic is a major threat to health and the global economy worldwide. Covid-19 disease causes mental disorders such as panic attacks, anxiety and depression by changing the daily routine and triggering the intense fear (Jiao et al., 2020). The fact that the use of masks became mandatory and the concept of social distance emerged during the pandemic process affected individuals in all age groups in the society (Tarlakazan & Tarlakazan, 2021).

With the emergence of the pandemic, it was tried to reduce the rate of transmission of the virus between people by closing the educational institutions. With the closure of educational institutions and the continuation of education online, it is seen that children's socialization environments become limited in this process while they are in contact with their teachers and friends. Restrictions in social areas may result in the affection of psychosocial conditions of children too (Gökçe et al. 2021).

While people face important problems in their daily lives during the Covid-19 pandemic process, the pandemic process has also caused many physical damage. Apart from physical harm in humans, it has brought along a wide variety of problems such as panic disorder, anxiety and depression (Qiu, Shen, Zhao, Wang, Xie & Xu, 2020).

Children may have difficulty in understanding things such as viruses, bacteria and microbes that they can not see. Children can fill the gaps in any uncertainty situation with worst-case scenarios due to their increasing anxiety (Ercan et al., 2020).

In this challenging period when we move away from the normal life, it is necessary for the parents to have good mental health and to maintain their well-being in order for children to go through this process in a healthy way and to get through this process with the least damage. Parents who act in a state of constant and high panic in the home environment can create much more serious anxieties in the mind of the child. For this reason, parents should first know that it is necessary to control their own anxiety levels. The behavior of parents during the pandemic and the meanings they attribute to the disease are of great importance for children (Kurt Demirbaş & Sevgili Koçak, 2020).

Parental roles begin with pregnancy and change in accordance with the child's developmental stages, personality and developmental characteristics, and changing living conditions (Başaran & Aksoy, 2020). It is thought that children may reflect their parents' reactions in the pandemic and be affected by this challenging process and suffer more permanent damage (Ghosh, Dubey, Chatterjee & Dubey, 2020).

In this 0ocess, it is among the important duties of parents to manage the high anxiety situation of children in the best way. In this unusual process, parents are expected to take control of their stress and anxiety levels first and to accept that this stress and anxiety are natural feelings. It is of great importance to overcome this pandemic, which the whole world is struggling with, in a way that will least affect the daily life routine, mental and physical health, family and social communication (MEB, 2020).

Covid-19 Pandemic Process and Education

The Covid-19 pandemic has caused problems in children's education life by creating negative effects in many aspects of their education. With the sudden changes that occurred during the pandemic process, some concerns have arisen in both parents and children. Although educational

institutions made some changes in order to continue education in a healthy way, it was not easy for children with low motivation to continue their education with distance education in this process (Daniel, 2020).

During the pandemic process, extraordinary measures were taken in the field of education, as in every field, and a very rapid transition to the online education system was ensured instead of the face-to-face education (Murphy, 2020). On the other hand, this rapid transition reveals that we need to think more broadly and take precautions not only for the Covid-19 pandemic process but also for extraordinary situations that may be encountered at different times in education. Online learning causes children to stay in front of the screen for long periods of time, makes it hard to use different learning methods and results in a monotonous life and differs from face-to-face education in this sense (Hughes, 2020).

The awareness of educators about how the process is perceived by children is an important factor in preventing the permanent negative experiences that can occur in children and in deciding the social and emotional support that can be given to children. Understanding the feelings and thoughts of children will guide families and educators on how to proceed in this process (Yüksek Usta & Gökcan, 2020).

Teachers should improve themselves, no matter what the circumstances are, by being aware of the existence of the school despite all the difficulties. Teachers should not only improve themselves but they should also develop different methods for students to reveal their potential. Teachers must transform their knowledge into skills and be able to apply them to children (Grammegna, 2020).

The most important thing in the courses to be continued with distance education is to choose an effective communication language and to find the type of information transfer that the student will get the most efficiency from. These should be planned by considering many variables such as the ideal tutorial model (Serçemeli & Kurnaz, 2020).

Basilaia & Kvavadze (2020) suggested to examine and develop teaching methodologies about the tools and platforms which are used in the education process with the start of online education after the pandemic. In the findings of the study conducted by Erol and Erol (2020), in which the experiences of primary school students during the new type coronavirus pandemic process were examined from their parents' point of view, it was determined that students and parents felt fear and anxiety in this process, and students turned to digital platforms to have fun and

spend time with the transition of schools to distance education. However, it was determined that the academic achievement of the students decreased, the parents had difficulty in managing this situation, and they wanted the students to have more frequent communication with their teachers in this process.

It has been stated that asynchronous learning can be used during the pandemic process for children who are accustomed to face-to-face education in classrooms. Thus, while children do not need to communicate at the same time, the pandemic will also create a balance for children participating in online education in different conditions, as it will create an environment of flexibility in preparing children's studies. Children who want to communicate with their teacher will be able to reach their teacher with an online appointment and they can communicate with their teachers more easily about their needs or problems (Daniel, 2020).

Within the scope of the study conducted by Yıldız and Bektaş (2021), in which the change in children's leisure activities caused by the Covid-19 global pandemic was examined, it was stated that there was a decrease in the mobility and socialization skills of children during the pandemic period, and that this decrease may adversely affect the personality and character development of children. As a result of the study, it has been determined that the fear of coming down with disease in the pandemic affects children at a high level, that the transition to a controlled social life by following the precautions can contribute to preventing the negative effects on children, and that family support is important in adapting to social life by minimizing the negative effects on children after the pandemic.

The Covid-19 pandemic reveals that it is necessary to develop more innovative solutions in order to find new ways of thinking about the future of education worldwide. With the innovations brought by the Covid-19 pandemic, it has become the most important goal to ensure that the education to be held with children must be continued uninterruptedly in all countries around the world. Each country is trying to carry out the education process smoothly in line with its own possibilities (Can, 2020).

With the transition to online education instead of face-to-face education, the educational needs of children who could not attend their schools due to the pandemic were met. Children who cannot find the necessary opportunities for online education do not have the opportunity

to learn in the home environment (Thevenon & Adema, 2020).

Covid-19, which has seriously affected all countries in the world and caused significant changes in the life of humanity, has caused some changes in the field of education as in many areas (Kırmızıgül, 2020). It was stated by Kırmızıgül (2020) that teachers should be supported with in-service trainings during and after the pandemic about the problems teachers have experienced and the measures that can be taken to prevent these problems during the distance education process.

With the Covid-19 pandemic, all countries have tried to find different solutions in line with their technical infrastructures in education (Yılmaz, Güner, Mutlu, Doğanay & Yılmaz, 2020). As a result of the study conducted by Çakın and Külekçi Akyavuz (2020), it was determined that teachers had problems with communication, parents and students' learning. In addition, it was determined that teachers do supportive activities as methods of motivating students and encourage them for the future.

Covid-19 Pandemic Process and Families

The pandemic process has affected the family lives of parents and children both positively and negatively (Çelik & Çak, 2021). During the Covid-19 pandemic, preschool children have been one of the most disadvantaged and overlooked groups of children (Katz, et al., 2021). With the sudden emergence of the pandemic process all over the world, families were asked to stay at home. It was a great uncertainty how long this stay-at-home process would last. It has been an unprecedented practice since such an application has not been carried out in any country around the world before. While families included many activities such as school, sports, entertainment, etc. in their normal lives, these activities had to be interrupted due to the pandemic. With the stay-at-home order, families have undertaken a number of tasks to overcome this uncertain period (Szabo, Richling, Embry, Biglan & Wilson, 2020).

When the positive communication within the family is examined in terms of the child's personality characteristics and feeling safe, it has been observed that positive results have been obtained in adapting to the pandemic (Direktör, 2021). With the transition to distance education instead of normal education, parents took new roles in the education process and had to experience these roles first-degree (Bozkurt, 2020). As a result, the ways in which individuals from each age group can make sense of the current process and cope with it differ. Parents have an

important place in making the pandemic process meaningful for children (Demir Öztürk et al., 2020).

As a result of the study conducted by Lawson et al. (2020), it was determined that if parents had a history of maltreatment of their children before the pandemic, they were more likely to apply psychological maltreatment and physical abuse on their children during the pandemic. The pandemic process has shown that depressive symptoms in parents are an important risk factor for child maltreatment. Likewise, similar results were obtained as a result of the study carried out by Sharma, Wong, Schomberg, Knudsen-Robbins, Gibbs, Berkowitz & Heyming (2021). As a result of the study, it is seen that child neglect increases during long-term stay-at-home practices.

While continuing face-to-face education before the pandemic, peer education in children and the support of teachers continued, but this situation was limited with the emergence of the pandemic. In addition, the problems in children's access to technological devices are seen as the most striking problems in this period (Alanoğlu & Doğan Atalan, 2021). It was stated by Roy (2020) that since each child has individual and unique learning situations, learning spaces suitable for each child's needs and an area should be created at home so that children can focus on learning.

While it has been observed that the pandemic has increased the children's risks of maltreatment, exposure to domestic violence and malnutrition, it has also been observed that children have to perform activities outside of their daily routines during the quarantine process and stay away from individuals who support them in the society (Thevenon & Adema, 2020). It was emphasized by Kırmızıgül (2020) that during the pandemic, families should have more interaction and communication with their children and that children should get over this troublesome process in the most seamless way. Akın & Arslan (2021) stated that the active participation of the family in the education process and the teacher's being a guide in all areas are effective in the quality of distance education in the preschool period.

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Section 5: NURSING

Chapter 23

Hospital Infections and Control Methods

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DEFINITION OF HOSPITAL INFECTIONS

Globally, hospital infection (HI) is an event that most commonly occurs during hospitalization and has adverse consequences, such as prolonged hospital stays, increased medical costs, and significant morbidity and mortality rates (Labi et al. 2019).

The concept of HI includes infectious diseases that occur within 48–72 h after hospitalization or 10 days after discharge in a patient who is not in the incubation period and has no signs of infectious disease at the time of hospitalization (Gedik, 2008; Ulutaşdemir et al. 2008).

Infections that originate outside of the hospital and do not have the characteristics of a HI are known as community-acquired infections (Audit Report, 2007).

The term HI is derived from the Latin. In Latin, nosos means disease, komeion means treatment, and nosocomeion means hospital. The concept of HI is expressed as "nosocomial infection", which is a combination of these words. For a disease to acquire the feature of HI, it must appear within a certain period of time after hospitalization. The time required may vary depending on the type of infectious disease involved. This period has been reported as 48–72 h in bacterial infections. Even if the symptoms of a disease occur after the patient has been discharged, these diseases should also be considered as HI since the source is a microorganism that was acquired while at the hospital (Audit Report, 2007).

Hospitals are environments where all microorganisms, especially resistant microorganisms, are concentrated, and are very easily transmittable (Demir, 2013). Although intensive care and burn units are the riskiest units in terms of infection, all units in hospitals can cause nosocomial infections. According to world data, the incidence of nosocomial infections varies between 3% and 17%. This rate is 2–20 times higher in underdeveloped

countries than in developed countries (Demir, 2013).

The reasons why HI is more common in underdeveloped and developing countries can be listed as follows:

- ✓ A high number of patients per nurse.
- ✓ Lack of infection control measures in the treatment and care practices of patients.
- ✓ Lack of up-to-date information and training in healthcare workers.
- ✓ The infrastructure and equipment required to combat HI are not enough.
- ✓ Performing complex surgeries in hospitals with inadequate infrastructure and infection control measures.
- ✓ Too frequent prescription and use of antimicrobial drugs.
- ✓ Lack of adequate communication between clinicians, HI control committees and all other staff and microbiology laboratories.
- ✓ Hospital administrators do not take their HIs and control measures into account adequately.

According to the estimates of the World Health Organization (WHO), approximately 10%–15% of hospitalized patients are experience these infections (Khan et al. 2017).

Recent estimates in the United States suggest that approximately 1 in 25 hospitalized patients in any acute episode will have at least one HI (Mitchell et al. 2018).

More than 2.5 million cases of HI occur in Europe each year, indicating a significant problem resulting in a reduced life span in approximately 2.5 million people (Mitchell et al. 2018).

It has been reported that approximately 100,000 HIs occur each year in the UK and 1% of deaths in the country are directly related to HI, while 3% are related to it indirectly (Audit Report, 2007).

A study in Ghana found a prevalence of hospital-acquired infections of 8.2% (Labi et al. 2019).

HI is one of the important health problems that needs to be addressed in Turkey, as well as in many countries around the world. Although it is not possible to obtain up-to-date and accurate data, it is known that the incidence of HI has been seen at rates varying between 5% and 15% (Audit Report, 2007). Although there are different data on the incidence of HI, it has been reported to vary between 3.1% and 14.1% (Özcetin et al. 2009).

The incidence of nosocomial infections varies according to the country,

the region within the country, and the hospital. Most hospitals have infection control committees. These committees monitor HI rates and make necessary analyses. With the information that is obtained from these analyses, the infection rates and the riskiest units of the hospitals are determined. Then, infection control measures are planned, and necessary training programs are prepared for health personnel, taking into account the physical, personnel, and infrastructure characteristics and needs of the hospitals (Karahocagil et al. 2011).

TYPES OF HOSPITAL INFECTIONS

HI can occur in different ways in terms of the systems it affects in the body and its microbial factors. However, the most common types of HIs can be listed as follows:

- Infections related to the urinary system,
- Surgical site infections,
- pneumonia (lung infection),
- Bacteremia (presence of bacteria in the blood) (Audit Report, 2007).

In a study conducted in hospitals in 10 of the United States, it was determined that the most common HIs were pneumonia and surgical site infection. It has been reported that these are followed by gastrointestinal infection, urinary tract infection and bloodstream infections (Magill et al. 2014).

Microorganisms infecting the body in various ways can cause HIs. These are bacteria, viruses, fungi, and parasites. Considering the frequency of hospital-acquired infections, it was determined that bacteriological infections are the most common infectious agents among all microorganisms. Therefore, HI is understood as bacteriological infections in national and international scientific studies (Audit Report, 2007). In addition, the majority of infection control measures and infection control methods are planned for bacterial infections (Audit Report, 2007).

CAUSES/SOURCES OF HI

Health care providers are at the forefront of infection sources. Bacteria, which are found in hospital workers due to illness or carrier, and mechanically transferred from one patient to another via their hands or belongings, are the most important sources of HIs (Ulutaşdemir et al. 2008).

The causes of hospital infections can be listed as follows:

- **Interventional applications:** Urethral injection, catheterization,

endotracheal intubation, etc., especially surgeries, as well as many other initiatives. In addition, in the interventions made directly into the body, the hand, medical equipment, the environment where the application is made, and the wound cleaning cannot be done adequately and in the desired way.

- Neglecting hygiene rules: Here, the primary responsibility lies with the hospital staff. In addition, patients and their relatives do not pay attention to personal hygiene regulations, the physical structure of the hospital, the tools and equipment used are not clean enough, the disinfection and sterilization processes are insufficient, the personnel working in other services, such as kitchen and laundry, do not comply with the cleaning regulations.

- Problems in the physical structure of the hospital: The building structure and electricity, water, oxygen, etc., in all units of the hospital. The inadequacy of the plumbing systems in providing service in accordance with the hygiene regulations.

- Inadequacy of hospital staff: The lack of sufficient personnel in treatment, care, and support services, especially in health institutions with a high patient density, and at the same time the personnel are not qualified enough.

- Deficiency in the immune system of patients: The risks caused by the primary disease of the patients, the age of the patients, and the presence of underlying chronic diseases other than the disease-causing hospitalization negatively affects the immune systems of the patients.

RESULTS CAUSED BY HI's

Nosocomial infections cause problems such as prolonged hospital stay, increased mortality and morbidity, and prolonged treatment time (Ozcetin et al. 2009).

HI increases the loss of labor because it affects not only patients, but also healthcare workers. Especially in newborns, premature babies, cancer and AIDS patients, and elderly patients, it can also lead to death because their immune system is weak (Audit Report, 2007). HI is an important problem in terms of requiring additional costs apart from deaths, because the occurrence of other diseases related to HI may prolong the recovery period of the main disease, which was the reason for hospitalization. Additional diseases require additional diagnostic procedures, and sometimes it may be necessary to apply different treatment methods. As a result of this, the cost burden may increase depending on the HI. Other factors, such as the economic situation of the country, the size of the hospital, and the type of

service, may also be effective in increasing the cost (Audit Report, 2007).

As explained above, it is noteworthy that the cost of HIs is high and their mortality is significant. However, they are still preventable infections with effective methods (Demir, 2013).

RESPONSIBILITY

HI is an infection acquired in the hospital and has many causes arising from the hospital environment and healthcare professionals. Some of these reasons may be medically normal complications. However, HI caused by the negligence or medical errors of healthcare professionals and institutions is quite high. In addition, the causes of nosocomial infections are often not determined precisely. Even in infections that cause death, it cannot be determined that the cause of death is due to HI. The fact that the deaths from HI cannot be explained definitively may be due to the hospital's management or personnel hiding their HI, the lack of effective surveillance in the hospital, and the patient and patient relatives not complaining.

In Turkey, as in some countries, the absence of an autopsy obligation in the health legislation and the unwillingness of the public to autopsy or the negligence of the hospital management in autopsy, etc., are among the reasons. The reasons listed above make it difficult to obtain official and real data on HIs and inform the relevant people.

CONTROL-CAUTIONS

Control of HIs is possible by following the surveillance results in each hospital, comparing these results with the infection rates of other hospitals, and taking effective infection control measures (Demir, 2013).

In addition to surveillance studies, infection control methods, such as hand hygiene, disinfection and sterilization practices, isolation of patients, and cleaning, are used to prevent HIs (Audit Report, 2007).

Surveillance means the systematic collection of data on the factors affecting the risk of developing a health problem and the determination of the number of HIs observed at certain times. It is necessary to evaluate the data obtained and provide rapid feedback to the relevant persons and units. Surveillance studies form the basis of HI control programs (Audit Report, 2007).

The purpose of a HI control program is to eliminate or minimize nosocomial infections. The first step towards achieving this goal is to maximize the performance of epidemiological studies. Epidemiology refers to studies carried out to determine health-related events in certain societies,

to determine their distribution and causes (İşsever et al. 2020). Epidemiology begins with the description of the characteristics of the cases. A good epidemiological study should produce analyses by grouping people according to various characteristics, such as those with and without the disease, gender, age groups, location, occupation, and education (Ergönül, 2016).

To improve epidemiological studies, continuous observation and follow-up should be made to determine the incidence and causes of HI in hospitals. For the monitoring to be efficient, data collection methods from multiple sources should be used. It is important for the personnel collecting data to be trained in this regard to ensure that the data are sufficient and healthy.

Data to be collected should include administrative data, demographic risk factors, patient history, and diagnostic tests, and the data should be validated. Analysis of the collected information should be done to compare the incidence rates with the information, including the identification and distribution of the causes that cause HI. Feedback should be given to the relevant units of the hospital about the data, and infection control should be expanded after data collection and analysis of the new data.

Committees, management units, and laboratories that protect the privacy of individuals are required for the evaluation of the reliability of surveillance studies and the effective implementation of control measures for HI. In addition, it should be made mandatory to carry out observation and data collection activities at regular intervals, to continue effectively (Khan et al. 2017).

Control of Hospital Infections

Despite significant efforts to control and prevent hospital-acquired infections, it is a fact that more work needs to be done (Khan et al. 2017). Health institutions should establish control programs against such infections. Hospital administrators and all other hospital staff should consider control programs to play a role in preventing nosocomial infections (Khan et al. 2017).

Infection control programs are an important resource for health institutions in the fight against HIs, as well as a mandatory study in accordance with the infection control regulation. While the rate of HI can increase to 10%–15% when no prevention or control studies are performed, this rate can be reduced to as low as 4%–4.5% when a systematic infection control program is prepared and implemented. Although hospitals are obliged to prepare an infection control program according to their own

characteristics, there are no detailed regulations in the relevant regulations. It has been stated in the regulations that an infection control program should be prepared in accordance with the characteristics and possibilities of the health institution, in light of scientific rules, by the infection control committee determined in each hospital. Specifically, infection control physicians and nurses have important responsibilities in the creation and development of infection control programs and working in accordance with the determined targets (Audit Report, 2007).

Isolation practices and standard precautions are the most effective way to prevent the spread of infection between patients, and between healthcare workers and patients. HIs can be brought under control by informing the hospital staff about infections, the reflection of the information on their behaviors, and the attention and competence in the practices (Demir, 2013).

In one study, it was determined that the knowledge of 318 cleaning personnel and caregivers about the prevention of HIs was at a moderate level and training on the subject was useful, but not at the desired level. No correlation was found between the number of trainings received by the personnel participating in the study on preventing nosocomial infections and the level of success in the pre-test. The results showed that the trainings on HI should be reviewed, and the content should be updated and presented in an interesting way (Durduran et al. 2020).

In a study conducted to determine the knowledge level of the health personnel working in the intensive care unit of a hospital regarding the control measures of nosocomial infections, it was determined that in-service training on the subject was needed (Öztürk et al. 2018).

Antimicrobial Use and Resistance

Microbes are organisms that are too small to be seen with the naked eye. Although invisible, they are found all over the world. Antimicrobial drugs are used against microbes that are pathogens. Antimicrobial resistance occurs because microorganisms develop the ability to resist drugs. In this case, they cannot be killed, and their growth does not stop. The following points should be considered when planning HI treatment:

- Appropriate antimicrobial use against the biological agents of HIs,
- To be aware of antibiotic resistance,
- Developing an antibiotic control policy.

Prevention of Hospital Infections

Nosocomial infections, which are an important cause of morbidity and

mortality, should be prevented by considering the main causes and transmission routes, and thus the spread should be controlled. The factors that affect the transmission of HI and the precautions to be taken can be listed as follows:

1- Environmental Factors

An unhygienic environment is seen as the best resource. Many pathogenic organisms predominate in hospital settings. Air, water, and food, etc., can be suitable settlement environments for pathogenic microorganisms. All contaminated environmental factors are an effective way of transmission to patients receiving health care. For this reason, environmental hygiene should be provided in health institutions and these activities should show continuity.

2- Personnel Factor

HIs can be transmitted through health personnel. This problem can be solved by healthcare professionals having knowledge of infection control, taking an active role in this regard, and following personal hygiene regulations. Decontamination can be achieved by using appropriate hand disinfectants in patient care applications. Being in contact with infected patients is an important risk factor for hospital staff. In addition to safe injection practices and the use of sterilized equipment, and protective equipment, such as masks, gloves, and bonnets, healthcare providers should wear appropriate uniforms (Khan et al. 2017).

In a study conducted on the assistant staff of a university hospital, consisting of caregivers and cleaning staff, it was determined that they did not know enough about their responsibilities in preventing HIs and the importance of their HIs (İnfal and Şahin, 2016).

The Centers for Disease Control, headquartered in the United States, reported that hand washing, as a personal precaution, is one of the most important practices in the prevention of HIs (Togan et al. 2015). Between 10% and 40% of HIs have been attributed to cross-contamination of healthcare personnel's hands. In addition, it is recommended that nurses reevaluate policies requiring long-sleeved uniforms to facilitate hand hygiene in military health institutions. Non-military healthcare organizations may also consider the impact of long-sleeved clothing on hand hygiene (West et al. 2018).

In a study in which the practices for the prevention of nosocomial infections in a foundation hospital were investigated, it was reported that the

patients and their relatives were informed about the general measures to prevent nosocomial infections. It was reported that in the hospital where the research was conducted, a hand hygiene compliance program and in-service training was given every three months. It was reported that the employees in the hospital where the research was conducted were included in in-service training programs on hand hygiene compliance every three months. It was determined that isolation methods were applied to the patients when necessary, and some protective measures were taken, such as the vaccination of personnel in accordance with hospital procedures (Yıldırım et al. 2015).

3- Hospital Waste Management

Waste from hospitals can serve as a potential reservoir for the transport and transmission of infections. Hospital-derived waste needs to be handled and disposed of appropriately. Of the waste produced by health institutions, 10%–25% is considered to be hazardous. Waste that is a source of infection should be stored in certain areas with a conscious approach. Wastes containing high heavy metals, resulting from surgeries, contaminated with the blood and sputum of infected individuals, and laboratory wastes should be disposed of in a separate way (Khan et al. 2017).

Conclusion

The resistance that develops as the result of the frequency of HIs and the use of antimicrobial drugs makes it difficult for health managers to fight against it. Infection control committees should keep the topic of HI on the agenda by making systematic and frequent observations. Patient care interventions, designed by taking necessary precautions by infection control committees, are important. A review of antimicrobial use methods to control the transmission of nosocomial infections can reduce the problem of resistance to antimicrobials. Appropriate biosafety training of the hospital, appropriate waste management, staff forms developed for healthcare services, and making hospital staff aware of these endemics can help reduce nosocomial infections.

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Chapter 24

Central Venous Catheters Use in Hemodialysis

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Introduction

Hemodialysis is the process of cleaning the blood taken by a suitable vascular access from excess fluid and waste materials by passing through the dialyzer with the help of a dialysis machine outside the body. In order to provide hemodialysis treatment, 300-450 ml of blood must be supplied to the dialysis machine. An effective dialysis treatment requires a functioning vascular pathway with adequate blood flow. Among the features of the vascular access that supplies the blood to the machine, it is expected to provide conditions such as being easy to create, suitable for comfortable use by the nurse, long-lasting, and aesthetically acceptable. Arteriovenous fistula, arteriovenous graft and catheter are used as vascular access. Catheter use is widely used for hemodialysis treatments and acute vascular access is synonymous with catheter use.

The use of a catheter gains importance when a reliable vascular access cannot be established in many patients for permanent vascular access. Catheters are mostly used in acute dialysis applications, during the maturation of fistulas and grafts, in patients who cannot form an AVF, and in order to perform adequate dialysis without changing the duration and frequency of dialysis by providing maximum blood flow.

Catheter Types

Catheters are designed to provide maximum blood flow, easy placement, and good positioning; usage times vary according to material, length, lumen width and blood flow holes. Hemodialysis catheters have two main lumens attached to two ports (blue and red).

Hemodialysis catheters are mostly in the form of luer locks (wring), and they are produced as combined, completely separate or semi-separate

according to the difference in the tip structure of the catheter. The lumen shapes of the catheters with combined catheter tip vary according to the manufacturer. Two types of catheters are used in practice for HD treatments, tunneled (permanent) and non-tunneled (temporary) catheters.

Non-tunneled Catheters (non-cuffed, temporary)

Non-tunneled catheters are inserted for short-term use; They are usually made of polyurethane and are hard at room temperature to minimize vascular trauma and soften at body temperature after insertion. Non-tunneled catheters should only be used in an emergency and should be removed or replaced with a tunneled catheter at the earliest appropriate time (up to 3 weeks). They can provide an average of 300 ml/min blood flow, which are suitable for emergency use and should not be worn unless needed. Temporary femoral catheters are preferred in hospitalized patients and should not be used for more than five days under the best care.

Tunneled Catheters (non-cuffed, permanent)

Tunneled catheters are placed for use longer than a week and are usually made of an elastic silicone material. Silicone and polyurethane are less thrombogenic than other materials. Tunneled catheters are generally with a polyester cuff positioned 1 to 2 cm from the skin exit site. Tunneled catheters should be preferred, if possible, in all patients whose treatment is expected to last longer than one week.

Catheter lumen width varies between 9-16 French (0.75-2.2mm). The length of the catheter varies according to the inserted person, the region to be inserted and its position. Temporary catheters are generally inserted 15 cm into the right internal jugular vein, 20 cm into the left internal jugular vein, and 20-24 cm into the femoral vein. Permanent catheters, on the other hand, are longer ones when considering the tunnel length; femoral permanent catheters can be up to 70 cm long.

The performance of the dialysis catheter should be capable of providing adequate blood flow and adequate dialysis for a sufficient time in acute and long-term dialysis treatment. The blood flow rate should be aimed to be at least 300 ml per minute. Separate catheter tips minimize recirculation. Thus, recirculation in dialysis catheters is generally negligible. The risk of recirculation increases when the catheter lumens are reversed. The risk of recirculation is higher, especially in femoral catheters that are not of sufficient length.

Patients Who Can Be Preferred for Tunneled Catheter

- Incident patients (patients who do not have a vascular access but will start new dialysis treatment)
- Patients waiting for the vascular access to mature
- Predominant patients (patients with vascular access problems during hemodialysis treatment)
- Patients with contraindications for AV fistula opening (such as severe heart failure)
- Patients with severe pain due to steal syndrome in the arm with vascular access, peripheral ischemia, serious problems with needle puncture
- Patients with a low life expectancy on hemodialysis, such as disseminated cancer patients
- Patients in whom other vascular access methods cannot be applied successfully
- Patients who have exhausted all other options
- Patients waiting for arteriovenous fistula and graft maturation
- Patients waiting for a living donor transplant
- Patients expected to use a peritoneal dialysis catheter.

Advantages of Dialysis Catheters

- Their placement is widely applicable
- Potentially many different area can be used
- Does not require continuous venipuncture for dialysis treatment
- No maturing time, can be used immediately
- No short-term hemodynamic effects (e.g. change in cardiac output)
- The placement technique is relatively easy, and the cost is low.
- Reliable vascular access option for patients awaiting AV fistula maturation.
- There is a possibility of intervention in the development of thrombosis.

Disadvantages of Dialysis Catheters

- It has high morbidity due to the risk of thrombosis and infection.
- There is a risk of permanent central venous stenosis or occlusion.
- May cause discomfort due to being outside of the body
- It is short-lived compared to other vascular access routes.

- Low flow rate can cause insufficient dialysis and long dialysis session.

Catheter Placement

Catheters are inserted percutaneously by the Seldinger technique by nephrologists, general surgeons, anesthesiologists or radiologists. In practice, a strictly aseptic environment should be preferred, and maximum barrier precautions should be taken, consisting of a bonnet, mask, sterile gown, sterile gloves and sterile large drape, while inserting the first catheter or changing it over the guide wire.

Guidelines recommend inserting catheters under ultrasound guidance and, if possible, using fluoroscopy. The use of ultrasound is effective in locating the vein and especially in preventing arterial punctures. Fluoroscopy is recommended in terms of placing the catheter tip in the best area and ensuring maximum blood flow. The tunneled catheter tip should be at the atriocaval junction or within the right atrium. Right atrial placement is recommended only for catheters made of soft and conformable material such as silicone. After the catheter is inserted, its location should be determined by chest x-ray and then, dialysis treatment should be started.

If possible, permanent catheters should not be inserted on the AVF side that is expected to mature. It is preferred that the catheters can provide a continuous blood flow rate of 350 ml/min and the arterial pressure should not be lower than -250 mm/Hg.

Veins Used for Hemodialysis Catheters

The right internal jugular vein is the first-choice vein for temporary and permanent catheterization, while other veins are located in the left internal jugular vein, external jugular veins, femoral vein, subclavian vein, and the translumbar and transhepatic tract as the last choice in tunneled catheters.

The right internal jugular vein is preferred because it is a straighter route and its complications (arterial puncture, hemothorax, etc.) are less than other regions. In current guidelines, insertion of a catheter into the subclavian vein is not recommended due to the high risk of stenosis.

Starting Dialysis of the Patient with a Catheter

Catheter preparation for initiation of dialysis treatment can be done either sterilely or with a non-touch technique. The catheter can be prepared in sterile technique for hemodialysis by using the kits in which all materials are sterile and readily available. Non-touch technique can be used in

institutions where ready-made kits are not available. In this technique, the catheter and its lumens should be touched with sterile gauze. Gloves should be changed at the necessary stages of the catheter dressing.

Required materials

- Gloves
- 2 masks
- 5 ml injectors (2 pcs)
- 10 ml injectors (2 pcs)
- 10 ml syringes filled with isotonic (2 pcs)
- Antiseptic solution
- Sterile gauze or solution-impregnated wipes
- Plaster
- Emesis basin/tray
- Apron and glasses

Steps of the Starting Process of Hemodialysis

- The hemodialysis machine is prepared for dialysis and the patient is placed on the bed in the supine position.
- Before the application, hands are washed with antimicrobial soap.
- The nurse wears protective equipment such as gowns, masks and glasses, and the patient wears a mask.
- If the catheter dressing is covered with a semi-permeable transparent dressing, since the dressing will be renewed every seven days, the catheter lumens are opened and cleaned, and catheter preparation begins. If sterile gauze is used to cover the catheter insertion site, the dressing should be renewed at the beginning of each dialysis session.
- Gloves are worn, and the catheter site is opened in a way that it can be worked easily, the old dressing is removed, and the catheter exit site is evaluated for infection, and a swab sample can be taken at this stage. If a semi-permeable transparent dressing is used, the skin should be observed and evaluated.
- Gloves are removed, hands are cleaned with aseptic solution and sterile gloves are worn. If non-touch technique is to be used, gloves are worn and the catheter is touched with gauze.
- Catheter exit site is wiped from the center outward with an antiseptic solution wipe or sterile gauze with antiseptic solution.
- Catheter lumens are cleaned with antiseptic solution gauze; The

clamp is opened and pushed forward, the lumen length and under the clamp are cleaned and clamped again. This process is done with separate gauze for both lumens, a sterile cover is placed under the lumens without touching the skin.

- After the antiseptic solution dries, the catheter insertion site is covered with sterile gauze or a semi-permeable transparent cover. Dirty waste is removed.
- Gloves are removed, hands are cleaned with disinfectant solution and sterile gloves are worn.
- Make sure that the arterial clamp is closed, remove the cap, clean it by rubbing with antiseptic solution gauze (especially products such as blood) and insert a 5 ml syringe, open the clamp, heparin solution in the catheter as long as the lumen and additional 0.5 ml blood are drawn and the clamp is closed.
- The same procedure is applied for the vein lumen.
- Blood sample can be taken at this stage (except for coagulation tests)
- Arterial and vein lumens are checked with two separate 10cc injectors and clamps are closed.
- If it is in the protocol of the institution; With two separate 10-20cc injectors, isotonic solution can be given to both lumens as give/pause.
- The injector at the end of the artery is removed, connected to the arterial set, the klemp is turned on and the machine pump is started (according to the protocol of the institution, the sets can be expected to fill with blood, or the direct method can be used).
- After removing the syringe at the end of the vein and checking whether there is air in the vein line, the line is connected to the catheter and the clamp is opened.
- It should be checked that both lumens are well connected, covered with a sterile drape or each lumen is wrapped with sterile gauze.
- The blood pump is turned on from 100 ml/min, if there is no contraindicated problem, it is increased to 200 ml/min and arterial and venous pressures are recorded.
- The artery and vein line are fixed by taping or clamping to the patient's clothing or bed.
- Catheter bandages and all waste are disposed of in medical waste.
- Hands are washed with soap and water and disinfected with alcohol-based disinfectant to ensure effective hand hygiene.

Ending Hemodialysis of the Patient with a Catheter

Required materials

- Gloves
- 2 masks
- Emesis basin/tray
- 2.5 ml syringe with 2 lumen-length locking solution (heparin, citrate) drawn
- 10 ml injectors filled with isotonic (2 pcs)
- Sterile gauze or solution-impregnated wipes
- Antiseptic solution
- Plaster

Steps of the Ending Process of Hemodialysis

- Hands are washed with soap and water and disinfected with alcohol-based disinfectant to ensure hand hygiene.
- The table where the materials will be placed is cleaned with a disinfectant that is in accordance with the institution's protocol.
- The nurse and patient wear masks.
- If ready-made kit is used, the kit is opened, gloves are put on and the process continues.
- During the treatment, the sterile cover and/or gauze pads surrounding the lumens are opened.
- The catheter is held with sterile gauze and a sterile cover is placed under it, and each lumen of the catheter is wrapped with a separate sterile gauze and antiseptic solution.
- The machine pump speed is reduced (according to the institution's protocol) and the pump is stopped, and the arterial line clamps are closed. If exit blood is to be taken, it is taken at this stage. The set is separated from the arterial line, and the isotonic filled syringe is immediately attached to the lumen tip, the lumen is washed, and the clamp is closed.
- After the glove is changed and the blood return process in the machine is completed, the same procedure is applied for the vein lumen.
- 2.5ml syringes filled with the right amount of lock solution (heparin, citrate) are attached to the end of the lumens, the clamp is opened, the solution is slowly introduced into the lumen and the clamp in the lumens is closed. Typical instillation volumes are 1.2- 1.8 mL for short non-tunneled catheters and 1.9-3.1 mL for larger tunneled catheters.

- The empty syringe is removed, the lumen ends are cleaned separately with gauze and antiseptic solution, and a sterile stopper is attached to the tip.
- Catheter lumens are wrapped with the catheter pouch or sterile gauze included in the kit and taped with a plaster.
- Catheter bandages and all waste are disposed of in medical waste.
- Hands are washed with soap and water and disinfected with alcohol-based disinfectant to ensure effective hand hygiene.

When the catheters and dressing are opened before each dialysis, the entrance must be observed for possible complications. Attention should be paid to purulent discharge, bleeding, and erythema at the entry site in terms of catheter, tunnel, and port site infections. However, it should be taken into account that catheters can cause systemic infections as well and signs and symptoms should be monitored at each dialysis session. If necessary, blood samples should be taken for laboratory tests. All changes seen in the catheter must be recorded in the patient file end of the session.

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Chapter 25

Total Hip Prosthesis Surgery and Nursing Care

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INTRODUCTION

Total Hip Prosthesis (THP) surgery is applied to decrease the limitation and pain in daily life activities of individuals as well as improve joint functions and quality of life (Australian Institute of Health and Welfare, 2007). The hip joint is replaced bilaterally with an artificial joint in THP surgery (Smeltzer et al. 2010). Hip prosthesis is used in cases such as coxarthrosis, rheumatoid arthritis, femoral neck fractures, developmental dysplasia, and avascular necrosis (Smeltzer et al. 2010; Kumar et al. 2020). Total hip surgeries can be performed with open or laparoscopic methods. Although the rehabilitation period of the laparoscopic method is shorter, the condition of the patient and the severity of his/her condition are decisive in the choice of the relevant method (Tokem and Taşdemir, 2015). There are different prostheses preferred for THP surgery. Skeletal structure and the movement level must be evaluated in the selection of the most appropriate hip replacement for the patient. Although total hip prosthesis surgery is mostly applied to the elderly, it is also applied to young patients who have severe damage to the hip joint (Yavuz, 2017).

1.NURSING CARE AFTER TOTAL HIP PROSTHESIS SURGERY

The purposes of nursing care after THP surgery are to enable the patient to reach the optimal level of independence in daily life activities, facilitate adaptation to the new condition, provide drug management, and avoid possible complications (Balkan and Seki, 2021; Büyükyılmaz and Özdemir, 2018). Some of the possible nursing diagnoses are acute pain, deterioration in physical mobility, changes in bowel functions, lack of self-care, anxiety, risk of traumas, risk of bleeding, risk of deterioration in tissue perfusion, and

risk of deterioration in skin integrity (Burucu and Durmaz, 2020; İlçe, 2021).

Multimodal analgesics must be used in pain management, the patient must be given a comfortable position, support must be provided for mobilization, and information must be provided to yim/her regarding the causes of pain and the use of auxiliary equipment (Burucu and Durmaz, 2020). Non-pharmacological methods such as cold application, distraction techniques, and listening to a music preferred by the patient can be used to provide pain control. An ice pack wrapped in a towel must be used for 20 minutes for cold application. It must be applied around the incision site for a period of time; and nurses must evaluate the effectiveness and side effects of analgesic methods (Australian and New Zealand College of Anaesthetists and Faculty of Pain Medicine, 2020;Aslan and Korkmaz, 2021; NAON, 2018).

The patient must be taken to standing position at the most appropriate time in the scope of ERAS protocols to provide physical mobility. Mobilization is important to maintain muscle strength, gastrointestinal and urinary functions, accelerate circulation, increase lung capacity, and make the patient feel well (Fındık Yıldız, 2017). The most important factors that limit the mobilization are pain and fear of falling (O'Donell and Dolan 2018; Nagai et al. 2018). The conditions avoiding mobilization must be eliminated, ROM exercises must be applied in bed, extremity exercises, and position change must be ensured to be mobile for patients, who must be physically active by creating a walking program out of bed. Activity intolerance may develop secondarily to intraoperative blood loss, advanced age, and prolonged immobilization. The signs of activity intolerance must be monitored in the patient, and rest periods must be considered (Fındık Yıldız, 2017; Koç et al. 2014).

For reasons such as inadequate hydration, limited activity, use of opiates, etc., the bowel habits of the patient may change. It must be recommended to increase fluid intake, consume fibrous foods, stay active, eat prune, regulate defecation times, apply bowel massage, not to delay defecation as much as possible, and use laxatives to avoid constipation if these are not contraindicated (Smeltzer et al. 2010; NAON, 2018).

Regarding the risk of trauma, environmental safety must also be ensured, the patient must always be supported and motivated during mobilization and informed about how to use legs in physical activities such as in walking and climbing stairs (Burucu and Durmaz, 2020). Necessary precautions must be taken regarding the risk of falling. Patients may

experience orthostatic hypotension because they experience blood loss during surgery and are usually mobilized 24-48 hours after their surgery. It is important to monitor the amount of drainage and the fluid taken-excreted carefully, to raise the head of the bed before standing up, to sit in the bed for some time, and to dangle the feet and then to stand up (if it can be tolerated), and to replace the blood losses with transfusion (İlçe, 2021; Fındık Yıldız, 2017). Patients must also be told that they must not take a shower alone until they feel safe in the home environment, use a non-slip mat in the bathroom, and take a shower while sitting down (NAON, 2018). Patients must also be supported by a nurse or a physical therapist in the selection and use of assistive devices after their surgery (Yavuz, 2017).

Vital signs, drainage, hemoglobin and hematocrit values, and urine output must be monitored against the risk of bleeding. Findings such as hematoma at the incision site, presence of blood on dressing, and change in consciousness also provide information about bleeding. More than 250 ml of drainage and bright red drainage in the first 8 hours indicate active bleeding. When it is suspected that there is bleeding, the surgeon must be informed, oxygen therapy, intravenous fluid replacement, and blood transfusion must be performed when required. The nurse must also check the extremity vitality every hour in the first postoperative 24 hours. Normal capillary refill time, pulse, pain, edema, movement, sensation, skin color, temperature show that tissue perfusion, and muscle and nerve functions are good (Smeltzer et al. 2010). If a tourniquet was applied during the surgery, more care must be taken regarding the evaluation of peripheral pulse (Fındık Yıldız, 2017).

Anxiety may develop because of the surgery, post-operative addiction, loss of function, and inability to manage the treatment. Lack of knowledge must be eliminated, breathing or relaxation exercises must be taught and applied, and relaxation methods such as meditation, daydreaming, and music must be suggested to manage anxiety. The level of social support must also be evaluated, and the contributions of family members must be discussed for patient care. The opinion of a doctor must be sought about when to start sexual life safely (NAON, 2018).

Complications that occur secondarily to infection, dislocation, Deep vein thrombosis, pressure injury, and immobilization may occur after THP (İlçe, 2021). Patients must be informed about the symptoms of hip dislocation are pain, shortening of the leg, and internal or external rotation etc., and the nurse must observe during the follow-ups. The patient must be informed about the avoidance of movements that will cause 900 flexion of

the hip to avoid dislocation. The patient must be supported by a pillow between the legs, and it must be said that the patient must keep the sleep abduction pillow between the legs, except for walking to ensure abduction of the leg. Fracture bedpan must be used for defecation and micturation. Patients must also be informed that they must avoid driving and taking a bath during this period. Depending on the surgical approach, patients must be warned not to cross their legs and not to bend over the ground (wear socks, pick something from the ground, etc.) in the first 4 months. Patients must also be informed that they must make some changes in their daily lives (using a European-style toilet, not crouching, etc.) (İlçe, 2021; Smeltzer et al. 2010). It must be stated that the home environment must be organized to avoid 90 degree hip flexion in patients (Tokem and Taşdemir, 2015).

Deep vein thrombosis and embolism symptoms e.g. redness, tenderness, edema, pain, dyspnea, chest pain, etc. must also be monitored. The use of compression stockings, early mobilization, use of low molecular weight heparin, implementation of foot-leg exercises providing in-bed mobilization and venous return, increasing the time spent outside the bed, providing hydration are nursing interventions applied to avoid the development of thrombosis and embolism if these are not contraindicated (Burucu and Durmaz, 2020; İlçe, 2021; Smeltzer et al. 2010; Mori et al. 2017). Physical therapy exercises must also be initiated to avoid DVT on the first day after the surgery (Tokem and Taşdemir, 2015).

Patients must be evaluated regarding all types of infections before THP surgeries. Appropriate skin preparation must be performed to avoid infections, surgery room environment must be ventilated with a hepafilter system, and surgical asepsis must be followed with care. Since elderly, obese, malnourished, diabetic, those with rheumatoid arthritis, comorbidities, and hematomas are at risk for infection, infection screening must be performed carefully in these patients (Yavuz, 2017). The infected prosthesis must be surgically removed in case there is a prosthesis infection (Smeltzer et al. 2010). Although the use of drains is not recommended in Total Hip Prosthesis patients (Tandy, 2019), antibiotics must be used in patients who have drains (if any) against the risk of infection, the nurse must perform wound care with standard dressing under aseptic conditions, evaluate the drainage, ensure body hygiene with the patient's participation in self-care, and monitor any sign of infection. A culture sample must be obtained when there are signs of infection. Dressings must be avoided from being contaminated with body fluids such as feces and urine etc. (Burucu and

Durmaz, 2020; Özer, 2021; Fındık Yıldız, 2017). Patients must also be warned that pets must be kept away from the incision area at home and dressing must be changed as instructed (NAON, 2012; Yavuz, 2017).

The risk of pressure injury must be evaluated, necessary precautions must be taken, and skin care must be provided to the patient. The nurse must take care to maintain the abduction of the leg to avoid dislocation when turning the patient in bed (Smeltzer et al. 2010).

General anesthesia, immobilization, and postoperative pain prepare the group for the development of pulmonary complications (e.g. atelectasis, pneumonia, etc.) (Hedenstierna, 2012; Smeltzer et al. 2010). The patient must be alert regarding the symptoms such as change in respiratory rate, fever, or cough (Smeltzer et al. 2010). Breathing, coughing, and balloon inflation exercises must be performed by patients, and spirometry must be used to support pulmonary functions and avoid complications (Kotta and Ali, 2021; Kızılcık Özkan et al. 2021; Mori et al. 2017). The nurse must monitor and detect complications regarding the slippage of the prosthesis, excessive wound drainage, thromboembolism, infection, pressure ulcer in the heel, bone formation in the periprostatic area, avascular necrosis, loss of prosthesis, and immobility after THP.

2.DISCHARGE EDUCATION AFTER TOTAL HIP PROSTHESIS SURGERY

In discharge training, information must be provided on topics such as supporting protein-rich nutrition to accelerate recovery, home wound care and dressing change, symptoms of wound complications (infection, separation of the wound edged, etc.), pain management, drug use, management of comorbidities, possible complication symptoms, and in which cases patients must be admitted to hospital, restricted activities, and the importance of physician follow-up must be provided to nurses as well as informing them about nursing diagnoses (Smeltzer et al. 2010). It must be emphasized that surgical nurses should know the importance of weight control during home care, the necessity of consulting a doctor, and carrying an implant card in the presence of symptoms of complications (e.g. dislocation, infection, deep vein thrombosis, pulmonary embolism, etc.) (Yip, 2018). Return to work might take an average of 4-6 weeks. However, a decision must be made about starting work by meeting with the physician according to the work situation of the patient (NAON, 2018). It must be said that patients need an average of 4 weeks to return to sexual life safely (Rondon et al. 2020). The patient must be informed about the precautions

that must be taken (NAON, 2018). The importance of sharing the THP history with all healthcare staff must also be emphasized for the use of prophylactic antibiotics when required (Tokem and Taşdemir, 2015). Consultancy must be provided to patients regarding the rearrangement of the home environment regarding physical barriers (Yavuz, 2017). In addition, the patient is given clinical contact information and an outpatient appointment is set (Yavuz van Giersbergen and Ter, 2021).

Close follow-up of the patients in the early period, informing the surgical nurses, providing discharge training, and reducing the body mass index of the patients play important roles in avoiding the development of complications (Balkan and Seki, 2021). Patients should be called within 5-7 days (Yavuz van Giersbergen M and Ter N. 2021). It is recommended to pay home visits to maintain the care of the patients at home, evaluate possible problems, and support wound healing (Yavuz, 2017).

CONCLUSION

Total Hip Prosthesis patients need a good preoperative preparation and a holistic nursing care after the operation. Necessary precautions for possible complications and risks in the postoperative period should be taken by the surgical nurse. Patients should be discharged as soon as possible with good post-operative nursing care. Patients should be prepared for the home care process with comprehensive discharge training.

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Chapter 26

Benefits of Breastfeeding for Infant and Maternal Health

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THE IMPORTANCE OF BREASTFEEDING

Breast milk is the natural first food for newborn babies. Provides all the energy and nutrients a baby needs in the first six months of life for up to half or more in the second half of infancy and up to a third in the second year of life. Breast milk is a unique nutritive composition that is formed to feed infants. Even though it is being implied that infant formulas and follow-on formulas are equivalent to breast milk, they contain such a fixed and limited number of substances that breast milk is fairly superior by far. Breast milk is an irreplaceable substance which enables infants to survive and grow up healthily and contains both nutritive composition and non-nutritive bio-active elements. It contains not only a composition of nutrients arranged peculiar to development stages of infants and to the period in which milk is produced but also a variety of cells and elements with bio-active characteristics. These are anti-infectious and anti-inflammatory agents, growth factors and factors including prebiotics (Ballard and Morrow 2013).

Breast milk is the most suitable form of food for the nutrition of newborns and infants regarding its content. Breast milk contains thousands of different bio-active molecules that protect infants against infections and inflammations, helps immune system to mature, to develop body parts and systems, and contribute to the formation of a healthy microbial colonization. Some of these molecules, for example lactoferrin, are defined as novel therapeutic agents. Feeding pumped breast milk, pasteurized donor milk, and in some cases frozen milk has grown popular in recent years. However, once breast milk, is subjected to heat treatment including freezing, the proteins contained in breast milk no longer feature the same bio-activity characteristics. Breast milk is a dynamic body fluid, and it changes from colostrum to late lactation milk stages in all developmental phases from the birth of the infant through each feeding, each day, and differs by mother (Allen and Hector 2005).

It is accepted that only breastfeeding for the first six months and continuing on additional breastfeeding for 1 to 2 years is vital for infant nutrition. Breast milk in general, and the breast milk of any mother, in particular, is unique for their own infants due to the fact that it contains bio active elements which aid the survival of infants and supporting their healthy development. Unlike the infant formulas that are standardized within a fairly limited range of compositions, the composition of breast milk is dynamic and differs across women and populations during feeding, on a daily basis, and during lactation. Particularly, it is crucial to understand the characteristics of breast milk to meet the necessities of high risk and sensitive neonates.

Breast milk has particularly been proven to have an important role in preventing neonatal and childhood infections in both underdeveloped and developed countries. However, the recent studies have indicated that breast milk protect individuals from a plurality of disorders in increased ages and in the long term (Allen and Hector, 2005).

BENEFITS OF BREASTFEEDING FOR INFANT HEALTH

It is possible to protect infants and children from infections by breastfeeding.

With the impact of the compounds with antimicrobial effectiveness such as immunoglobulins, macrophage, granulocyte, T and B lymphocytes, lysozyme, C3, C4, breast milk may suppress bacteria such as Vibrio cholerae, Escherichia Coli, Staphylococci, Hemophilus influenza and Helicobacter pylori, and viruses such as Rotavirus, Hepatitis C, Cytomegalovirus (CMV). Therefore, the infants fed with breast milk can be protected against sepsis, bacteremia, meningitis, respiratory, urinary, and gastrointestinal tract infections, and allergic diseases. IgA antibodies contained in breast milk suppress bacterial and viral retention in mucosa The amount of IgA that the infants only fed with breast milk receives is far higher than the Ig amount introduced to a patient diagnosed with hypogammaglobulinemia for prophylaxis (Giray 2004).

The studies conducted on infectious diseases have shown that breastfeeding is protective against lower and upper respiratory tract infections, gastro enteritis and middle ear infections in infancy and the later periods. In a meta-analysis of the studies conducted in developed countries, it was detected that the infants fed with formulas had 3 times as much respiratory problems as the infants which are only fed with breast milk for at least 4 months (Bachrach *at al* 2003).

A Stronger Immune System:

Breast milk not only contains appropriate nutritional substances for physical development of infants but also has an important role in building and supporting their immune systems.

A great amount of easily absorbable nutrients, antioxidants, immune substances, and live antibodies of mother are transferred to infants through breast milk. Mature immune system of a mother produces antibodies to protect herself and her infant against microorganisms, and these antibodies are transmitted to the infant by means of breast milk, ensuring the infant is protected against diseases. These protective substances contained in breast milk encircle an inner wall of the infant's intestines, preventing allergens and microorganisms from transmitting to the infant's body (URL 1).

These antibodies are high in amount in the colostrum which is the first postnatal milk to be formed. Additionally, antibodies are found in breast milk throughout the period in which the mother continues breastfeeding. Due to these antibodies, the mother can be cured to an extent from her previous infectious diseases and protected against the current ones likely to be transmitted during breastfeeding. Breast milk is comprised of other proteins, lipids, sugars, and even white blood cells that battle against infections in many different ways as well as the antibodies coming from the mother. Firstly, breast milk protects against gastrointestinal infections as it goes into stomach and intestines. Different elements contained in breast milk serve only in intestines without being absorbed. These elements pave the way for the establishment of a protective and balanced immune system that will identify and combat infections and other diseases even after nursing has ended.

Other elements such as lactoferrin and interleukin-6, -8 and -10 present in breast milk directly stimulate and support the immune system. These proteins allow balancing inflammatory reactions that are required for immune system functions but can be harmful to the body if they are unnecessarily excessive in amount. It has also been proved that antibodies of the mothers vaccinated against COVID-19 are transmitted to their babies by means of breast milk. Even though it has yet to be proved, these antibodies can aid in protecting infants that are too young to get vaccinated. Recent studies have shown that COVID-19 mRNA vaccination antibodies, which can be potentially transmitted to infants fed for protection, are found in breast milks of the vaccinated nursing mothers. There is a need for further studies to determine how these antibodies protect the infant (URL 2).

The current evidence indicate that the Coronavirus is not transmitted by means of breast milk. The advantages of breastfeeding outweigh the potential risks of the COVID-19, and it even protects the infant and mother (Lubbe *et al.* 2020). Breast milk protects infants against infections due to immunological and antibacterial characteristics of breast milk. The infants fed with infant formulas are more prone to infections because these formulas are deprived of these characteristics. Recently, it was found out that breast milk also protects infants against urinary system infections. (Allen and Hector 2005). In a prospective study conducted in Sweden, it was seen that the rate of pyelonephritis cases in the infants fed with breast milk for a long period of time, particularly until the first seven months was less than that of the infants fed with formulas. The effectiveness of breastfeeding against urinary infections was determined to be higher in the first months (Mårild *at al* . 2004). In a study conducted, the risk of acute pyelonephritis in the infants only fed with formulas for the first six months was higher than those fed with breast milk only (Lee *et al.* 2020).

Early And Late Gastrointestinal Disorders:

Diarrhea, constipation, gastroenteritis, gastroesophageal reflux, and preterm necrotizing enterocolitis (NEC) are seen less in the infants fed with breast milk.In a meta-analysis study, a plurality of evidence was indicated that breastfeeding is fairly effective against diarrhea incidence, prevalence, hospitalizations, diarrheal mortality, and all-cause mortality. The most evident result of this study is that the incidence of diarrhea in 0-5 months old infants and less than 6-23 months old infants that are only fed with breast milk was less than the infant fed with less breast milk in the same periods, while the risk of mortality in the infants that are not fed with breast milk was higher. The studies have shown that the glycans that contains free and conjugated oligosaccharides present in breast milk is a part of natural immunological mechanism protecting the infant from diarrhea. Furthermore, the infant fed with breast milk is not subjected to the contamination which occurs when formulas are being prepared (Lamberti *et al.* 2011).

Covering the inner wall of intestines with a protective layer, breast milk inhibits the incidence of necrotizing enterocolitis. Breast milk has been proved to prevent the incidence of enteral food intolerance and necrotizing enterocolitis in the infants with low-birth weight. In several randomized control studies conducted by Rodriguez *et al.* 2005, it was found that the infants fed with formulas had two times as much the incidence of Necrotizing enterocolitis (NEC) as the infants fed with donated breast milk

(Ramani and Ambalavanan 2013). Artificial nutrition in infants accelerates the incidence of Coeliac disease and poses a risk for Crohn's disease and ulcerative colitis that may develop in the increased ages (Giray 2004). Some studies show that a decrease is seen in the prevalence of rotavirus diarrhea in the infants fed with breast milk while others hold total opposite opinions. In a meta-analysis conducted, it was concluded that there is no direct correlation between feeding only with breast milk and the incidence of rotavirus infections in infants (Shen *et al* 2018).

Respiratory Diseases

There is a less risk of pneumonia, respiratory syncytial virus and pertussis diseases in the infants fed with breast milk. The immunoglobulin G (IgG) antibodies that are developed by breast milk against aspiratory syncytial virus are transmitted to the infant through transplacental or breast milk, protecting the infant against this infection. Breast milk can enable infants to overcome pertussis, which is a fairly infectious upper respiratory tract infection, due to its immune system boosting characteristics even though it is not completely protective against the infection (Mazur *et al* 2019; Pandolfi *et al.* 2017). In the last trimester of the pregnancy, it is found that the infants fed with breast milk only are better protected than the infants of the mothers with pertussis vaccination (Nascimento *et al.* 2017).

Some viral diseases that the children with immunodeficiencies went through in their childhood can be permanent in the advanced ages, and they are believed to cause neoplastic diseases. The most common one of these diseases is the Epstein-Barr virus that causes lymphoma. In a study conducted, it is indicated that the prevalence of lymphoma is less in the infants fed with breast milk for six months and longer (Giray 2004).

Children aged six-month and under 2 years have a higher risk of otitis media infections. Ear infections are caused by bacteria and viruses. Many times, an ear infection begins after a cold or other respiratory infection. *Antibodies in breast milk prevent ear infections when the baby is exclusively breastfed for the first 6 months and breastfed until 12 months of age (URL1).* Breastfeeding may prevent ear, throat and sinus infections in the infancy and childhood (Li *et al.* 2014).

Less prevalence of Covid-19 infection in infants can be explained with the protective effects of breast milk for long years. In a sample consisting of the infants applying to emergency clinics with the symptoms of potential COVID-19, it was found out that the prevalence of positive results of SARS-CoV-2 RT-PCR tests of the infants fed with formulas only was higher than

the infants fed with breast milk (Verd *et al.* 2021).

The risk of neonatal and child mortality in both underdeveloped countries and developed countries is quite high particularly due to diarrheal diseases and acute respiratory infections. As it contains protective substances, breast milk reduces the risk of mortality in these diseases. The risk is highest for diarrheal disease and acute respiratory infections. In a study in which infant mortality in Latin America and the Caribbean was examined, it was indicated that the rate of mortality was 66% in 0-3 months old infants, 32% in 4-11 months old infants, and 13% in all of the cases where the infants were fed with breast milk (Betrain *et al.*2001).

When the amounts of immunoglobulins that the infant receives from the mother at delivery fall, it is possible to improve the newborn's immunological health by supplementing breast milk with cytokines and immunoglobulins. Even if the exact reason is not known, the risk of sudden infant death syndrome (SIDS) is less in the infants fed with any amount of breast milk and in any period of time. The rate of protection against the SIDS is found to be higher in the infants fed with breast milk (Byard 2013).

Breast milk supplies not only abundant and easily absorbed nutritional components but also antioxidants, enzymes, immune properties, and live antibodies from the mother. The antibodies produced by the mother's immune system protect herself and her infant from the microorganisms to which her infant is exposed. These antibodies go into breast milk to help protect the infant from the disease. The Immunoglobulin A inhibits the transition of microorganisms and allergens by covering the intestinal mucosa of the infant's immature intestines. Furthermore, breast milk also includes substances that help newborns relax naturally (URL 1).

The Advantages of Breastfeeding in Childhood, Teenage and Adulthood:

Childhood diseases are less seen in the infants fed with breast milk. It was found out that breastfeeding for ≥4 months only reduces the risk of eczema at the age of 4 years regardless of combination with asthma, sensitivity to common allergens, or parental allergy. Breastfeeding reduced the incidence of eczema development before the age of 2 at most. Breastfeeding has also been shown to have a protective effect on children with an early-onset eczema, late-onset asthma, or early-onset asthma, which is followed by late-onset eczema for up to 4 years.

Breastfeeding for 4 months or more reduces the risk of eczema and the onset of allergies up to the age of 4. (Kull *et al.* 2005).

Childhood cancers, leukemia, and lymphomas are less common. Immunoglobulins in breast milk protect the baby against viral infections, including Epstein-Barr virus, which causes lymphoma. In a meta-analysis study, it was determined that breastfeeding was associated with a reduction of 9% for acute lymphoblastic leukemia, 24% for Hodgkin's disease, and 41% for neuroblastoma (Martin 2005).

Delayed transition to bottle feeding may have a protective effect against childhood obesity. Full breastfeeding significantly reduces the risk of obesity (Ortega-Garcia *et al.* 2018).

Breastfeeding also prevents the development of some diseases that may develop in adulthood. Obesity and Type 2 diabetes are less likely to occur in the individuals fed with breast milk. It has also been suggested that faster postnatal growth in the infants fed with formula will program the development of metabolic cardiovascular risk factors, including type 2 diabetes. The infants fed with formulas have a higher insulin concentration, which leads to beta cell failure. Breast milk contains high content of long-chain polyunsaturated fatty acids (LCPUFAs). These substances increase the level of LCPUFA in the infant's cell membranes. It is also reported that the increased level of LCPUFA in the skeletal muscle membrane are inversely proportional to fasting glucose (Ortega-Garcı´a *et al.*2018).

Adolescents and adults who were breastfed in infancy also have a reduced risk of developing allergic and autoimmune diseases such as rheumatoid arthritis, lupus, multiple sclerosis, heart disease, and postmenopausal breast cancer.

BENEFITS OF BREASTFEEDİNG FOR MATERNAL HEALTH

Breastfeeding the baby after birth also provides many benefits for the mother.

Postpartum Bleeding and Lactational Amenorrhoea:

Since breastfeeding increases the release of oxytocin, it reduces the risk of postpartum hemorrhage in the mother. Prolactine suppresses ovarian functions that prolongs the time to return to fertility (Arage and Gedamu 2016). Specifically, exclusive breastfeeding has been shown to prolong the mean duration of lactation amenorrhea in the mother compared to mixed feeding or longer breastfeeding (Chowdhury *et al.* 2015).

Losing Weight:

Breastfeeding prevents obesity and prevents high blood pressure as it

increases postpartum weight loss Postpartum residual weight increases the mother’s risk of future obesity and cardiovascular disease of mather . Breastfeeding can increases postpartum weight loss, reducing the risk of type 2 diabetes and cardiovascular disease, however, strong evidence on this topic is lacking Long-term breastfeeding reduces the risk of diabetes 2 in the mother by 9% (Chowdhury *et al.* 2015) .

The Effect of Breastfeeding on The Psychological State of The Mother:

Breastfeeding produces the natural soothing hormones oxytocin and prolactin, which reduce stress and evoke positive emotions in the nursing mother,increases self-confidence and self-esteem. A breastfed baby is calm, cries less, and gets sick less, which supports the mental health of the mother and family. It increases physical and emotional bonding between mother and baby, encourages skin-to-skin contact, and meets the need for mother and baby to cuddle (URL-1).

Postpartum Depression:

Studies shows that there is no evidence of a decrease between breastfeeding and postpartum depression. However, a positive emotional state develops in the mother who breastfeeds her baby (Chowdhury *et al.* 2015). Oxytocin and prolactin hormones, which have a role in milk secretion and production, have an effect on postpartum depression. The levels of these two hormones were found to be low in women with postpartum depression. High levels of prolactin reduce anxiety. Likewise, oxytocin hormone increases with touch, smell and positive emotional stimuli. The warmth, body contact, smell and communication between mother and baby during breastfeeding reduces the mother's stress. The risk of depression in mothers who bottle-feed their babies was found to be quite high compared to those who breast-fed their babies (Özkan 2014 ; URL 1)

Mezzacappa and Katlin evaluated the mood of mothers before and after feeding their baby and found that there was a decrease in the negative emotions of breastfeeding mothers after breastfeeding, and that the negative emotions of bottle-feeding mothers increased after the baby was fed (Mezzacappa and Katlin 2002).

Ovarian and breast cancer risk:

Breastfeeding reduces the risk of breast and ovarian cancer (Arage and Gedamu 2016). While the risk of ovarial cancer is 17% in mothers who

breastfeed their babies for the first six months, this risk is 95% in women who have never breastfed. Chowdhury et al. (2015) Results from studies show an inverse relationship between breastfeeding and ovarian cancer risk. In women who cumulatively breastfeed for 12 months, the risk of breast garcinoma is reduced by 26% (Chowdhury *et al.* 2015).

Effect on osteoporosis:

Calcium and bone metabolism are significantly affected during pregnancy and lactation. Therefore, the calcium requirement of the mother increases during pregnancy and lactation. Bone density decreases by 3-10% in a healthy mother (Chowdhury *et al.* 2015).

CONCLUSION

Nutrition with breast milk supports the growth and development of the baby with the nutrients and bioactive substances it contains and protects against infections and allergens. Children and young people who are breastfed for a sufficient period of time are also protected against diabetes, obesity and cancers of viral origin.

Breastfeeding also prevents postpartum hemorrhage in women, protects against obesity, breast cancer, contributes to the protection of the psychosocial health of the mother.

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Chapter 27

Persuasive Communication

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Persuasion Process

Communication is the mutual interaction formed through verbal and non-verbal messages between sender and receiver in order to correspond, to concert, or to solve a problem. Feelings and thoughts are expressed through non-verbal messages. Basic skill for a happy life is communication (Yalçın 2019). During persuasion process, however, it is ensured that an individual believes in a subject, creates a new attitude towards this subject, or changes his/her existing attitude. Persuasion is generally defined as the effort to change an individual's idea by drawing his/her attention, in academic studies (Baumeister and Finkel 2010, O'Keefe 2005). Examining common properties of these definitions, persuasion can be described as source individual's, receiver's or target's effort to create a positive attitude towards a certain situation (Demirtaş 2004).

Persuasion makes people positively affect each other when they properly express themselves. Successful persuasion is important for success in social acceptance and social relations (Kaptan 2015). Actions taken and reactions given on how to behave in certain situations are determined by individual's communication skill. Those who know how to effectively listen to the source of message and who successfully express themselves as they know themselves understand other people. Since this communication is a proper interaction, it is also a persuasive communication (Okur *et al.* 2013).

There is a parallelism between communication and persuasion. Main difference between persuasion and communication is the creation of message with a conscious intention during persuasion process. During persuasive communication, it is not possible to talk about convincing people by force. Direction by punishment and threat is likely during

persuasion process which uses force. And yet, being able to be understood and expressing oneself is the fundamental condition of persuasive communication, it is intended to build trust and thus to create a change in attitude by this way. Trust is the foundation of persuasive communication, which has significant impacts in the field of economy in particular (Taillard 2000).

Persuasive communication is realised in order to make other person believe in new situation in his/her feelings and thoughts. First study on this topic began with Allport (1935) who stated the importance of attitudes in social psychology through his effort to understand and explain the situation where an individual can influence others with his/her personal traits. Attitude is an individual's inclination towards approaching or avoiding a situation (Yalçın 2019). Since social psychological explanations related to attitudes describe an individual's behaviour within his/her interaction with his/her social environment, they are important for providing benefit in many fields.

Many attitudes form as a result of direct experience with attitude objects. The attitude may contain positive and negative components (Olsen *et al.* 2005). In many studies, attitude sources are described as natural and environmental sources (Fiske *et al.* 2010). An individual's desire to change the direction of attitude assessments has led to the emergence of attitude change and persuasion research. In social psychology, various studies have been conducted in the field of persuasive communication. In the context of Turkey, it has been explained in conceptual framework in chapters and books written on this subject (Bilgin 2000, Kağıtçıbaşı 2012, Gökçe 2003).

According to Brembeck and Howell (1952) persuasion is the act of changing human behaviours by influencing his/her desires and thoughts in order to achieve predetermined results. According to Hovland (1953), persuasion is the cognitive process composed of messages which convey mutual affection elements between source and recipient. With regard to message preparation and exchange, when recipient is convinced, learning, attitude change and behaviour change occur.

Aim of persuasion process is to teach message by paying attention to it, to accept message and to affect individuals' choices. Eventually, reaction suitable for the situation develops (Perloff 2010).

Stages of Persuasive Communication Process

These stages are examined in six phases according to the properties of the situation when an individual is persuaded.

- Drawing attention of receiver through delivered message (Presentation of message),
- Focusing attention
- Grasping subject
- Accepting or rejecting
- Recording (Attitude change)
- Reaction (Behaviour)

Factors Affecting Attitude Change in Persuasive Communication

Özodaşık (2012) states that persuasive communication covers all elements of a normal communication process, such as source, message, channel and receiver. Properties of these factors affect success of communication.

A) Source

Physical properties such as age, gender, length and personal traits of source individual affect the beginning of persuasion process, its progress and consequence.

Properties of Source

Reliability

It is receiver's tendency towards source. By this way, the source creates social impact. Reliability is important in persuasive communication in terms of drawing attention to the message and ensuring continuity of the subject.

Expertise

Source's high educational level and power of social impact is his/her state of being respected in general. Sources with a high level of expertise give more confidence and have high level of persuasion.

Physical Attractiveness

Physical properties of the source, his/her message delivery method and how he/she expresses himself/herself have an impact on receiver. First action is very important in the formation and continuance of an attitude. The halo effect is automatic reaction one person creates on other people.

Liking

When receiver sees resemblances with the source, appreciation, interest and intimacy level increases. The higher liking is, the more positive social influence and thus persuasion level increases.

Intention

When the source is perceived as a person who does not try to influence others for his/her own sake, who thinks of others, and who is honest, his/her messages are more influential on the other party. The manner of delivering a message is very important. Vibrant, fluent and clear voice increases effectiveness of communication and reinforces mutual trust. Interesting and emotional words, natural expressions, and elements of open communication are examples of persuasive language. Individuals understand each other better thanks to this open communication established.

Table 1: Examples of words used in persuasive language

Great	Fabulous	Excellent
Perfect	Extraordinary	Unique
Single	Authentic	Respected
New	Brand new	Young
Dynamic	Modern	Quality
Powerful	Special	Fast
Quick	Easily	Guarantee
Convenient	High	Expert
Trust	Satisfied	Limitless
Customer	Participant	Extra Discount
Pioneer	Leader	Surprising

B) Receiver

Gender, social status, personal traits, intelligence, self-confidence of receiver is influential on his/her affection level from the message. Women and men are interested in different subjects, and thus subject they are affected are also different. Language as a means of thinking ensures an individual's perception and comprehension (Zıllıoğlu 2000). In perception, a meaning is given to incidents and objects. During mutual interaction, receiver evaluates messages according to his/her perception style, and therefore the message sent may be interpreted differently, based on the receiver's traits (Reobuck 2009). The individual accepts or rejects messages delivered to himself/herself accordingly, and develops a

reaction (Tutar and Yılmaz 2002).

Properties of Receiver

Authoritativeness

When people are status and power oriented, messages they present are more reassuring and persuasion process occurs more easily, due to their social influence.

Anxiety

Those who have difficulty in decision-making since they are anxious comply with persuasion messages at low level.

Personal Traits

Since individuals with dependent personality have low self-confidence, they accept persuasion messages more easily, while those with independent personality are more resistant to these messages.

Social Approval Need

Individuals with social approval need more easily accept persuasion messages, and therefore they increase their compatibility. Individuals with sufficient self-confidence are not in such a quest.

Self-esteem / Trust

Individuals with low self-confidence are more easily persuaded. Since they are not sure about their own truths, they need others' suggestions. Those with high self-confidence are not easily persuaded. They show resistance on the accuracy of their own ideas.

Intelligence

An individual's adaptation to his/her environment and learning skills affect his/her reaction to persuasive communication. Individuals who can adapt to their environment and have problem-solving skill are more affected from messages with rational aspects.

C) Message

Another important property of persuasive communication is the formation of message. Situations like ineffective listening and not focusing on emotions between the source delivering the message and the receiver lead to misunderstandings and difficulties in communication. In case of different points of view, the receiver shows resistance to not

accept the message. By advocating for the accuracy of his/her own information, he/she shows that he/she does not want the message.

Properties of Message

Fear Appeal

Powerful messages with fear appeal are more easily accepted. However, fear appeal creates adverse effects only when supported with emotional elements.

Quality of Argument

Clearer and straightforward persuasive messages are important for affecting the other party. When presented and supported with information details, they draw attention and are perceived as more powerful and qualified.

Messages with rational appeal aim to draw attention by concentrating on the receiver's rational thoughts. Vibrant messages draw more attention and thus are remembered more easily.

Generalisation and incorrect simulations must be avoided in messages with rational appeal. On the other hand, positive emotional properties are influential in messages with emotional appeal, which invoke emotional properties of the receiver. Messages' creating fear effect and bearing negative elements is not appropriate ethically.

Empathy is the act of reflecting oneself to the other party, and thinking like him/her. In this process, there is an effort to be able to understand inner world of the other party. In emphatic communication, it is important to be able to understand feelings and thoughts of the other party and to be able to convey this situation to him/her (Yalçın 2019). Messages which try to explain oneself and to give importance to the other party have positive effects in communication.

Table 2: Feelings in persuasive messages

Negative Feelings	Fear	Anger	Hatred	Distrust	Selfishness
Positive Feelings	Reliable	Happy	Intimacy	Love	Tolerance
Social Feelings	Crime	Honour	Timidity	Social Approval	Helpfulness

Basic Persuasion Techniques

Variants related to source, message and receiver are effectively used with basic persuasion techniques, and thus persuasion process is facilitated, accelerated, and eventually successful communication is established.

Basic Techniques Frequently Used in Daily Life

The "Foot in the Door" Technique

According to this technique, the source makes a request which does not enforce the source in the first place, and then requests are presented consecutively and ever-increasingly (Fern Monroe and Avila 1986, Weyant 1996).

The receiver, who positively responded to the first request, complies with ever-increasing requests and shows an effort for acceptance (Burger and Guadagno 2003).

The "Door in the Face" Technique

Unlike the previous technique, bigger request is made in the first place, and the interaction progresses with a decline in requests and the receiver's acceptance of this situation (Bilgin 2000, Sakallı 2001). Tussing and Dillard (2000) explain this technique as mutual affection of individuals, development of responsibilities on being sympathetic to each other's interests, reverse guilt, and feelings and thoughts of regret.

According to this technique, social responsibility effect is described with an individual's benevolence behaviour. When the first request is big, it can be refused by the receiver without thinking, and yet, since a smaller request made later on evokes one's social responsibility feeling, he/she is obliged to accept this request.

Cialdini (2001) explains persuasion power of this technique with perceptual opposition principle. For example, a child asking for a week's holiday from his/her mother reduces this period to two days as a result of his/her request's not being accepted. The mother evaluates this request as a short period of time and approves it.

The "Law-Ball" Technique

According to this technique, the receiver is firstly presented with an offer that he/she cannot refuse, and later on the offer gradually becomes more favourable until the stage the receiver accepts it. For example,

appearance, colour and convenient price of a dress are praised, and an attraction between this cloth and the customer is ensured. Afterwards, a complete look is formed with the same colour jacket and accessories, and the dress is sold to a price the customer has never thought of in the first place.

In this technique, where the condition of a bigger request comes after a small request is not sought, only verbal acceptance is taken into evaluation after the initial request (Sakallı, 2001).

The “That’s Not All” Technique

In this technique, before having his/her opinion, some changes that may be attractive for the customer are made on the point that the customer will be persuaded. In the “door in the face” technique, the target is presented a smaller request after the rejection of the initial request. In the “that’s not all” technique, however, options that the target can accept are presented (Sakallı 2001).

The “Yes-Yes” Technique

According to this technique, an individual cognitively approves the necessity of a situation, and needs the subject shared.

For example, the customer is asked questions that he/she may likely say yes, that consecutively provide acceptance opportunities for the receiver, and that leave main goal of product sale to the very last (Larson 1995). For example, an association employee may use this technique by consecutively asking questions about an individual’s safe life in the future, while trying to convince the other party for membership. After gaining sufficient trust, he/she may finally ask “We would like to be with you. You would also like to be with us, wouldn’t you?” And then, the decision of the other party is expected. The individual with a sense of social responsibility is ready to say yes. As these questions are consecutively asked and the receiver cannot make a new evaluation in this short period of time, he/she accepts it in a hurry.

The “Don’t Ask If, Ask Which” Technique

In this technique, without asking his/her opinion on the subject, the target is directly presented with options, and he/she is expected to be persuaded with his/her own choice (Larson 1995). For example, the target wants to be with his/her friend who does not want to see the target, and the target wants to persuade his/her friend on this matter. Instead of

asking him/her to meet and being rejected, the target want to make his/her friend approve it by asking questions. For example, after asking "Are you available to meet on either Tuesday or Wednesday?", he/she lines up options "Do you want to meet in my office? Is 10.00 OK for you?" Therefore, without allowing his/her friend to say no, the target makes him/her accept his meeting request.

The "Ask Question with a Question" Technique

When persuasion process does not continue successfully, the target person, who cannot form his/her messages as desirable as possible since he/she does not have sufficient preparation on this matter during communication, uses this technique in order to gain time for thinking.

This technique directs the receiver to reply, and sometimes to explain his/her own feelings and thoughts. For example, the receiver makes the source individual gain time to revise his/her message through messages "What are your thoughts on this matter?" or "Could you explain it again?" (Larson 1995).

The "Planting" Technique

Main aim of this technique, which is frequently used in advertising in particular, is to make an impression in individuals' minds by influencing them. For example, with frequent use of messages such as "Different taste" "Brand new presentation" these properties of the product occupy the receiver's mind through perceptive associations (Larson 1995).

The "Getting a IOU" Technique

Getting a IOU technique underpins the behaviour of a sales person, who tries to find the skirt model that suits the most to his/her customer's figure. The customer, who sees the sales person's effort and behaviour, feels himself/herself indebted (principle of reciprocity) and obliged to choose one of these products.

The "Throw a Ball" Technique

In this technique, the target is presented with attractive conditions such as the product's exclusiveness and very convenient price. Then, the target sees the product more positively and develops a connection (Cialdini, 2001). And yet, during payment, it is told that the product is, in fact, not that price, that it was mislabeled, and the price is completely different with additional products. In this case, the individual does not

buy the product or shows acceptance behaviour under every condition. This technique, which is not thought to be ethical, is not used widely.

CONCLUSION

Understanding persuasive communication is important in social terms. Formation and change of attitudes, persuasive communication is the research subject of social psychologists. Importance of this topic and limited studies conducted in Turkey expresses the need for new studies. Objective of persuasive communication is to create behavioural change with a conscious intention. In daily life, since most people try to persuade others to form new attitudes about certain objects and to change their reactions, understanding this process with new research is important for the continuation of healthy interpersonal relations in social life.

Empathy develops through successful persuasion, people tend to understand and accept each other, and sensitivity strengthens. Subjects that cannot be understood are clarified through effective listening and mutual understanding, development of cognitive processes such as perception and focus is achieved, effective listening is ensured, and appropriate behavioural change is experienced through learning. Through accumulation of knowledge, attitude change can be achieved on certain subjects not known correctly, and positive social behaviours strengthen with mutual responsibility feeling.

Persuasive communication targets to achieve better understanding among individuals and to regulate effective interpersonal relations. In this process, necessary methods are devised to ensure positive reaction against desired attitude object. With successful techniques, it is likely to achieve attitude changes with appropriate attitude evaluations in necessary situations.

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Section 6: HEALTH MANAGEMENT

Chapter 28

Health Services and Hospitals in North Macedonia During the Ottoman Empire

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INTRODUCTION

The Balkan Peninsula; With its geographical location, climatic characteristics and living conditions, it has hosted many civilizations from ancient times to the present. This geography is a crossing point between Europe and Asia. Various tribes such as Thracian, Illir, Turan (Turkish) origin Scythian (Saka), Hun, Avar, Cuman (Kipchak), Bulgarian, Pecheneg and Western and Eastern Roman, Persian, Slavic and Ottoman Turks have settled in Macedonia throughout history. These tribes living in this geography have left their traces here. For example, the city named Kumanova, which is named after the Cuman Turks and is the third largest city in the country, in North Macedonia today. (Kumanova, https://www.google.com) The region passed under the rule of the Ottoman Turks in 1389. In Macedonia, during the Ottoman Empire, new cities and foundations were established, schools and hospitals were built. In this study, information and visuals about the historical process of Macedonia and the historical artifacts left by the Ottoman Empire, which ruled here for more than 500 years, the health services it provided and the hospitals it built, are included.

HISTORICAL PROCESS OF MACEDONIA

In the north of Hellas, there are three states that have always been in constant interaction with the Greeks. These are Epeiros, Thrakia and Macedonia where the Illyrians are located. In ancient times, the Kingdom of Payonya was located in Macedonian territory. (Green, 2005,319), (Roisman, 2010, 13), (Strabo, Book 7, Frg. 4), (Bauer, 2007,518), (Willkes, 1966,49), (Sealey, 1976,442), (Evans, 2007, 13), (Borza, 1992,74-75), (Lewis, 1994,723-724), (Boardman, 1982, 284), (North

Macedonia, https://en.wikipedia.org/)

According to ancient sources, Macedonia is a mountainous geography surrounded by the Strimon and Haliakmon Rivers to the north of Thessalia. In the lower region of Aksios (Vardar), there are productive commercial products with the capital Pella. Macedonians, BC. Starting from the 12th century, they settled as tribes around the Haliakmon River (Vardiça) Valley, Strimon (Struma) Orestis and Elimeia and lived in this region for many years, allowing the region to be recognized as the Macedonian Geography. To the south of the Heliakmon River is the Pieriya Highlands and its center, the city of Pidna. To its west lies Elimeya in the central part of Haliakmon. In the upper part of Haliakmos, there is Orestis. On the seaside, on the Khalkidakia Peninsula, there are two large gulfs, Strimon and Terma, and many well-protected harbors. The most well-known of these ports is Terma (Thessaloniki, Thessaloniki)

M.O. During the 12th century migration, the Dorians came to the north of Hellas. Then the Macedonians, perhaps somewhat related to the Thessalians and Epeiros, first occupied the Haliakmon (Vardiça) Valley and spread from there to the Strimon (Struma) River. The first settlements of Macedonians were Orestis and Elimeia in South Macedonia.

Although the Macedonians who settled in the mentioned regions continued their existence in this geography for centuries, it was not easy for them to establish a state. Macedonians, who formed a large population in the region as a result of migrations, shaped their state functions as a tribal society for a long time. Macedonians began to settle in the vicinity of Aigai, which is close to today's Thessaloniki, after 1200 BC. The emergence of a state phenomenon in the real sense is BC. It dates back to the 7th century. From that date on, it was ruled by a king of the Argead dynasty. I. Perdikkas, the first known founder of the Argeiad Dynasty, known as the Macedonian Dynasty, and the Macedonian State, laid the foundations for the transition from a tribal understanding to a monarchical state structure.

In ancient times, the Pelagones were settled by the Paionians in the Vardar basin in North Macedonia, centered on Lower Strymon, next to the Macedonian peoples. They were said to have been inhabited by the Illyrian (Ohrid-Prespa) peoples while in the western region. During the Late Classical Period, Paeonia became a constituent province of the Kingdom of Macedonia.

This new state of the Balkan Geography BC. Until 359, he did not follow an active politics and preferred to deal with his own internal affairs. However, the fate of this small kingdom was determined by the BC. II in 359. It changed when Philippos came to power. Heading to the geography of Hellas, III. Alexandros struggled with the Greek city-states and was victorious in his wars. II. Philippos made the Balkans and Hellas accept his political superiority and made Macedonia the leader state of the region in a short time. He proved his power against the Greek troops and ensured the tranquility in the region. (Yalçın, 2014)

In 356 BC, II. Philip annexed Upper Macedonia and southern Paeonia to the Macedonian kingdom. (Hugh, 2000, 14) In 336, Alexander the Great ascended to the throne as the ruler of the region. The First (215-205 BC) and Second Macedonian Wars (200-197 BC) are important in terms of showing that the region was also valuable at that time. .(North Macedonia, https://en.wikipedia.org/wiki/)

Alexander the Great captured the rest of Paeonia to reach the Scupi region, but Scupi and its environs remained under Dardani rule (Giorgio, 1967,77), (North Macedonia, https://en.wikipedia.org/wiki/). In the 4th century, Athens severely threatened Macedonia, and in the ensuing war, Alexander defeated the Athenians. None of them, including the Greeks, the royal dynasty of Macedonians, were of Greek origin. The Greeks claimed they were "Barbarians". Herodotus argued that the Macedonians were a Greek tribe. The Athenian orator Demosthenes described them as a barbarian people (Yalçın, 2014, 132). The Macedonian state and social structure was very different from that of the Greeks. In addition, the Macedonian dialect, although of Greek origin, was under the influence of the Ilirian and Thracian languages and could not be understood by the Greeks. The center of Macedonia was in the V and IV. It has been the city of Pella for centuries. II. In the time of Philip (Philippos, 359-336 BC), Macedonia became the greatest power in the Balkans and dominated a significant part of the Greek cities. Alexander the Great (Alexandros III, 356-323 BC) continued his father's occupation policy.

Asian, Indian and European Scythians (Sakalar) ruled in Asia and Europe and ruled by Confederation; They also lived in the northern Black Sea, in Europe and in the Balkan geography. German archaeologists date the existence of the Scythians to 250 000 BC, according to the results of the carbon tests they conducted on the finds unearthed in the Arjan-I and Arjan-II Kurgans in Siberia. The most famous khan of the European

Federation of Scythians was Ateas. Known as a brave warrior, the Scythian king Ateas tried to expand the western border of the Scythians, especially the Macedonian king II. He fought long wars with Philip in the Danube River basin and BC. He died in 339 during a war they fought near the Danube. (iskitler (sakalar in Turkish), ttps://tarih34.com/), (Durmuş, 2007,62-64,86-88), (Durmuş, 1997,49-52),(Durmuş, 1996, 178), (Potratz, 1963, 14), (Vernadsky, 1943,74), (Memiş, 2000,32), (Ak, 2000) As a result, some of the Scythians settled in Dobruca, known as "Little Scythia" in the Danube region (Durmuş, 2008: 201-202). II. After the death of Philippos, his son Alexander the Great ascended the throne.

The Scythians, on the other hand, took action again upon the death of Phillip II and advanced to Thrace. Alexander wanted to protect his northern borders before crossing into Asia. He advanced to put down several rebellions in the spring of 335 BC. Starting from Amphipolis, he went east to the land of the "Independent Thracians". Triballi advanced to his country and defeated the Thracians near the river Lyginus, a tributary of the Danube. He then crossed the Danube River and encountered the Getae tribe. He crossed the river at night, surprising them and forcing their armies to retreat after the first cavalry clash. (Alexander, https://tr. wikipedia.org/wiki/%C4%B0skender),(Öztürk,Dacia, https://ozhanozturk. com). Along the Tanais, native tribes attacked and killed Macedonian soldiers (Arrianus, Alexandroi Anabasis, IV, 1). Upon these attacks and rebellion, seven cities were captured by Alexander the Great. When the last city was captured, a force of Asian Scythians reached the shores of Tanais. This force came to the region with the intention of participating in an attack against the Scythians, Alexander the Great and his soldiers. They constantly provoked Alexander the Great. Alexander the Great had rafts prepared from skins to cross the river. However, when the offerings showed that this war attempt would result in negative results, Alexander the Great gave up on this attempt. When the Scythians continued their provocations, Alexander the Great decided to attack them. However, he was careful not to make the mistake of Darius. When all the leather rafts were ready and the army had lined up on the riverbank, the catapults began to fire at the riding Scythians. However, due to their war strategy, the Scythians drew circles around the small attack force by shooting from a horse instead of attacking directly. Then they galloped to a safe distance. Thereupon, Alexander gave the order to advance against the Scythians. Again, the Scythians retreated into Scythia due to their war

strategy (Curtius Rufus, VII, 6, 13-23. 18 Don River), (Herodotos, Historia, IV, 120-130. Also see Durmuş, 2017: 113-114; Memiş, 2018: 42-44). As a result of the chase in the extreme heat, Alexander the Great and his soldiers were very thirsty and Alexander himself had to drink all kinds of water he could find in Scythia. However, the waters were not clean, and Alexander the Great suffered from severe diarrhea with a sharp pain in his stomach (Arrianus, Alexandroi Anabasis, IV, 4). Plutarch says that Alexander the Great continued to chase the Scythians despite having diarrhea. Alexander the Great ultimately made the mistake of Darius. He did not advance further and tried to turn back, but the Scythian army completely destroyed the Macedonian army by ambushing it on its way back. This defeat, which the Scythians inflicted on the army of Alexander the Great, was one of the few defeats that Alexander the Great experienced during his rule. In fact, he lost his entire army only as a result of his struggle with the Scythians. The Scythians won the struggle with Alexander the Great (iskitler, https://www.turktarihim.com/Iskitler.html), (iskitler (sakalar), ttps://tarih 34.com/iskitler-sakalar-_h349.html,09 May 2013). Macedonian king Alexander the Great defeated the Persians in the Asian campaign (334/333 BC) he organized against the Persians. When Alexander the Great pursued the fleeing Persian king and commanders, he encountered the Asian Scythians after crossing the Oxus (Ceyhun) river. This first encounter was quite hostile, and Alexander was showered with arrows and spears, wounded, unsuccessful, and defeated by the Scythians. Alexander the Great died in Babylon in 323 BC not long after this expedition. He reigned 13 years of his 33-year life. Therefore, can a 13-year reign be called an empire? The Iran-India expedition was not a conquest, but a long-term military expedition. In the IV century, the Balkans and thus Macedonia came under the rule of the Hun Turks (Saatçı, 2009, 1, 2). Hun Turks, Avar, Bulgarian, Kipchak, Pechenek Turks followed and settled in this region (Castellan, 1995,364).

Scythian/Saka Turks period: European Scythians (Sakas); From 1300-1200 BC, they descended to the northern Black Sea, the interior of Europe and the Balkans, the Carpathians and the Danube region, and the Peloponnesian Peninsula in the south, and lived there, including Athens, Crete and the Peloponnese (Demir, 2020, 177-218). Scythian king Atheas, Macedonian king II. He fought long wars with Philip in the Danube River basin and BC. He died during a war in 339 BC. Before the eastern expedition, Alexander the Great fought with the European Scythians and

lost his whole army against the Scythians and saved his life. During his eastern expedition, he encountered the Asian Scythians around the Ceyhun River, was defeated in the war after his attack, and he himself benefited. Balkan region, 13. Until the 16th century, it was the scene of the raids of Turkish tribes from the north (Horata, 1997, 1864), (Horata, 2003, 160).

Persian Period: At the end of the 6th century BC, the Persian Achaemenid Empire under the command of Darius I seized the region, and the Macedonian region was occupied by BC. It remained under the Persian Empire between 510-479 (Howe & Reames 2008, p. 239.), (Roisman, 2011, 135-138, 342-345.), ("Persian influence on Greece (2)". Archived from the original on 28 December 2016. Retrieved 17 December 2014.) After the failure of the second Persian attack on Greece, the Persians left their territory in Europe, including the territory of Macedonia (North Macedonia, https://en.wikipedia.org/wiki/ North_ Macedonia)

Roman Period He made an alliance with Hannibal against the Roman Empire of Philip V, King of Macedonia. Then, at the end of the Macedonian wars that started with Rome (214-205, 200-196, 171-168 BC), the Kingdom of Macedonia was abolished and Macedonia came under the rule of Rome. After that, the Macedonians began to be romanized and this process left a lasting impression on the Macedonians. (Kuzey Makedonya, (2021). https://tr.wikipedia.org/wiki/), (Toynbee, 1969,80,99-103), (Jovanonv,1999, 25-29), (Blackwell, 2011,551), (Mekodonlar, https://www.wikiwand.com/tr/)

In 146 BC, the Roman Empire established the Macedonian Province. By the time of Diocletian, this province was divided into "Macedonia Prima" ("First Macedonia") in the south, covering the ancient kingdom of Macedonia, and "Macedonia Salutaris" in the north, which covered all of Paeonia and part of Dardania, that is, most of the territory of the present Republic of Macedonia. The city of Stobi was the capital of the region. .(Roisman, 2010, 18-21). During the reign of Domitian (81-96 AD), the Scupi region passed under Roman rule and was attached to the province of Moesia Superior (Scopje, Encyclopædia Britannica, 2008). The region, which was connected to the state of Moesia in 300, left this state in 326. (North Macedonia, (2021). https://en.wikipedia.org/wiki/), Latin spread in Macedonia in the eastern part of the empire (Christidis, 2007,351). Macedonia remained in the Eastern Roman (Byzantine) Empire in 395

AD. In 1014 II. The Byzantines under Basileios defeated the army of the Bulgarian king Samuil and destroyed the Bulgarian kingdom. Within four years, the Byzantines regained control of the Balkans, including North Macedonia, in 1018 (Kuzey Makedonya, https://tr.wikipedia.org/wiki/). Macedonia, AD.III. It was the scene of the raids of the Sarmatian and Germanic tribes from the 19th century on, and was plundered by the Goths.

Slavic Domination: Slavs (Sakalibe) are the most populous ethnic community living in Europe. They were formed from a mixture of Turkish and Ugor tribes. They actively appeared on the stage of history during the Avars period. The Turks living in the Black Sea steppes and engaged in the slave trade were called Sclavus/Sklabos by the Romans. Because these lands are the former lands of Saklar and other ethnic Turks. As it can be understood, the word Sclavus/Sklabus has been transformed from the word from Saka/Saka. Saklar (Sakalar / Scythians) are an ancient Turkish people and their place of residence is today's Eastern Europe, the Balkans, Russia and Ukraine. The Slavs are a people who emerged in these lands in the 6th century and are the successors of the Turks. The Slavic language is basically a mixture of Turkish and Ugor languages. The Varyags, Swedish Vikings, settled in the region and mixed with the Salvs and completed their ethnic transformation in the 9th century. The Varyags are descendants of European Hun commanders who founded the first kingdoms in Scandinavia. Starting from the second half of the 9th century, the Russians, by capturing the great trade route going down to the Black Sea via the Ozi (Dnieper) River, put an end to the Caspian domination in this region and established the Russian state by gathering the scattered Slavic tribes. The Eastern and Southern Claims, on the other hand, emerged with the mixture of Turkish tribes such as Avars, Bulgars, Pechenegs, Kipchaks with the first Slavs. In 803-804, the Bulgarian khan Kurum captured all the Avar lands in the Danube region, and after this date, some of the Avars mixed with the Hungarians, and some of them formed the Croatian people by mixing with the Slavs. (Qacar, 2021, https://kiriminsesigazetesi.com/slavlarin-kokeni/). The Slavs remained under Avar domination for a long time in their first period and this situation had a great impact on the historical development of the Slavs. The active emergence of the Slavs on the stage of history, their settlement in the Balkans and Bohemia, the establishment of their first political organization and the changes in their ethnic structure have

always been under the rule of the Avars. Upon the weakening of the Avars and their withdrawal from the Slavic lands, the Eastern Slavs came under the rule of the Khazars, a Turkish tribe. (Kurat, 1978,5). (Cengiz, 2019). After the Roman domination, Macedonia suffered the first Slavic invasion in 578. (North Macedonia, https://tr.wikipedia.org/wiki/ North Macedonia) Byzantine records in the 580s mention Slavs raiding Byzantine settlements in North Macedonia with the aid of the Proto-Bulgarian Turks (North Macedonia, https://en.wikipedia.org/wiki/). Macedonians called the Slavic people Bulgarian. There is very little difference between the language spoken by these people and the Bulgarian. VI. Towards the end of the century, Slavic and Avar Turkic tribes advanced as far as Thessaloniki and settled in North Macedonia in the 6th century AD. (Hacısalihoğlu, 2003, 437-444).

Avar Turks domination: Avars, an important Turkish tribe, signed an alliance agreement with the Byzantines in 558. The plains made the nomadic Avars happier. The Byzantine Emperor gave the Avars the lands where today's Serbia is located. The territory of the Avar Khaganate, founded by the Avars, was approaching Thurungia in the west, Italy and Constantinople in the south. They established their dominance in Illyria and Dalmatia. The Avars destroyed the fortified towns of Ratiaria and Oescus on the Danube and besieged the city of Thessaloniki in 586. Slavs also remained under Avar rule (Mauricius', 2021).

Bulgarian Turks Domination: In the 680s, under the leadership of Kuber, a group of Pre-Bulgarians, Slavs, and Byzantines settled in the vicinity of the Monastery (Acta, V195, 159-166). During the reign of the Bulgarian khan Presian I, the Slavs in North Macedonia came under Bulgarian rule. During the reign of Boris I, the Slavs in the region accepted Christianity. The region was included in the Bulgarian Empire in 896-900. By the end of the 12th century the control of the Byzantines weakened and in the early 13th century the Second Bulgarian Empire took over the region.

Cuman/Kipchak Turks Domination: Iznik Emperor III in 1241-1256. Ioannes (Dukas Batatzes) settled a large group of Cumans as stratiotes in the regions of the empire in Thrace and Macedonia in the Balkans, and in the Maiandros (Menderes) Plain and Phrygia in Anatolia. The Byzantines, who were given land on the condition that he join the army, when necessary, were called stratiotes. Cuman troops fought for Eastern Rome in many wars. In 1242 the Cumans came to Thessaloniki to assist

Batatzes in the siege of Thessaloniki. In 1259, 2,000 Cuman light cavalry took part in the Pelagonian war. In 1261, the majority of the 800-strong contingent of Alexios Strategopoulos, who participated in the recapture of Constantinople, were Commanders. Some Cumans were also in the regular army. The influence of the Cumans on the political history of the Balkans was very significant from 1185 to the 1330s. The Cumans were the founders of three successive Bulgarian dynasties (Asen, Terter and Şişman) and the Wallachian dynasty (Basarab). Except for the interim period when illegitimate rulers such as Ivaylo (1277-80) and Smilec (1292-97) were on the throne, all dynasties of the Second Bulgarian Kingdom were of Cuman origin. Cumans also played important roles in the political history of Byzantium, Hungary and Serbia at that time. Some members of the Cuman communities took their places among the elite of the host country (Istivan, 2008, 175).

Serbic Domination: Macedonia came under the rule of Serbian Emperor Stefan Dusan, who saw it as the savior of the Slavs who were crushed under Byzantine persecution between 1345-1355, and Skopje became their capital (Saatçı, 2004, 1-2), (Castellan, (1995,364).

MACEDONIA DURING THE OTTOMAN EMPIRE

In 1352, with the efforts of Süleyman Pasha, the eldest son of the Ottoman Sultan Orhan, the Turks captured the Tsympe (Cinbi) Castle. Two years later, they annexed Gallipoli, which has great strategic importance, to their lands. They conquered the southern region of Thrace within five years, brought soldiers and people from Anatolia and settled there, and in a short time they established a strong bridgehead on the European side. Before the Ottomans came to the Balkans, as in many parts of the Balkans, various Turkish tribes such as Scythians, Huns, Avars, Cumans and Pechenegs existed in Macedonian territory. With the 14th century, the Turks began to take control of Macedonia. The defeat of the Crusaders by the Ottoman Turks in Çirmen on September 23, 1371 was a very important turning point in the history of the Balkans. The Ottoman Empire's conquest of Macedonia largely took place in 1373. Monastery in 1382, Prilep and Ohrid in 1385, Niš in 1386. After the defeat of the Serbian and allied forces in the 1389 Kosovo War, Macedonia came under Ottoman rule and began to be Turkified systematically (Macedonia, 2021, https://en.wikipedia.org/wiki/) XIV. From the second half of the century until the Balkan Wars, the region remained under Ottoman rule. The Ottoman Empire expanded its territory

in the Balkans from east to west, and this region became one of the first major stops for the Ottoman administration. Macedonia gained the feature of a fertile, populated region that took place within the Empire for centuries. After the conquest of Istanbul in 1453, at the request of Fatih Sultan Mehmet, most of the Karamanoğulları in Anatolia were settled in Skopje and Gostivar region. (Kuzey Makedonya, 2021, https://tr.wikipedia.org/wiki). Under Ottoman rule, the region was not known as Macedonia. During the first conquests, some parts and all of the administrative regions named Kosovo Vilayet, Manastir Vilayet, Thessaloniki Vilayet took place in the region, which was within the Rumeli Province. The region, which was very dense in terms of Turkish population during the Ottoman period, witnessed great migrations due to the political and social problems experienced after the Ottoman administration. Despite all the migrations, a significant Turkish population still lives in the Macedonian region, especially in North Macedonia (Baştav, Şerif, 1999,s.173), (Saatçı, 2004, 1, 2), (Osmanlı Makedonyası, https://tr.wikipedia.org/wiki,2021). During the Ottoman period, Turks made up the majority of the population in cities and towns such as Thessaloniki, Skopje, Manastır, Serez, Köprülü, Tetovo and Gostivar. Macedonia, whose ethnic structure and geographical borders are the subject of discussion, is an inseparable part of Turkish history and is one of the most ethnically, religiously, culturally and linguistically complex regions of the Balkans. Macedonian region; It is divided into three parts: Aegean Macedonia (in Greece), Vardar Macedonia (present-day independent state) and Prin Macedonia (in Bulgaria). (Bayur, 1973, 164), (Çayırlı, 2002,444-454).

Ottoman Investments ın the Balkans: The Ottoman Empire brought 15787 architectural works to the Balkans. 2356 of these works are mosques and masjids, 174 zaviye-tekke, 116 inns, 142 madrasahs, 113 spas-hamams-ılıca, 273 schools, 16 caravan palaces, 24 bridges, 27 tombs, 74 fountains, clock towers, covered bazaars, libraries and hospitals. However, most of these works have disappeared today. Today, the number of works that preserve their original form is negligible. Fatih Bridge (Stone Bridge) built by Fatih Sultan Mehmet over the Vardar River and the Turkish fountain in Samokov are among these works. Davut Pasha Bath, II. It was built between 1489-1497 by Davut Pasha, who served as the grand vizier during the Bayezid period. It has managed to survive in Skopje until today.

Although some of these works, which are an important part of Ottoman architecture, have survived to the present day, they are facing a situation such as extinction. Turkish artifacts that have survived in Macedonia; Fatih Mosque in Debre, Mosque Minaret in Radoviş, İshakiye Mosque and Haydar Kadı Mosque in Manastır, Çarşı Mosque in Prilepe, Hüsamettin Mosque in İşitip, Hünkar Mosque and Banitsa Village Mosque in Usturumca. (Yekreng, 2021, https://www.osmanlipadisahlari.gen.tr/). The Ottoman Empire built many health institutions and hospitals in the Balkans. In Macedonia, health services are provided with the hospitals, the information of which is given below, such as the municipal hospital, the gureba hospital, and the military hospital.

Ottoman Health Services in Macedonia: The Ottoman Empire gave great importance to the construction activities in the places where it was settled. they have shown. He built places that meet the social and economic needs of the society, such as roads, caravanserais, hospitals, hospices, bridges, fountains, and gave life to the region and cities. All the architectural works built were built with the support of foundations and survived. Hospitals, pharmacies, Turkish baths, fountains and wells were built to facilitate people's social life (İdrizi, 2008,48,64). In Ottoman city architecture, hospitals are one of the structures that fulfill an important mission in cities other than soup kitchens. (Çağ, 2010, 118) In the Ottomans, health services were provided by the hospitals in the kulliyes built by the sultan, the members of the palace and the pashas, the repair of the health buildings in the conquered areas and the newly built hospitals. Doctors, surgeons and pharmacists were appointed up to the State Districts. The governors were following the health personnel situation of the region and reporting them to the center. Example: Due to the investigation carried out by the governorship for the determination of the licensed doctors, surgeons and pharmacists in the settlements of Skopje, the Governorship of Skopje sent an order dated March 18, 1876 and numbered 664 to the Kumanova District Governorate and the diplomas and documents of those who worked as doctors, surgeons and pharmacists in the accident were requested. Kumanova District Governor Mustafa Sabri, in his reply letter, stated that İbrahim Efendi, who was a surgeon in the accident, went to another place, and that physician Lefter did not have a diploma and did not practice medicine, and that there were no physicians, surgeons and pharmacists in the accident and demanded that a

physician, surgeon and pharmacist be sent to the accident. (DARM, F. 1/10/7/9/11), (Sarınay, 2005). In another document, the Municipality of Kumanova contains the documents of the local and civil administrations covering the years 1869-1913 (File no-1, document number 281, leaf number 424) about the income and expenses of the municipality, the prices of food products, the status of immigrants, veterinarian and doctor reports about diseases. information is registered (Binark, 1966, 24). Starting from 1837 until the 1912 Balkan War, about 40 military hospitals were established by the Turks in today's Macedonian region (Eraslan, 2018, 289). In the field of health, Sultan Hamid established military hospitals, especially military hospitals, hospitals (immigrants, needy people, orphans) hospitals, municipal hospitals (Skopje, Thessaloniki, Dimetoka) and Quarantine facilities in all cities in the Balkan geography. Municipal Hospital in Skopje, Gureba Hospital and rabies laboratory in Manastir were established and vaccination campaigns were carried out. In Macedonia, military hospitals were built in Monastir, Skopje, Kırçova, and the existing ones were enriched with medical devices and additional medical staff. (Sarı, 2014,30-34) These hospitals provided health services to everyone, regardless of whether they were military or civilian, Muslim or non-Muslim (İpşirli, 2021, 1), (Babuçoğlu, 2013), (Yılmaz, 2006), (Sarı, 2014). The health of the soldiers is important in times of war, as well as in times of peace. For this reason, mobile hospitals were established in certain places for soldiers and physicians served. In addition, due to the rapid progress of epidemics in the battlefield, physicians were held responsible for all health care of the soldiers, and even the water the soldiers drank was controlled (Uğur, 2006,86,87).

Structuring Military Health Services

In the organizational structure of the Ottoman Empire, there is a supply line and structuring for the needs of soldiers, foodstuffs, weapons, ammunition, hospitals, etc. in the military organization at the time of mobilization. According to this organization, in the structuring related to health services; range command, reserve hospitals, range hospitals, fortified area hospitals, war hospitals [temporary hospital] branches, patient transport detachment, patient transport train, railway wagon and patient transport ship.

Range Command: Range commander; will supply and store foodstuffs, and will operate by establishing enough ovens and armaments. In this way, it will take the necessary measures to ensure that its troops

and the soldiers and animals that will pass through the range point are accommodated as regularly as possible. Range commander; If there is a need to establish larger ammunition warehouses, ammunition depots and range hospitals, it will determine and create suitable places that will enable these facilities to be opened by the range branch operating on the range line. It will also allocate the necessary military for assistance. Other issues in range commands will occur in peacetime as in a location command. If necessary, a warehouse will be set up at one of the center points in Edirne direction. Necessary vehicles will be taken into consideration in the Edirne operational area and accordingly, what kind of materials and equipment and medical pharmaceuticals will be included in this warehouse and who will be civil servants will be determined by the sanitary office. There will be a range general sanitary inspectorate, a general headquarters affiliated to the general headquarters, and the First Army sanitary inspectorate and medical officers suitable for their cadres in the Edirne operational area. In order to transform the garrison and central hospitals shown in the charts in the Edirne campaign into reserve hospitals during the campaign, the necessary materials will be collected from the beginning of the peace (Durgun, 2014,75), (ATASE Arşivi, Kls. 25, Dos. 64, Fih. 002-12.), (ATASE Arşivi, Kls. 25, Dos. 64, Fih. 002-11a). One of the range lines that will be formed on the Thessaloniki side when there is a mobilization according to various possibilities is the Manastır Range line. On the monastery range line; For lines with range numbers 1 to 7, including seven, the general warehouse location and range center points are the Monastery. As the line to be protected, the Skopje division, the 1,2 and 3 redif battalions of the Skopje redif regiment, and the Vodine redifala from the Thessaloniki Division, the 1,2 and 3 vodine redif battalions were assigned to the Manastir line guard (Durgun, 2014,67,72,79).

Possible Hospitals: Since the provisional hospitals, garrison and central hospitals in the specified places will be converted into reserve hospitals during the campaign, it will be ensured that the amount of sanitary materials specified in the charts will be collected in the mentioned places more peacefully.

Range Hospitals: Menzil Hospitals will be connected to the army sanitary inspectorate in the direction of Edirne to the range health committee in a way that can treat 10,000 patients at once. The materials required for this will be collected in time in the sanitary warehouse in

Istanbul. Homeland doctors, doctors of Red Crescent societies and military doctors will be employed in Menzil hospitals. Considering the extent to which local doctors and Red Crescent committees will be used, the necessary military medical committee will be appointed by the health department for the range hospitals. The locations of the range hospitals will be determined by the army sanitary inspectorate according to the form of the war operation. However, at the beginning, the medical committee of the range hospitals will be present at the center points of the range collectively. Although the facilities available in the country will be used in the establishment of the hospitals mentioned, as a precaution, tents will be kept ready to accommodate 2,500 patients and they will be collected in the sanitary warehouses (ATASE Arşivi, Kls. 25, Dos. 64, Fih. 002-11), (ATASE Arşivi, Kls. 25, Dos. 64, Fih. 002-11; 223).

Garrison or Location Hospitals: Garrison or local hospitals; When they are turned into reserve hospitals on an expedition, they will determine how many patients in peace need to be prepared at the same time to treat them. For example, the Thessaloniki-Manastir-Prilepe garrison hospital will also be enlarged to treat 14,000 soldiers and its officers will be appointed. The Skopje Garrison Hospital will also be enlarged to treat 1000 soldiers and its officers will be appointed (Durgun, 2014,75),(ATASE Arşivi, Kls. 25, Dos. 64, Fih. 002-11a))(ATASE Arşivi, Kls. 25, Dos. 64, Fih. 002-12).

Hospitals ın the Forced Location: In order to expand the fortified area hospitals and the Edirne castle garrison hospitals to be able to treat 5,000 patients, when necessary, the necessary materials and medical drugs will be gathered at the specified locations and the medical officer will be appointed accordingly.

War Hospitals [Temporary Hospital] Branches: War Hospitals [temporary hospital] Branches, 9 war hospital directorates will be established in the Edirne operational area if necessary. These directorates will also house the medical and sanitary supplies capable of treating 10,000 patients. Although it is possible to take advantage of the war operations and the opportunity on the range zone in the establishment of war hospitals, tents that can accept 2,500 soldiers will be attached to this delegation, just in case. This delegation will be constituted in accordance with the orders given before and how the Red Crescent Societies will be used in their organization will be appreciated. A war hospital directorate will be established for the Kardzhali direction. This directorate will also

be given the means and materials to treat 400 patients. [This material should be stored in the Komotini garrison hospital in peacetime.] It will be decided to make use of local doctors for Komotini side.

Patient Transport Detail: The patient transport platoon will be added to the army range inspectorate in Edirne direction, by connecting 2 patient transport platoons. A patient transport detachment will be formed for Kardzhali direction. The organization of these detachments will be appointed by the sanitary office in accordance with its staff. The Kardzhali direction patient transport platoon's capability will be half that of the others. One of the patient transport detachments in Edirne direction will transport patients on the roads ending in Istanbul and Tekirdag reserve hospitals, and the other Kardzhali detachment will transport patients between Kırcaali and Xanthi.

Patient Transport Trailer: The patient transport train will be prepared to be used in the direction of Edirne when necessary, by equipping 30 wagons on the Eastern Railways with excellent vehicles for patient transport in peacetime. The devices required to make 30 wagons capable of patient transport at a time will be kept in the sanitary warehouse.

Patient Transport Ship: Patient Transport Ship, Two hospital ships will be prepared to be capable of transporting 1000 patients at once at a time. (ATASE Arşivi, Kls. 25, Dos. 64, Fih. 002-11),(ATASE Arşivi, Kls. 25, Dos. 64, Fih. 002-11a). Below are information and photos about Skopje, Manastır, Shtip, Köprülü, Kumanova and Koçana Hospitals.

OTTOMAN TURKISH HOSPITALS IN MACEDONIA

Ottoman Turkish Hospitals in Macedonia; They were established as military hospitals, municipal hospitals, gureba hospitals and Kızılay hospitals in the cities of Skopje, Manastır, Shtip, Köprülü, Kumanova and Koçana.

Usküp (Skopje) Hospıtals: Skopje is the capital and largest city of North Macedonia. The city has been a residential area since 4000 BC. It was captured by the Ottomans in 1392 and was called Skopje by the Turks. It remained under Ottoman rule for more than 500 years. (Üsküp-Wikipedia, the free encyclopedia)

ÜSKÜP (SKOPJE) GUREBA HOSPITAL

During the reign of Mehmed Faik Pasha, many historical mosques, inns, baths and fountains were repaired in the Muhacir District of Skopje,

apart from the construction of the Faik Pasha Mosque, Muhacir Bath, School, Police Station and Gureba Hospital. (Bektaş, 2020, 179)

Photograph 1- Gureba Hospital

In hospital plans, together with general hospital units such as patient rooms, operating room, pharmacy, practice, laboratory; toilet, bath, laundry, kitchen, heating room, basement, stairs, balconies are arranged in an orderly manner. There are even architectural application plans that show the location of the patient beds. Meanwhile, “indoor and outdoor promenades” are indispensable spaces for hospital architectures.

SKOPJE MUNICIPAL HOSPITAL

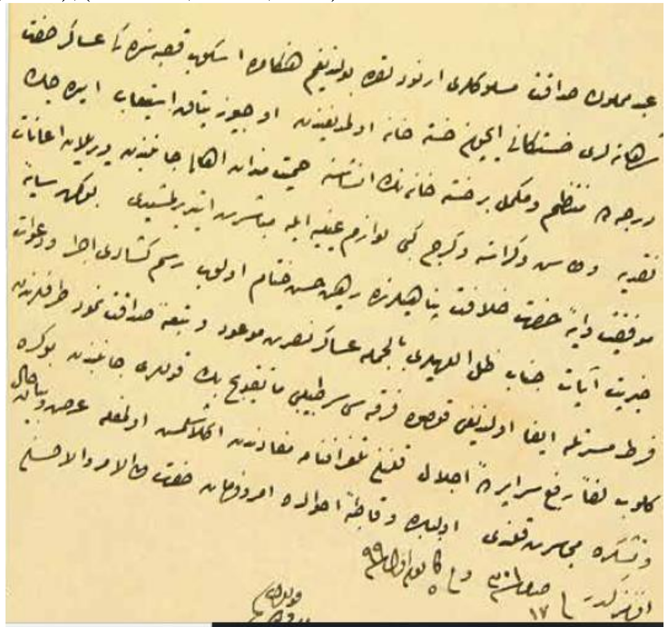
Sultan Hamid had Skopje Municipal Hospital and Military Hospital built.

Photograph; 2- The office of the Skopje Municipal Hospital, temporarily given to the military administration (Eraslan, 2018, 291).

SKOPJE ASAKIR-I SAHANE HOSPITAL

During the reign of Abdulaziz III. Skopje hospital served for the army. (Uğur, 2006,86-87), (Pabuççu, https://derinstrateji.files.wordpress.com/, Erişim Tarihi:11.09.2021)

Photograph:3. 300 bed Skopje Military Hospital, (Babuççuoğlu, 2013, 217, 219),(Eraslan, 2018, 289).



Document 1: A letter sent to the Sultan from the Governorship of Thessaloniki about the opening of a 300-bed military hospital in Skopje. 17 December 1883 (BOA, Y.PRK.MYD, 3 / 16 – 1)

Letter sent from Thessaloniki Governorate about the opening of a 300-bed military hospital in Skopje. 17 December 1883

[From Thessaloniki Governorate to the Sultan],

During my service in Albania [1875] there was no military hospital in the town of Skopje. That's why I started the construction of an orderly and excellent military hospital with 300 beds. The people also contributed to the construction of this hospital by providing money, stones, timber and lime. Finally, in the attached telegram sent to you from the Kosovo Party Sertabibi Mankovic, It was reported that the construction of the military hospital was completed and it was put into service with a ceremony.

We would like to thank you for the support given by you in this regard.

17 December 1883

[signature] İbrahim Derviş Pasha, Governor of Thessaloni

SKOPJE KALE MILITARY HOSPITAL

Mehmet Faik Pasha (1883-1889) of Thessaloniki, who served in Skopje for about six years, first as the governor and then as the Governor of Kosovo, undertook many important initiatives. One of the important and new types of buildings built in his period is the 300-bed Military Hospital built on the castle wall. The building, which was built in 1883, took its place in the city space of Skopje as a symbolic monument. (BOA, Y.PRK.MYD., Nr. 3/16, 17)

Photograph; 4-Kale Military Hospital with 300 beds in Skopje (Eraslan, 2018, 290).

When viewed from Karşıyaka, the Military Hospital, together with the Castle, has been an impressive addition to the urban landscape and has taken its place in the urban identity and created an image until the 1963 Skopje Earthquake. (BOA, 2007, 109), (Eraslan, 2018, 290).

SKOPJE KIZILAY HOSPITAL

At the meeting held on October 10, 1912, the Kızılay Headquarters decided to immediately initiate the initiative for the aid to be provided to the Army Health Department of the Kızılay and the hospitals to be established. At the end of the negotiations with the Ordu Health Office, the places where the Kızılay will open a hospital were determined. The Kızılay set out health committees to open eight hospitals with 150 beds in Lüleburgaz, 200 beds in Edirne and Thessaloniki, and eight hospitals with 100 beds each in Skopje, Alasonya, Yanya, Manastır and Shkodra, some of them mobile. The railway to Rumelia was disrupted and the roads were closed, and the Greeks' occupation of the islands and cutting the connection with Macedonia hindered the health aid to the Balkans.Due to the war, it was not possible to open hospitals in Lüleburgaz, Alasonya, Yanya and Manastır. Except for the Skopje hospital, other hospitals could not be put into operation.

The Skopje hospital, which was in operation for a very short time, started working in a building donated by Hüseyin Hilmi Pasha to the Kızılay, with the efforts of Tevfik Rüştü Bey, who came from Istanbul. (Çapa, 2021,91-93)

MANSTIR (BİTOLA) HOSPITALS

The Manastır (Bitola) was founded in the middle of the 4th century BC by the Macedonian king Philip II under the name of Heraclea Lyncestis.

After joining the Turkish lands, it became the center of the 3rd Army as an important trade and military for the Ottoman Empire. The 3rd Army played a major role in the development of the city and the opening of educational and cultural institutions. Manastır (Bitola) is also known as the city of consulates *(Aktürk, 2021, https://makturk.com/manastir).*

The grandfather of Atatürk, the founder of the Turkish Republic, Kızıl Hafiz Ahmet Efendi and his father, Ali Rıza Efendi, lived in the Kocacık Sub-district of Debre-i Bala Sanjak, which is affiliated to the Manastır

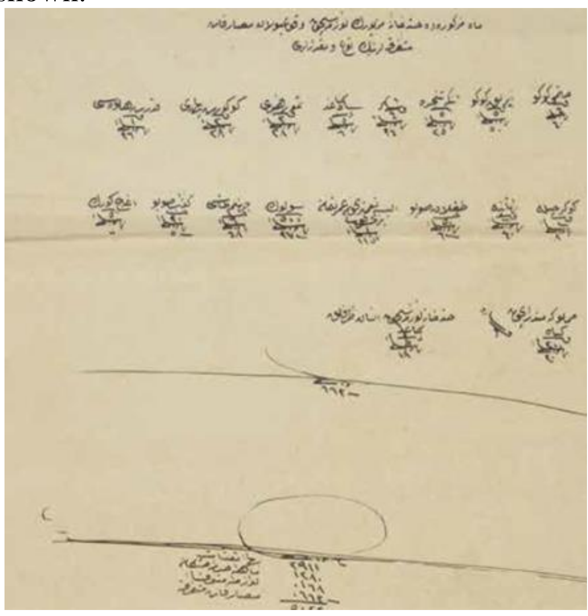
Province. Born in Thessaloniki, Atatürk studied at the Manastır Military High School. Everyone in Turkey knows the song "There is a fountain in the middle of the monastery" (Özkan, 2002, 20-24), (Baştav, 1999, 173).

MANASTIR MILITARY HOSPITAL

A new cavalry barracks and a hospital were built in Manastır by Sultan Abdülmecid. An inscription showing the date of construction, 18 November 1844, was intended to be written on these structures. For this reason, the poems written by Resa Efendi, which a physician would never be able to think of, and in which he stated in his verses that he had built a two-part hospital by the unique sultan Abdulmecid to revive his soldiers, were also liked by the sultan and included in the inscriptions. (BOA, İrâde Internal Affairs, no: 4677)

Monastery Central Hospital III. He served for the army. (Uğur, 2006,86-87), (Pabuççu2021)

The documents of the expenses made in the hospitals give us information about the needs of the hospitals of that day. Below is a sample record of the expenses and construction of the Manastır Military Hospital. In this record, the items supplied, their unit prices and amounts are shown.



Document:2- Expenses of the Manastır Military Hospital between 9 January and 6 February 1837, (BOA, C. SH, 8 / 356 – b)

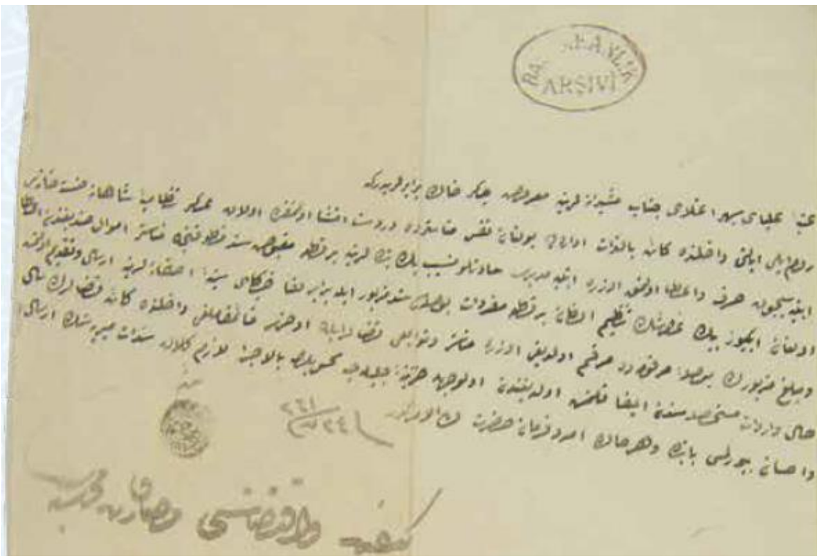
February 6, 1837
Hospital expenses:
Marshmallow root, 4 okka, 40 cents
Split root, 5 okka, 50 cents
Tin pot, 5 pieces, 25 cents
Sugar, 4 okkas, 34 cents
Black paper, 5 bundles, 6 cents
Tamarind, 2 okka, 28 cents
Sulfur spring, 2 okka, 28 cents
Kudret halva, 1 okka, 36 cents
Saltpeter, half an okka, 8 cents
Rataniye, half okka, 40 cents
Taflan water, 50 dirhams, 6.5 cents
American cloth for clothes repair, 1 ball, 115 cents
Leech, 500 pieces, 37,5 cents
Hell stone (silver nitrate), 6 dirhams, 48 cents
Kezzap water, 30 dirhams, 5.5 cents
Wood shovel, 5 pieces, 5 cents
Leather for cushion, 200 okka, 30 cents
Envelope paper purchased for the hospital, 3 packs, 18 cents
TOTAL 663.5 cents

Fee of the fee, 2,911 cents
Nursing salaries, 1,280 cents
Funeral supplies, 168 cents
Other expenses, 663.5 cents
GRAND TOTAL 5,022.5 cents

Between January 9, 1837 and February 6, 1837, the rations (dry food to be eaten) prepared for the patients, officers, soldiers and hospital staff at the Manastır Military Hospital were calculated one by one, together with their prices, and the monthly cost of the hospital was five thousand twenty-two and a half cents. understood.

February 6, 1837

[seals] Mehmed Izzet and Miralay [Colonel] Ali (Babuçoğlu, 2013, 145)



Document;3- Registration of Manastir Military Hospital Construction Costs, (BOA, C.AS, 459 / 19170 – 1)

Letter sent from Manastır Sanjak to the Grand Viziership about the money paid to the authorized officer from the property fund for the construction of a military hospital in Manastır. 26 September 1845

[From Monastery Sanjak to Grand Vizier],

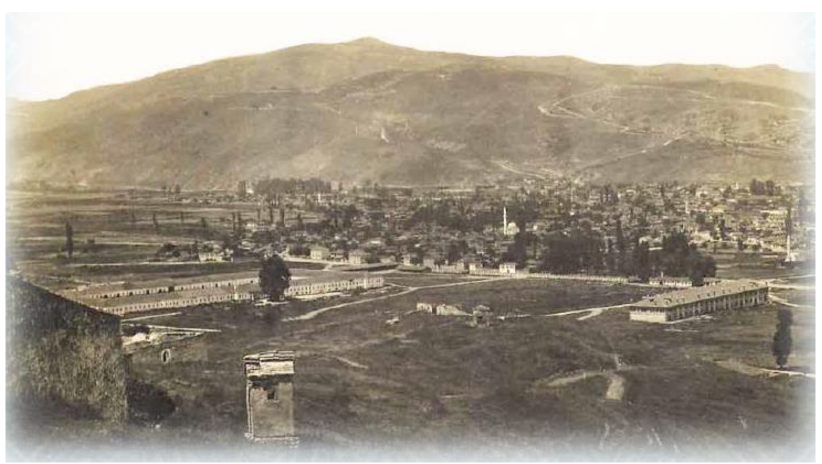
Ebniye (Reconstruction and Construction) Manager Nesib Bey was given 200,000 kuruş from the Manastır Enval (Property) (Movable and Immovable Property) Fund in return for a receipt, to be spent for the military hospital under construction in Manastır. A detailed compass prepared for this payment and a copy of the receipt are attached. The amount in question was met from the tax revenues of Manastır and its districts and the districts within the Sanjak of Ohrid in 1845.

It would be appropriate to give an order to send the documents to be issued by the Treasury.

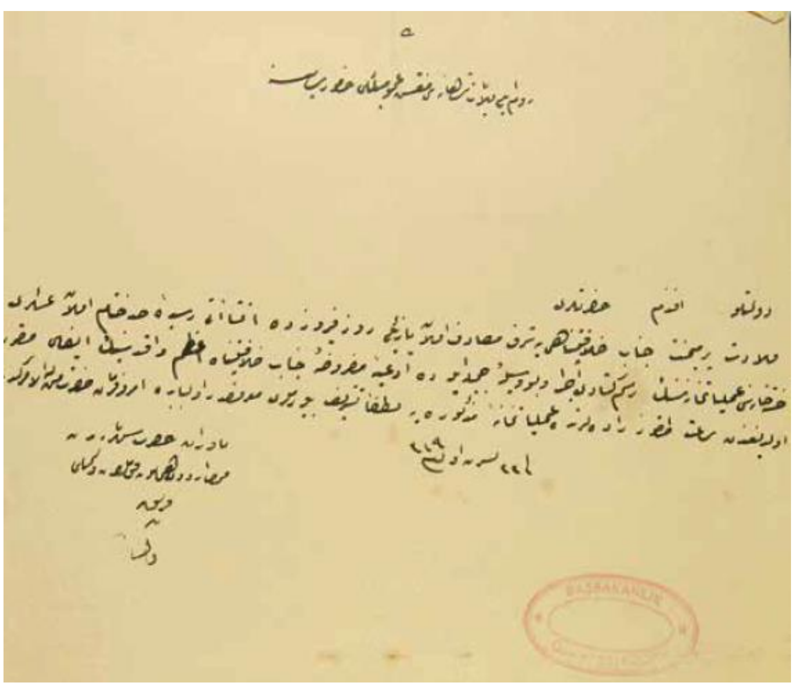
The order and the edict belong to our master.

September 26, 1845

[seal] Governor of Manastir Mehmed Ziya (Babuçoğlu, 2013, 147)



Photograph:5- Manastir Military Hospital Construction



Document:4- Letter of invitation to the opening ceremony of the Manastır Military Hospital Operating Room, (BOA, TFR.I.AS, 9 / 848)

Letter sent from the Manastır Corps Command to the Rumelian General Inspectorate about the invitation to the opening ceremony of the Manastır Military Hospital operating room.

5 November 1903

[From the Monastery Corps Command] to the Rumelian General Inspectorate,

Tomorrow [16 Şaban / 6 November], the birthday of our Sultan, the operating room of the Monastery Military Hospital, whose construction was completed, will be put into service with a ceremony. We expect you to attend the opening ceremony to be held at 09:00.

November 5, 1903

[signed] Ferik Nasser, Acting Commander of the Monastery Corps

Pasha (Babuçoğlu, 2013, 148-149)

MANASTIR GUREBA HOSPITAL

Built by Sultan Abdulhamid, Manastır Gureba Hospital and rabies laboratory were opened on 10 September 1894. (Sarı, 2014)

Photograph:6- Manastır Gureba Hospital

OTHER HOSPITALS

Apart from the hospitals mentioned above, health services were provided to both the public and the soldiers in the Shtip, Köprülü, Kumanova, Koçana and Kırçova Hospitals in Macedonia, the documents of which are shown below.

Below is the telegram sent from the Third Army to the Rumelian General Inspectorate about the need to send the March and April appropriations for the Štip, Köprülü, Kumanova and Koçana military hospitals. document can be seen. May 5, 1907, (Babuçoğlu, 2013, 148-134).

TÉLÉGRAMME

L'état n'accepte aucune responsabilité à raison du service de la télégraphie

Le ... 190	Le ... 190
N° d'arrivée	Transmis par
h. m. de	h. m. de
Expédié à	Commencé à
	Fini à
Signature de l'Employé	Signature de l'Employé

De ... pour

N° du dépôt	Nombre de mots	Group	Date du dépôt	Heures	Minutes	Matin ou soir	Voies	Indications non taxée

Document:5-Telegram on Allowances of Military Hospitals (BOA, TFR.I.KV, 160 / 15907)

[From the Third Army Military Administration of Thessaloniki],

To the General Inspectorate of Rumelia in Thessaloniki,

One of the newly created military hospitals, 2.000 kurus per month for the Shtip Military Hospital and a thousand kurus per month for the Köprülü, Kumanova and Koçana military hospitals are required. You should give instructions to those who need it in this regard. It has also been learned that this month's allocations of other military hospitals have not yet been sent. Please ensure that the hospital allowances of 45,000 kuruş for March and 35,000 kurus for the month of April are paid immediately.

May 5, 1907

[signed] Third Army Chief of Administration Miralay [Colonel] Halid

IŞTIP MILITARY HOSPITAL

In 1382, Shtip came under Ottoman rule. It became one of the important cities of the Rumelia Province. Almost all of the population was Turkish. The 1911 Encyclopedia Britannica edition states that it

exhibits the most beautiful characters of the noble, serious, disciplined Turkish race for its people. Shtip is famous for its philanthropists and scholars.

Photograph:7-Isip Military Hospital

KOPRULU MILITARY HOSPITAL

Köprülü; It is a town established on the Vardar river during the Ottoman period. It was conquered by Gazi Murat Hüdavendigar in 1386 by Timurtaş Pasha. Timurtaş Pasha had a solid bridge built over the Vardar river, and this city was named after this bridge and called Köprülü Castle.

On the fertile and arable land of Köprülü, mostly wheat, rye, oats, barley, corn, beans, potatoes, rice, tobacco, sesame and opium were grown. The Skopje Thessaloniki railway, which runs through the middle of the city, increased trade and movement. Viticulture, silkworm and beekeeping were common. There were many sheep, goats, cattle and other cattle in the area, which was wide range of pastures. (Köprülü City, https://koprulu-yabulcista.tr.gg/)

The origin of the Köprülü family, such as Köprülü Mehmet Pasha and Köprülü Fazıl Ahmet Pasha, who were successively in the office of grand vizier in the 17th century in the Ottoman Empire, comes from this city. 7 viziers emerged from the Köprülü family (Ottoman land Macedonia, 2021, 1).

Photograph:8- Köprülü Military Hospital

KUMANOVA MILITARY HOSPITAL

The name of the city, XII. From the XIII century. It comes from the Cumans, that is, the Kipchak Turks, who settled in this region until the 16th century. The Cumans, who formed the western branch of the Kipchaks, were invaded by the Mongols in the dasht-i Kipchak region and some of the Kipchak tribes began to migrate to Europe. These Kipchak tribes who migrated to Europe are defined as Cumans and the city of Kumanova is their city. The city of Kumanova is 35 km. It was established in the middle of a long valley (Aktürk, 2021, https://makturk.com/kumanova). Kumanova is an important city where the Turkish traces of Rumelia can be found even before the Ottoman Empire.

Photograph:9- Kumanova Military Hospital

KOÇANA MILITARY HOSPITAL

Koçana joined the Ottoman Empire at the end of the 14th century. According to the famous Turkish traveler Evliya Çelebi in 1662, Koçana consisted of 600 houses and 15 shops in 1662. Again, in the continuation of this period, in 1670, Koçana grew even more. During the reign of the great Ottoman vizier Köprülü Mehmed Pasha, this place was developed with many towers and buildings and became one of the important settlements in the region.

Photograph:10- Koçana Military Hospital, (Babuçoğlu, 2013, 135)

KIRÇOVA MILITARY HOSPITAL

Kırçova is located in the western part of Macedonia. In the 14th century, it joined the territory of the Ottoman Empire (Kırçova, https://tr.wikipedia.org**).** After the conquest, the Ottomans established a military garrison in the castle in Kırçova and settled a group of Turks in the town. Since it was an important military center, a military hospital was also established in the town. (Kiel, 2002,440)

MACEDONIA TODAY

Macedonia remained under the rule of the Ottoman Turks for nearly 600 years. Macedonia was the last region to be separated from the Ottoman Empire during the 1912-1913 Balkan Wars. After leaving the Ottoman Empire, it came under the domination of the Serbs. During the First World War, it was under the rule of Bulgaria for a short time. After the war, it was connected to the newly established Kingdom of Serbs, Croats and Slovenes. II. The region, which was occupied again by Bulgaria in World War II, became one of the founding states of the Socialist Federative Republic of Yugoslavia in 1945, forming the southernmost parts. In 1991, it peacefully separated from Yugoslavia and declared independence under the name "Republic of Macedonia". In 2018, the country's name was changed to "Republic of North Macedonia". (Kuzey Makedonya, https://tr.wikipedia.org/)

North Macedonia; It borders Serbia and Kosovo in the north, Albania in the west, Greece in the south, and Bulgaria in the east. Its current population is approximately 2,076,694 people (https://www.nufusu.com/ dunya-nufusu). Turks constitute 4% of the population and 83 thousand Turks live. Its capital and largest city is Skopje, and a quarter of the population lives in this city. The largest ethnic group in the country are

the Macedonians, who belong to the South Slavs. Albanians make up 25% of the population and are the largest minority. Other ethnic groups are Turks, Gypsies, Serbs, Bosnians and Vlachs (Trakya Halkları, https://www.trakyanet.com), (North Macedonia, https://en.wikipedia.org/)

CONCLUSION

Macedonia is one of the most important transition points of the Balkan geography in the historical process. It is famous for its history that goes back to ancient times in the world, its famous leaders such as Philip II and Alexander, and its borders reaching as far as India. Throughout history, they have spent a long time under the domination of Scythians, Huns, Avars, Bulgarians, Cumans, Pechenegs, Seljuks and Ottoman Turks, and Persians, Romans, Slavs and Serbs. Macedonia remained under the domination of eight Turkish-origin states during this historical process. The only Ottoman Turks who stayed in Macedonia the longest with 600 years. Therefore, the Ottoman Empire's architectural, cultural, sociological, economic, ethnic and so on. has had many effects. In this study, information and visuals about the services provided in the field of health and the hospitals established are included. It is hoped that it will contribute to those working on this subject and Macedonian historians.

The historical process of the Turks about Macedonia has been going on for thousands of years. The grandfather and father of Atatürk, the founder of the Republic of Turkey, were born and lived in Macedonia. Atatürk studied military high school in Manastır, which further increases the Turks' interest and love for Macedonia. Today, there are many Turkish villages in the modern and new Republic of Macedonia and Turks still live there. Turkey and Turkish people cooperate with Macedonia in the spirit of friendship and brotherhood for the unity and strengthening of Macedonia. The Turks now accept the Macedonian people, who have lived together for thousands of years, as a relative nation.

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Chapter 29

The Relationship between Organizational Culture and Employee's Job Satisfaction: Sample of Samsun

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Introduction

Culture is defined as one of the concepts that is attached importance by different disciplines and discussed in many studies (Şişli & Köse, 2013). Institutions having an important place in social life are both affected by the cultural structure of the society and affect society in time. The survival of institutions depends on directing all sources they have to their objectives and working in a harmony. Organizational culture is of great importance in acquiring organizational harmony and handling and evaluating the organization as a whole. When considered in this respect, it is come out that organizational culture plays an important role having effect on the objectives and policies of the institution, distinguishing one group from the others and contributing to the shaping of the employees' behaviours (Duygulu & Eroğluer, 2006). As can be seen, every institution develops an organization culture in accordance with its geography, the sector it operates in and the managerial mentality it has (Yücel & Koçak, 2014). It is stated that the organizational culture that expresses how the employees of the organization define themselves has emerged due to the perfection seeking (Kurt, 2016), and is used in order to explain the manner of the performing and running the activities in an organization (Alp & Ardahan, 2015).

Job satisfaction varies depending on the qualifications of the job (Duygulu & Eroğluer, 2006). It is accepted as one of the basic criteria in terms of the content of employees, and defined as the feelings and

attitudes that employees have for their jobs and the jobs' dimensions. Another characteristic of the job satisfaction is that it is affected by the organization culture being included in (Çarıkçı & Oksay, 2004). In another word, job satisfaction involves the emotional state of employees related to their jobs, it is associated with the fulfilling the expectations, and, except from the job itself, it is affected by promotion opportunities, working environment and the management strategies adopted in the organization (Şeker et al., 2016).

The concepts of organizational culture and job satisfaction, which have an important influence on the employee success and performance, are among the important issues requiring emphasize also in terms of health sector employees. This is because the levels having job satisfaction of the health sector employees do not influence only employees and institutions, but they have also caused some important results to emerge on patients, patient relatives, the overall health status of the society and the quality of the services in terms of overall health sector (Derin, 2007).

When considering some specific characteristics of the health sector, such as the desire for improving the quality of life and the state of well-being of the society, the mistakes made in diagnosis and treatment processes being irreversible and the requirement of providing health care services within the framework of efficiency and productivity principles, the performances and job satisfaction levels of the health care employees are observed to be appreciated increasingly. Taking into account that the performances and job satisfaction levels of employees are affected by the organization culture, the importance this issue has is understood more clearly. In this study, prepared based on these considerations, it is aimed to investigate the effects of the organizational culture on job satisfaction. Therefore, in this study, firstly the concept of organizational culture and its dimensions will be emphasized, the concept of job satisfaction and its importance will be handled, the relationship between organizational culture and job satisfaction will be explained, and the findings of the research conducted on hospital employees will be presented.

Literature Review

The Concept of Organizational Culture and its Dimensions

Although studies on the concepts related to organization and management had been conducted for many years (Kılıç, 2015), the 1980s are accepted as a period that the interest in organizational culture

increased (Alp & Ardahan, 2015; Eşitti, 2014; Gülova & Demirsoy, 2012; Rızaoğlu & Ayyıldız, 2008), and it is seen that this concept have wide range of area of use (O'Donnell & Boyle 2008). The reflections of globalization, organizations' desire to survive and the differences in the point of views to management are among the factors accelerating the improvements in organizational culture (Vural & Gürsan, 2009). In the same way, rapid changes and improvements in both immediate and remote environments of the organizations and their adaptation processes to them are pointed out to be among the issues increasing the importance of organizational culture (Kaya, 2008). When the studies on organizational culture conducted in the USA by Peters and Waterman (Eşitti, 2014; İşcan & Timuroğlu, 2007) firstly, and in Japan by Pascale and Athos are examined (İşcan & Timuroğlu, 2007), it is revealed that there is no a common opinion about organizational culture (Duygulu & Eroğluer, 2006) and different definitions are made by different authors (Gülova & Demirsoy, 2012; Karahan, 2008).

In the general sense, organizational culture expresses the values, beliefs, perceptions and attitudes that shape the behaviors of the employees in an organization provide the norms to be formed and are shared by the employees of the organization (Duygulu & Eroğluer, 2006; Gülova & Demirsoy, 2012; İşcan & Timuroğlu, 2007; Kılıç, 2015; O'Donnell & Boyle 2008). According to another definition, organizational culture is defined as a social adhesive ensuring the organization being together (Gülova & Demirsoy, 2012; İşcan & Timuroğlu, 2007), expressed as an abstract reality bringing personality to the organization (Alp & Ardahan, 2015), has the characteristic of a guide in terms of performing the works and interpersonal relations (Şişli & Köse, 2013), and explained as the whole of the common rules and values taught to those joined the organization newly (Kılıç, 2015). Some of the basic characteristics of the organizational culture are that it is a learned fact (Alp & Ardahan, 2015; Duygulu & Eroğluer, 2006; Karahan, 2008), it is shared by the employees of the organization, it is not written and expressed as the behavioral patterns that are repeated regularly (Duygulu & Eroğluer, 2006; Rızaoğlu & Ayyıldız, 2008), it establishes an identity for the organization members and it is accepted as a control mechanism and defined as almost a border to distinguish an organization from the others (Alp & Ardahan, 2015). In addition, organizational culture is also explained by visible ways of explanation such as ceremonies, stories,

heroes and symbols (Şeker et al., 2016). As can be understood from all these explanations, organizational culture varies depending on the organization (Kısacık, 2009) and expresses that employees act as a team in the process of achieving organizational goals (Kılıç, 2015). Varying organizational culture depending on the organization can be explained as being strong or weak. Accordingly, if organizational goals are known and adopted by all employees, the employees work eagerly to achieve the goals, and the employees behave harmoniously in their relationships with each other, then there is a strong organizational culture. On the other hand, the culture in organizations where employees do not have a common point of view and a distinct working structure cannot be established is defined as a weak culture. The fact that the organizational culture has a strong or weak characteristic is among the important factors affecting employees' performance at work as well as their commitment to the organization, their job satisfaction and the success of the organization (Şişli & Köse, 2013).

When the views related to the formation of organizational culture are examined, it is seen that three fundamental opinions come into prominence as the roles of the founders in the stage of foundation of the organization, the interaction that employees develop to solve the problems they face in the integration and adaption process and the solutions that employees adopt related to meeting their needs of organizational identity, supervision, honoring and individual requirements (Duygulu & Eroğluer, 2006). In addition to these, it is stated that the history of the organization, norms, common values shared by employees, ceremonies, stories (Çarıkçı & Oksay, 2004; Kısacık, 2009) and leaders have also an important part in organizational culture to be formed (İşcan & Timuroğlu, 2007). Organizational socialization, which is one of the methods applied for the ones joined the organization newly to adopt the organizational culture, contribute much to the development of the organizational culture. Accordingly, in the framework of socialization process, it is very important to be careful about many stages from the selecting the right employees at the stage of starting the job to employing them, from their becoming professional to measuring their performances and rewarding, from the commitment to the important values to strengthening the traditions and to the recognition of the employees that can be role models (Alp & Ardahan, 2015).

Organizational culture plays an important role between

organizations' following their goals and adopted policies, following the strategies adopted by executives (Duygulu & Eroğluer, 2006) and human resources management, the performance of the organization (Rızaoğlu & Ayyıldız, 2008). Moreover, it is stated that this concept is not only important to achieve organizational goals, but also to make work environment more attractive for employees, to create a positive organizational image and to improve the communication with partners (Desson & Clouthier, 2010). By means of organizational culture, employees can reveal commitment to the values except for their own interests, stability in social system can be provided, the behaviors of the employees can be controlled and their actions can be shaped (Duygulu & Eroğluer, 2006), the adaptation of the organization to the external environment is ensured (Rızaoğlu & Ayyıldız, 2008), we-feeling is developed, a strong unity is established and emotional integration occurs (Karahan, 2008). In addition, organizational culture contributes employees to understand more easily what the organization expect from them, to improve in-house communication, to increase the motivation of the employees, to train new executives, to decrease conflict, to perpetuate the life of the organization and to protect the union (Kısacık, 2009; Rızaoğlu & Ayyıldız, 2008). It realizes the continuity of the social system (Gülova & Demirsoy, 2012; Kısacık, 2009), forms corporate identity, preserves the stability in the organization (Karahan, 2008; O'Donnell & Boyle, 2008), and enables to determine the mission and vision (Karahan, 2008; Kök & Özcan, 2012).

By means of organizational culture, employees have the opportunity to act with a sense of responsibility, a high commitment to the organization and willingness to represent the organization emerges, employees continue their activities in a motivated way, a team approach is adopted, a determined, consistent and high degree of compliance performance is displayed since the chaos decreases, the chance of rapid access to information arises and decisions can be taken serially and, in this way, plans and projects can be carried out smoothly, an institutionally steady development is ensured, conflicts can be resolved in a short time, the organization is provided continuity and the culture is enabled to pass down (Alp & Ardahan, 2015).

Considering the dimensions of the corporate culture; concepts such as individual initiative, risk tolerance, direction, integration, management support, control, identity, reward system, tolerance showed in

disagreements and communication models are observed to gain importance (www.selcuk.edu.tr). The diversity in defining the concept brought along to handle its dimensions from different perspectives. According to another definition from this perspective, the dimensions of organizational culture are individual autonomy, organizational structure, organizational support, corporate identity, organizational justice, tolerance in conflict and encouragement for undertaking risks (Ataseven et al., 2014).

The Concept of Job Satisfaction and its Importance

The concept of satisfaction has been accepted one of the topics drawing behaviorists' attention, and service providers have turned towards this subject in time (Çarıkçı & Oksay, 2004). This is because job satisfaction is considered as one of the important criteria in terms of the content of employees (Çarıkçı & Oksay, 2004; İşcan & Timuroğlu, 2007), it is felt only by employees and contributes employees to achieve inner peace (İşcan & Timuroğlu, 2007). Therefore, in many studies conducted at the corporate level, job satisfaction is handled and evaluated as an important dimension (Aşan & Erenler 2008). In addition, several variables such as the acceptance of the human resources as one of the essential inputs, the value they carry in the process of achieving organizational goals and the determining role they play in the process of organizations' succeeding have increased the importance executives give the concept of job satisfaction. Indeed, the fact that managers accept it as a requirement of modern management approach to make some arrangements in order to ensure employees' motivation and increase job satisfaction is among the main factors leading to increase the interest in this issue (Özaydın &Özdemir, 2014).

Although the concept of job satisfaction has been the focus of many studies since the beginning of the 1900s (Tekingündüz &Tengilimoğlu; 2013), it is seen that it is difficult to define the concept, and there are different definitions (Aziri, 2011; Çarıkçı & Oksay, 2004; Saari & Judge, 2004; Şeker et al., 2016; Tekingündüz & Tengilimoğlu; 2013). Job satisfaction emerges with the help of disciplines such as psychology, sociology, social psychology and anthropology and in general meaning, it is defined as employees' presence at the work place not only physically but also psychologically. According to another point of view, job satisfaction is a reflection of the peace employees feel due to their jobs and their basic characteristics expressed as job security, autonomy level,

wage and, career development (Çarıkçı & Oksay, 2004). Employees' loving their jobs (Tekingündüz & Tengilimoğlu; 2013) and the combination of psychological, physiological and environmental factors that enables them to state they are satisfied with their job is another accepted opinion that expresses job satisfaction (Aziri, 2011; Tekingündüz & Tengilimoğlu; 2013). According to another definition, the concept of job satisfaction is used to express the content or discontentment that employees feel about their jobs, consists of inner responses, includes personal evaluations of the job and it is predicted that it will increase if the expectations regarding the job comply with the nature of the job (Aşan & Erenler, 2008).

The factors affecting job satisfaction are grouped as internal and external factors; the genders, ages, working durations, professions, education levels, intelligences and personalities of individuals are defined as internal factors, and the physical structure of the job, wage level, career opportunities, superior-subordinate relationships and the level of participating in decisions are defined as external factors (Duygulu & Eroğluer, 2006). It is possible to classify the factors affecting employees' job satisfaction as individual and organizational factors. Individual factors include the physical and emotional states of employees such as age, gender, level of education (Çarıkçı & Oksay, 2004; Özaydın & Özdemir, 2014), position, marital status and working time (Özaydın & Özdemir, 2014). Organizational factors consist of the factors such as the structure of the work, working conditions, executives (Çarıkçı & Oksay, 2004; Özaydın & Özdemir, 2014), the level of income, employees' needs of development and promotion, job security, the climate of the organization, the level of the concord with colleagues (Özaydın & Özdemir, 2014) and employee health (Ordun & Demirbaş, 2012).

It is stated that employees having high level of job satisfaction are in harmony with their environment, tend to collaboration, agree on the unity of purpose in the process of the organization's achieving its goals and are eager to work (Duygulu & Eroğluer, 2006), and it is indicated that their success and performance at work (Aziri, 2011; Çarıkçı & Oksay, 2004), and their organizational commitment is high (Çarıkçı & Oksay, 2004). In addition, it is among their other emphasized characteristics that increasing job satisfaction of employees will lead them to change job fewer, will increase their productivity and lead them to display more productive and creative attitudes. On the other hand, employees with low level of job

satisfaction will be under intense pressure and stress, start to be late for work, leave the job voluntarily (Çarıkçı & Oksay, 2004), have depression, detach from work, their productivities and performances will decrease, they will move away the goals (Duygulu & Eroğluer, 2006) and their incorrect practices will increase (Aziri, 2011).

Low level of job satisfaction is one of the most important indicators pointing out that working conditions have disrupted in an organization (Çalışkan, 2005). Therefore, organizations adopt practices that increase employees' job satisfaction levels in order to realize organizational unity, comply with changes, to be able to compete, to have qualified employees and improve their performances (İşcan & Timuroğlu, 2007). From the perspective of executives, it is observed that motivating employees, making arrangements to increase employees' job satisfaction them and thus maximizing production are the primary objective (Çalışkan, 2005), and by means of this objective, they contribute to the efforts to create a flexible and innovative environment that ensures employees to participate in the decisions (Kısacık, 2009). This is because it is believed that employees with high level of job satisfaction are happy, and happy employees are also successful (Aziri, 2011).

In terms of health care sector, it is revealed that job satisfaction is critical since it affects both the quality of health care services and the satisfaction levels of patients and relatives regarding the service they receive. Therefore, in order to increase job satisfaction, the requirements of ensuring the participation of employees in decisions and meeting their expectations, encouraging and rewarding them, having more autonomous managements and adopting an honest management approach are emphasized (Tekingündüz & Tengilimoğlu; 2013).

The Relationship between Organizational Culture and Job Satisfaction

Job satisfaction, which is defined as a multi-dimensional concept, is one of the most frequently researched issues in terms of organizational culture. Understanding the culture of the organization, adopting organizational objectives, management structure, leadership approaches, working conditions, career opportunities, income, organizational policies and co-workers have a great effect on increasing job satisfaction. Having a productive working environment improves the performance of employees, allows them to be promoted, and as a result of these, it is argued that a significant increase occur in job satisfaction. Organizational

culture, also referred as the system of values, have a major role in experiencing these positive developments (Aziri, 2011). When the results of the researches conducted especially in 2000s are examined, it is observed that the relation between organizational culture and job satisfaction was revealed clearly, and a positive impact is stated (Eryılmaz, 2019).

Due to the impact of the organizational culture on the quality of health services, organizational performance and job satisfaction of the employees, it has gained an increasing importance in the health sector, and studies have started to be carried out to determine the relationship between job satisfaction and organizational culture and their influence on each other (Brazil et al., 2010; Rovithis et al., 2016).

Considering many organizations aim to increase their organizational performances, the importance given to the concepts such as organizational culture, employee performance and job satisfaction is understood more easily. Organizational culture affects not only employees' job satisfaction but also their commitments, performances and keeping at the job. Therefore, it is argued that the better employees understand the culture of the organization, the higher job satisfaction and the high performance they will have, and organizational arrangements are made in this direction.

Methodology

This descriptive study was carried out in Samsun Training and Research Hospital between the months of June and August 2015. 180 people who were on the annual leave, unpaid leave, maternity leave, sick leave and military service were excluded from 1301 employees; 1121 employees were included in the study as the population. Accordingly, sample size was calculated as 285 in the confidence interval of 0.95 and with 0.05 margin error, and the research was conducted on 151 nurses, 74 technician, 48 physicians and 12 other professionals. A questionnaire form to obtain the socio-demographic characteristics and information about working life of the employees, Minnesota Job Satisfaction Scale and The Organizational Culture Scale are used as data collection tools in the research. In order to determine the level of the organizational culture, Denison Organizational Culture Survey, of which Turkish validity and reliability study was carried out by Yahyagil, was used. The scale is a 5-point Likert type and consists of 36 questions. It consists of 4 basic conceptual dimensions as participation, consistency, harmony and vision,

and 12 sub-conceptual dimensions as authorization, teamwork, talent development, core values, reconciliation, coordination, change, customer orientation, organizational learning, strategic management, organizational goals and mission. The scale for determining the job satisfaction levels of the employees was developed under the guidance of Weiss et al. in 1967 and its Turkish validity and reliability study was conducted by Rızaoğlu and Ayyıldız, and it consists of 20 questions. It is a 5-point Likert type and formed by 3 dimensions as internal job satisfaction, external job satisfaction and overall job satisfaction.

The Cronbach's Alpha (α) values of the participation, consistency, harmony and vision, the basic conceptual dimensions of the Organizational Culture Scale, were calculated as 0.839, 0.799, 0.797 and 0.807 respectively, and the Cronbach's Alpha (α) values of the internal job satisfaction, external job satisfaction and overall job satisfaction, sub-scale scores of Minnesota Job Satisfaction Scale, were determined as 0.924, 0.868 and 0.943 respectively.

In the statistical analysis of the data, SPSS 17.0 software was used. Student t test was used in comparing two groups, and variance analysis was used in comparing more than two groups. In the evaluation of the relation between the variables, Pearson correlation coefficient was calculated. The significance level was accepted as $p<0.05$.

Aspect of Research

To conduct the research, Ethical Committee was applied, and the research process was started after the approval of the 22 June 2015 dated and 54103609/604.02/3458 numbered Poll Conducting Permit obtained from the Republic of Turkey Ministry of Health, Public Hospitals Administration of Turkey, Samsun Association of Public Hospitals General Secretariat.

Results and Discussions

The average age of the employees was 36.1±8.3, and the median was (min-max) 35 (19-64). 60.7% of the employees were female, 80.0% were married and 37.2% had associate's degree. 53.0% of the 285 employees consisting the research group were nurses, 26.0% were technicians, 26.8% were physicians and 4.2% were other professionals. 88.1% of the employees were working at medical units and 11.9% at administrative and technical units, and their period of service was 13.2 ± 8.6 years, min-max (1-37 years), and the working period at the institution was 7.8±7.0

years, min-max (1-33 years).

Organizational culture scale basic and sub conceptual dimensions and Minnesota job satisfaction scale sub-scale scores are presented in Table 1.

Table. 1. Hospital Employees' Organizational Culture Scale Basic and Sub Conceptual Dimensions and Minnesota Job Satisfaction Scale Sub-Scale Scores

Organizational Culture Scale Basic Conceptual Dimensions	**X± SD**
Participation	3.0 ±0.7
Consistency	2.9 ±0.7
Harmony	3.0±0.7
Vision	3.0 ±0.7
Organizational Culture Scale Sub Conceptual Dimensions	
Authorization	3.1 ±0.9
Teamwork	3.0 ±0.8
Talent Development	2.9 ±0.9
Core Values	2.8 ±0.7
Reconciliation	2.8 ±0.8
Coordination	3.0 ±0.7
Change	3.1 ±0.9
Customer Orientation	3.1 ±0.7
Organizational Learning	2.9 ±0.8
Strategic Management	2.9±0.7
Organizational Goals	3.0 ±0.9
Mission	2.9 ±0.8
Minnesota Job Satisfaction Scale Sub-Scales	
Internal Job Satisfaction	3.2 ±0.9
External Job Satisfaction	2.9 ±0.8
Overall Job Satisfaction	3.0 ±0.8

In terms of gender, in the harmony and vision basic conceptual dimensions of the organizational culture scale (Table 2), females had significantly higher score than males in the sub conceptual dimensions of customer orientation (M:3.0±0.7; F:3.2±0.7), strategic management (M:2.8±0.8; F:3.0±0.7) and mission (M:2.7±0.8; F:3.0±0.8) ($p<0.05$).

When the basic and sub-conceptual dimensions of the organizational culture scale in terms of the educational status of the employees are compared, the difference between the groups in the basic conceptual dimensions of harmony and vision (Table 2), and in the change, customer orientation, organizational objectives and mission sub-conceptual dimensions were found statistically significant ($p<0.05$). Associate degree graduates' scores were significantly higher in compliance and vision basic conceptual dimensions and change, customer orientation and mission sub-concept dimensions when compared to other graduates, while in organizational goals dimension associate degree and undergraduate graduates score significantly higher than graduate graduates. In the organizational objectives dimension, those having associate and bachelor's degree obtained significantly higher scores than the ones having master degree.

When Minnesota Job Satisfaction Scale sub-scales were compared, the difference between the groups was found statistically significant in internal job satisfaction, external job satisfaction and overall job satisfaction scales. In the internal job satisfaction scale, nurses had significantly lower scores than technicians and physicians, in the external job satisfaction scale they had significantly lower scores when compared to technicians and other professionals, and they scored significantly lower than the other professionals in overall job satisfaction scale ($p<0.05$) (Table 2).

Table. 2. Organizational Culture Scale Basic Conceptual Dimensions and Minnesota Job Satisfaction Scale Sub-Scales in terms of Socio-Demographic Characteristics of the Employees

Variables	n (%)	Organizational Culture Scale Basic Conceptual Dimensions				Minnesota Job Satisfaction Scale Sub-Scales		
		Participation X±SD	Consistency X±SD	Harmony X±SD	Vision X±SD	Internal Satisfaction X±SD	External Satisfaction X±SD	Overall Satisfaction X±SD
Gender								
Female	173 (60.7)	3.0±0.7	2.9±0.6	3.1±0.6	3.0±0.7	3.1±0.9	2.9±0.8	3.0±0.8
Males	112 (39.3)	3.0±0.8	2.9±0.7	2.9±0.7	2.9±0.7	3.2±0.9	2.9±0.9	3.1±0.8
p value		p=0.413	p=0.916	**p=0.031**	**p=0.048**	p=0.157	p=0.938	p=0.355
Marital Status								
Married	228 (80.0)	3.0±0.7	2.9±0.6	3.0±0.7	2.9±0.7	3.2±0.9	2.8±0.9	3.0±0.8
Not married	57 (20.0)	3.1±0.8	2.9±0.7	3.0±0.7	3.0±0.7	3.2±0.8	3.0±0.8	3.1±0.8
p value		p=0.123	p=0.894	p=0.966	p=0.488	p=0.968	p=0.249	p=0.611
Educational Status								
High School	29 (10.2)	3.1±0.8	2.9±0.8	3.0±0.8[ab]	3.0±0.8[ab]	3.3±0.7	3.1±0.8	3.3±0.7
Associate's Degree	106 (37.2)	3.1±0.7	3.0±0.7	3.2±0.7[b]	3.1±0.7[b]	3.2±0.8	2.9±0.9	3.1±0.8
Bachelor's Degree	82 (28.8)	2.9±0.6	2.8±0.6	2.9 ±0.6[ab]	2.9±0.6[ab]	3.0±0.9	2.7±0.9	2.9±0.9
Master Degree	32 (11.2)	2.8±0.8	2.7±0.6	2.7±0.7[b]	2.7±0.7[b]	3.3±0.9	2.9±0.8	3.1±0.8
PhD	36 (12.6)	3.0±0.7	3.0±0.6	3.0±0.7[ab]	3.0±0.7[ab]	3.4±0.7	2.9±0.8	3.2±0.7
p value		p=0.141	p=0.058	**p=0.004**	**p=0.017**	p =0.074	p=0.236	p=0.112
Profession								
Nurse	151 (53.0)	3.0±0.7	2.9±0.7	3.1±0.7	3.0±0.7	3.0±0.9[a]	2.7±0.9[a]	2.9±0.8[a]
Technician	74 (26.0)	3.0±0.8	2.9±0.7	2.9±0.7	2.9±0.7	3.3±0.8[b]	3.1±0.8[b]	3.2±0.8[b]
Physician	48 (16.8)	3.0±0.6	2.9±0.7	2.9±0.7	2.9±0.7	3.4±0.7[b]	2.9±0.8[ab]	3.2±0.7[b]
Others*	12 (4.2)	3.0±0.7	2.7±0.7	3.0±0.7	3.1±0.9	3.1±0.9[ab]	3.3±0.6[b]	3.4±0.5[b]
p value		p=0.973	p=0.881	p=0.175	p=0.832	**p=0.001**	**p=0.015**	**p=0.002**

Units								
Medical Units	251 (88.1)	3.0±0.7	2.9±0.6	3.0±0.7	3.0±0.7	3.2±0.9	2.8±0.8	3.0±0.8
Administrative and Technical Units	34 (11.9)	2.9±0.9	2.8±0.8	2.9±0.8	2.9±0.8	3.2±0.9	3.2±0.8	3.2±0.8
p value		p=0.451	p=0.560	p=0.249	p=0.985	p=0.789	**p=0.048**	p=0.319
Working Period in the Profession								
1-10 years	219 (76.8)	3.0±0.8	2.9±0.7	3.0±0.7	3.0±0.7	3.1±0.9	2.9±0.9	3.0±0.8
11-20 years	47 (16.5)	3.0±0.7	2.9±0.7	3.0±0.7	3.0±0.7	3.2±0.9	2.9±0.9	3.1±0.8
21 years and above	19 (6.7)	2.9±0.6	2.8±0.5	2.9±0.6	2.9±0.6	3.1±0.8	3.0±0.7	3.0±0.7
p value		p=0.308	p=0.730	p=0.291	p=0.490	p=0.811	p=0.643	p=0.881
Monthly Income								
1000-1999	49 (17.2)	3.1±0.7	2.9±0.6	3.2±0.6	3.0±0.7	3.0±0.9	2.7±0.7	2.9±0.8
2000-2999	156 (54.7)	3.0±0.7	2.9±0.6	3.0±0.7	3.0±0.6	3.2±0.9	2.9±0.9	3.1±0.8
3000-3999	43 (15.1)	2.9±0.7	2.8±0.8	2.9 ±0.8	2.8±0.9	3.2±0.8	2.8±0.9	3.0±0.8
4000 and above	37 (13.0)	3.0±0.7	2.9±0.6	3.0±0.7	2.9±0.7	3.4±0.7	2.9±0.8	3.2±0.7
p value		p=0.638	p=0.787	p=0.378	p=0.407	p =0.224	p=0.573	p=0.370

* Data preparation and control operator, officer, pharmacist, cook, engineer, servant, biologist/chemist.

When Minnesota Job Satisfaction Scale sub-scale scores are compared in terms of the units employees work at, the difference between the groups was found statistically significant in overall job satisfaction scale. The scores of those working at medical units had significantly lower scores when compared to those working at administrative and technical units (p<0.05) (Table 2).

When the relationship between the age of the individuals constituting the research group, the working time in the profession and the institution, and the sub-conceptual dimensions of the corporate culture scale are examined, a very weak negative significant relation was found between age and authorization, teamwork and coordination, and working time in the profession and coordination (p<0.05) (Table 3).

Table. 3. The Correlation between the Organizational Culture Scale Sub-Scales and Minnesota Job Satisfaction Scale Sub-Scale Scores of the Hospital Employees

Sub-Conceptual Dimensions	**Age**	**Working Period in the Profession**	**Working Period in the Organization**
Authorization	**-0.120***	-0.104	-0.107
Teamwork	**-0.156****	-0.115	-0.059
Talent development	-0.080	-0.062	-0.034
Core values	0.046	0.061	0.115
Reconciliation	-0.007	-0.009	0.002
Coordination	**-0.124***	**-0.120***	-0.092
Change	-0.032	-0.044	0.010
Customer orientation	-0.064	-0.102	-0.070
Organizational learning	-0.075	-0.086	-0.064
Strategic management	-0.056	-0.056	-0.012
Organizational objectives	-0.074	-0.061	-0.020
Mission	-0.102	-0.064	-0.020

* p<0.01

When the correlation between the organizational culture scale subscales and Minnesota Job Satisfaction Scale subscale scores of the hospital employees were examined, a positive weak and moderate significant relation between participation and internal job satisfaction, and between external job satisfaction and overall job satisfaction; a weak relation between consistency and internal job satisfaction; a positive moderate significant relation between external job satisfaction and overall

job satisfaction; a weak relation between harmony and internal job satisfaction and overall job satisfaction and a positive moderate relation with external job satisfaction; a positive moderate significant relation between vision and internal job satisfaction and between external job satisfaction and overall job satisfaction subscales was determined ($p<0.01$) (Table 4).

When the correlation between the Organizational Culture Scale sub-conceptual scales and Minnesota Job Satisfaction Scale subscale scores were examined, a positive weak and moderate significant relation was determined between all scales except for customer orientation and external job satisfaction subscales ($p<0.05$) (Table 4).

Table. 4. The Correlation between the Organizational Culture Scale Sub-Scales and Minnesota Job Satisfaction Scale Sub-Scale Scores of the Hospital Employees

Organizational Culture Scale	**Minnesota Job Satisfaction Scale Sub-Scales**		
	Internal Job Satisfaction	**External Job Satisfaction**	**Overall Job Satisfaction**
Organizational Culture Scale Basic Conceptual Dimensions			
Participation	0.409**	0.467**	0.457**
Consistency	0.386**	0.489**	0.451**
Harmony	0.338**	0.414**	0.389**
Vision	0.404**	0.499**	0.467**
Organizational Culture Scale Basic Conceptual Dimensions			
Authorization	0.322**	0.418**	0.381**
Teamwork	0.298**	0.272**	0.298**
Talent development	0.438**	0.501**	0.489**
Core values	0.277**	0.338**	0.318**
Reconciliation	0.395**	0.501**	0.462**
Coordination	0.305**	0.396**	0.361**
Change	0.352**	0.442**	0.410**
Customer orientation	0.124*	0.115	0.127*
Organizational learning	0.342**	0.439**	0.402**
Strategic management	0.295**	0.347**	0.433**
Organizational objectives	0.378**	0.439**	0.381**
Mission	0.359**	0.486**	0.298**

** $p<0.01$ * $p<0.05$

Discussion

According to this research conducted on health sector, the difference between *harmony* and *vision* basic conceptual scales and *customer orientation, strategic management* and *mission* sub-conceptual scale scores in terms of gender, and the difference between *harmony* and *vision* basic conceptual scales and *change*, *customer orientation, organizational objectives* and *mission* sub-conceptual scale scores in terms of education status is statistically significant. When the job satisfaction scale sub-scale scores of the employees are compared in terms of the professions, the differences between the groups in *internal job satisfaction, external job satisfaction* and *overall job satisfaction* scales, and the difference in the *overall job satisfaction* sub-scale in terms of the units employees work at are also statistically significant.

In addition, a negative and very weak level of significant relation was determined between *authorization, teamwork* and *coordination* sub-conceptual scale scores in terms of age, and between *coordination* sub-conceptual scale in terms of the working period in the profession. According to the result of another study conducted to determine the job satisfaction, organizational commitment and organizational dimension levels of the employees of a state hospital, and to detect whether these levels differed in terms of the socio-demographic characteristics of the employees; the job satisfaction levels of the employees were found above the average. It was determined that the job itself, co-workers, managers and communication were the scales having the highest job satisfaction scores, and promotion, presence of additional opportunities and wage were among the lowest job satisfaction scales (Tekingündüz & Tengilimoğlu, 2013). According to the result of another research conducted to determine the effect of organizational culture and organizational structure on the job satisfaction level of health care sector employees (physicians, nurses and other health care staff), health care employees' having the employment security had a great importance on experiencing job satisfaction and loving the institution they work for. However, it was revealed that employees had dissatisfaction in terms of justice perceptions mostly related to the distribution of nonwage payments (Çarıkçı & Oksay, 2004). As it is understood, job satisfaction levels differ depending on the socio-demographic characteristics of the employees, and these results comply with the results of other researches in the literature.

When the correlation between the sub-scales of the organizational culture scale and the sub-scale scores of the job satisfaction scale was evaluated, a positive weak and moderate significant relationship was determined between *participation* and *inner job satisfaction, external job satisfaction* and *overall job satisfaction*. A weak significant relationship was found between *consistency* and *internal job satisfaction*, a positive moderate significant relationship between *consistency* and *external job satisfaction* and *overall job satisfaction*, a weak significant relationship between *harmony* and *internal job satisfaction* and *overall job satisfaction*, a positive moderate significant relationship between *harmony* and *external job satisfaction*, and a positive moderate significant relation between *vision* and *internal job satisfaction, external job satisfaction* and *overall job satisfaction*. When the studies examining the relationship between organizational culture and job satisfaction in the literature, it was found that the employees working at chain accommodation establishments had higher job satisfaction when compared to those working at family-run accommodation establishments, and it was inferred that organizational culture had positive effects on job satisfaction. In addition, it was found that especially employees having high educational levels adopt the organizational culture, and they had more satisfaction from their jobs (Eşitti, 2014).

When the results of another study conducted on company employees to determine the effect of organizational culture on job satisfaction were examined, it was revealed that employees felt under control, they thought that personal development and innovative ideas were given importance, stated that rewards were given fairly to those who deserve and they love the institution they work for. In addition, according to the job satisfaction scales averages of the employees, it is seen that they satisfied depending on the environment and content of the job, and organizational culture sub-scales were in a positive relation with both themselves and job satisfaction scales in the same direction (Duygulu & Eroğluer, 2006). According to the result of another research conducted on a chain store widespread across Turkey in order to examine the relations between job satisfaction, organizational culture and organizational commitment, it was revealed that wage relationships with managers and co-workers, working conditions and occupational health and safety were the basic factors increasing job satisfaction (Ordun & Demirbaş, 2012). In the result of a different study conducted to determine the job satisfaction

levels of the nurses working in the public sector in Malatya, it is seen that a large part of the nurses stated that they were not able to participate in the management, did not like the supervision manner and were not content with the wage they got, working conditions and promotion possibilities (Çalışkan, 2005). With another study conducted on the employees working for Diyarbakır Provincial Directorate of Social Security Institution, it was aimed to determine their perception for organizational culture, and as a result, it was found that the employees did not have a clear perception, and also their job satisfaction was low. On the other hand, it was found that there was a positive relation between organizational culture and job satisfaction, and as the perception of organizational culture developed, job satisfaction would also increase (Şeker & et al., 2016). According to another study conducted by Habib & et al. (2014), it was found that organizational culture had an important effect on the job satisfaction of employees, and positive organizational culture would affect job satisfaction positively. When the findings of the research conducted by Bellas & Koustelios (2014) were examined, it was determined that similar results were obtained and there was a positive relation between organizational culture and the job satisfaction of the employees. A similar finding was also revealed in the research conducted by Qazi & et al. (2017). It was found that if organizational culture was improved, job satisfaction would also increase.

Conclusion and Recommendations

In terms of the health sector, it is seen that hospitals operating in both private and public sectors need highly motivated and successful staff despite all the developments in technology. Based on the fact that employees are one of the most important resources they have, it is considered as the main goal not to lose them and increase their job satisfaction. The underlying reason for this is that determining the factors that enable employees to get satisfaction from their job is not only limited with increasing the performance of the health care staff and increasing institutional efficiency, but also contributes to the process of improving the health status of the society and providing quality health services.

As can be understood from the results of the research, there are positive and significant differences between the socio-demographic characteristics of the employees such as gender, age, education, profession and working period in the profession, and job satisfaction levels.

When it comes to organizational culture scales, employees' satisfaction levels increase in the cases of participation in decisions, adopting institutional mission and vision, authorization, talent development, reconciliation and having the chance of organizational learning. Therefore, it is thought that hospital management's taking a step to create awareness in employees about the issue, to include them in decision making process, and to prepare a career improving environment by informing them about the developments related to organizational learning will have positive results. In addition, it is also believed that teamwork and coordination that are important for health sector will contribute the process.

It is foreseen that this study, which has been conducted to determine the affecting level of the organizational culture to the job satisfaction of health sector employees, will be helpful to evaluate the present situation and to present solution offers, and contribute to the further large scale studies on this issue.

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Chapter 30

Health Services and Hospitals in Romania During the Ottoman Empire

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INTRODUCTION

The Ottoman Empire ruled over Europe, Asia and Africa for centuries. His longest reign lasted in the Balkan Geography. Romania which is a Balkan country, remained under the rule of the Ottoman Empire for 490 years. During this period, Turks had profound effects in Romania in terms of ethnicity, language, culture, sociology, history and civilization. In addition, the castles, bridges, roads, railways, train station, port, inn, Turkish bath, mosque, barracks and various hospitals which build, have survived to the present day.

In this study, the chronological historical process of Romanian Geography, information and photographs of the Ottoman Empire, and information about today's Romania and the Turks living in Romania are given. In the study, there are Ottoman artifacts, which are the witnesses, seals or title deed records of the Turkish civilization in Romania, which are the subject of the study, and especially information and visuals about hospitals and health services.

HISTORICAL PROCESS OF ROMANIAN GEOGRAPHY

The oldest human fossils in Europe have been found on Romanian soil. Discovered in 2002 in a cave in western Romania. These fossils are estimated to date back 42,000 years. (Romanya Tarihi, https://www.turkcebilgi.com/romanya_tarihi#post)

Archaeological researches on Romanian soil date the human existence in this geography back to 40,000 years ago, which is the oldest history that can be reached in the European countryside until today.The history of the first settlements and community activities goes back to 6,000 BC (Birbudak, 2014).

The history of settlement on the territory of today's Romania goes back to the Neolithic period (5500-2500 BC). Brilliant examples of the

Hamangia and Cucuteni cultures were found here. After the Indo-European European tribes came to the region at the end of the third millennium BC, a mixture with native elements occurred. In the first millennium BC, the Scythians, Greeks and Celts coming from outside had influences in the region. (Ülküsal, 1966,45), (Beksaç, 2013,37-53), (Bozkurt, 2008, 1-31)

Scythian Period**:** In 1300 BC, Scythian (Saka) Turks came to this region and captured the cities of settled cultures. Due to their militaristic characteristics, they enslaved the local people and created a mechanism that their military caste classes ruled and exploited. From 1300-1200 BC, the Scythians descended over the Northern Black Sea steppes to the Balkans and the Peloponnesos Peninsula in the south. (Iron, 2020,77-218) In 1000 BC, Dobruja, Carpathian-Danube region was again the scene of the incursions of new Scythian (Sciti) groups coming from the north. In these years, the effects of Greeks and Celts were seen in the region as well as Scythians (Birbudak, 2014). The Scythians came into contact with the Thracians, who are considered to be the ancestors of the Romanians, and they took some local tribes under their rule in the vicinity of Mangalya (this name was inherited from the Scythians (Horata, 1997, 1864), (Horata, 2003, 160). The oldest known people of Dobruja are the Thracians and Gets. VII BC. It is known that in the century, the Hellenes went to the Black Sea coasts for trade and settled and established some colonies. B.C. IV. in the steppes north of the Black Sea in the mid-century. As a result of the pressures of the Sarmatians, the Scythians migrated further west and south and crossed the Danube to find a safe place for themselves. They also aimed to seize the area called "Little Skythia". (İskitler, 2021, ttps://tarih34.com/iskitler-sakalar), (Durmuş, 2012,62-64), (Durmuş, 2007,86-88), (Durmuş, 1997,49-52), (Durmuş, 1996, 178), (Potratz,963, 14), (Vernadsky, 1943,74), (Memiş, 1987,32) The Scythians who achieved this goal settled in Dobruja and gave their name to the region as Scythiaminor (Small Scythians). (Karpat, 1994,482-486), (Dobruca, 2021, https://tr.wikipedia.org/wiki), (Dobruca Beyliği, 2021, https://tr.wikipedia.org/wiki), (Balkan Tarihi, 2021, https://tr.wikipedia .org/wiki)

Persians period: The first written document on human existence in Romania belongs to 513 BC and is the book of Herodotus. In this book, there is a section about the defeat of the Thracians living in this region to the Persian king Darius I. (Romanya Tarihi, 2021,

https://www.turkcebilgi.com).

Traks (dak/gatae) period: Between the 5th and 3rd centuries, the Thracian Dak (Gatae) tribes began to spread in the region.

Figure:1- Daks

Daks are Thracian tribe called Geton in ancient Greek sources, Dacus and Getae in Latin sources. The word Draco is thought to be borrowed from the Sarmatians or Alans. Strabo writes that the ancient name of this people, which spread as far as Scythia Minor (Little Scythia), was Daoi and that it was related to the word "daos", which means wolf in the Phrygian language. Indeed, the symbol of the Dak Army is called "draco". Strabo this symbol; The balaur (dragon-body) denotes a wolf-headed creature with its mouth open and its long tongue sticking out.

Figure-2-Draco symbol, (Capitolini Museum)

Thucydides states that the Gets were mounted archers living on the Scythian border. (Strabon, Geographika,7, 13), (Öztürk, 2016, 217-226),

(Getae, 2021, https://tr.wikipedia.org)

The Daks belong to the same language group as the Thracians. In the 1st century BC, the Dacians (Gets) who lived to the north of the Danube river, founded the Dacia (Dacian) Kingdom, which stretched from Bohemia to the Black Sea and was located in the Carpathians. This kingdom reached its greatest extent under the rule of King Burebista in 82 BC. The Dacians first attacked the Roman province of Moesia in 87, and confronted the Roman Empire. The Dacians were defeated by the armies of the Roman Emperor Trajan between 101-107 and their kingdoms dissolved after hard and long wars with the Roman Empire. The Romans instead created the province of Dacia in AD 106. VII-IX. As a result of the Romanization of the Dako-Get indigenous people between the centuries, a new ethnic structure was born. They were called Roman, based on the Latin word Romanus, meaning "Roman citizen". (Ülküsal, 1966,45), (Beksaç, 2008), (Bozkurt, 2008, 1-31), (Birbudak, 2014),(Romanya Tarihi, 2021, www.turkcebilgi.com)

Rome period:After the Scythians, the Germans stayed here for a while. Then, in 29 BC, the Romans occupied Dobruja and dominated the region for about 250 years. Because the Dacian region was very rich in silver and gold, and these rich resources attracted the attention of the Romans the most. Thereupon, many Romans settled in the region and Latin began to be used very widely. Thus, the old Romanian language was born. The Romans remained in Dacia until around 271. However, in the end, they were unable to withstand the invasions of the Goths and had to retreat from the region (Romanya Tarihi, 2021, www.turkcebilgi.com).

Gots period: After the collapse of the Roman Empire, Huns, Goths, Slavs, Avars, Pechenegs, Cumans and Mongol-Tatars ruled in the region. (Birbudak, 2014)

Huns and Sequels Periods: The Goths invaded Dobruja in 250 AD, but after a while, the Huns came to the region and settled in the region and left the Roman administration in a difficult situation. Later, the region remained under the rule of the Goths between 271 -378 AD and the European Huns until 435. In the sixth century, Avars and Slavs came to the region. In 453 AD, the Sekelles, who were originally Hun Turks, settled in the Carpathian basin and 800 000 Sekel Turks still live in this region today.

The Szekels are a group of Western Huns who settled in Hungary after the tribes migration. The Hun Empire, which was established in

375, was destroyed after the death of the chief Atilla in 453 and 454. Afterwards, Atilla's younger son Çaba's unit and 3000 soldiers withdrew to a solid place in the Carpathian Basin. Here are the sequels of these types. They continued their existence here until the arrival of the Hungarians in 895 AD. Hungarian chronicles of the Middle Ages also record that the Szekels were descendants of Atilla and were present there when the Hungarians arrived. The sequelae had 6 lengths and each neck had 4 arms. Most of them are Turkish.

Some historians state that the Szekels came to the region before the Hungarians, but that they are the descendants of the Avars, not the Huns. Others state that they came with the Hungarians and are the descendants of the community called Esegel or Eskil. Another group of historians think that the Szekels were Kabars from the Khazar Empire, and that their homeland was around present-day Bashkortostan. After the collapse of the Hungarian State in 1526, the Ottoman State recognized the Sekel Autonomy.

According to what is written in Romanian history books; Romanians have lived in the Transylvania region for a long time and have always been the majority of the population. Romanians are always settled, peaceful and intelligent people. They developed a high civilization in Europe and were even the first settlers, superior in some ways to Greek and Roman civilizations. The Romanian people are direct descendants of the glorious Roman Legionnaires. They are the real bearers of Roman Culture. They are the oldest inhabitants of Transylvania. The indigenousness of the Romanians goes back to the “oldest times”. For these reasons, this region belongs only to them as a historical right. Romanians; They also successfully propagate what is written in these history books. In fact, according to their claims, the first inventors of many scientific achievements of mankind were the Romanians. All the other peoples around them are invaders who came to the region as barbarian nomads and hindered the peaceful development of the Romanians. Hungarians were blamed for all the misfortunes that happened to the Romanians. For these reasons, a genocide was committed by the Romanians in Transylvania in 1848 with the support of the Austrian Army and Austrian authorities. In this genocide, Hungarian and Szekel leaders were executed.

There is no reliable evidence for the claims of the Romanians in the most ancient times and their official ideology mentioned above. It should

be known that it is not possible to create an imaginary, fabricated and forced history that is far from reality. The Romanian nation began to form in the 10th century AD.

During the Russo-Turkish War in 1877, the Szekels formed a unit called the Sekel Legion to assist the Turkish army. An autonomous region was established in Romania in 1952, on the geography corresponding to the territory of Szekelia, as per the new Constitution, but this never had autonomy and this autonomous region was abolished in 1968. Romanians often say to Szekels "go to Hungary" or "go to Asia". (Borbély, 2018, https://bilimdili.com/),(Doğan,2006,147-148),(Güldür,2021, https://www.turktoyu.com/)

Avars Period: M.S. VI. century Avar (Kipchak) Turks; They came from Central Asia (Dest-i Kipchak) and advanced to Istanbul and besieged Istanbul. In the same century, the Slavs also came to the Dobruca region. (Romanya Tarihi, https://www.turkcebilgi. com/ romanya_tarihi#post). This situation continued in the 7th century AD.After the Avar and Slavs entered the region, the Roman administration built a long defense wall in the middle of Dobruja. Traces of this wall can still be found today. When the Romans could not cope with the Avar and Slavs, they withdrew from Dobruja.

Bulgarians periods: Bulgarian Turks living on the banks of the Itil River started to come to the region in the 7th century (681-702). In the 8th century, under the rule of Asparuh (Isperich), Turkish tribes and Volga Bulgarians coming from the north crossed the Danube River in 678 and came to the region extending from the Isakça and Nikulitzel regions to the south in the north of Dobruja. They dominated the Slavs living on these lands. In 681, Bulgarian Turks (Proto Bulgarians) established the First Bulgarian State. 9.-11. Between the centuries, most of the Romanian lands lived as part of the First Bulgarian State. 9.-11. Between the centuries, most of the Romanian lands lived as part of the First Bulgarian State. The period of the First Bulgarian State was followed by Hungarian, Pecheneg, Cuman and Tatar invasions. (Romanya Tarihi, https://www.turkcebilgi.com/romanya_tarihi#post). The second Bulgarian State, founded by the Cumans in 1186, continued its existence until the invasion of Dobruja by the Mongols in 1241. (Ak, 2020,640-645)

Pechenches period: Romanian nation IX. and X. centuries began to form in the Carpathian-Danube region. In this region, IX. Towards the end of the century, it was seen that the Pecheneg Turks settled and

included Byzantium. The Pecheneg Turks besieged Istanbul for the second time after the Avars, but they could not take it. One of these Turks, consisting of thirteen tribes, is the Oguz/Uzs, the origin of today's Gagauz Turks. In Brail and Tulça, some place names from Pecheneg and Oghuz/Uz Turks are found. It is known that the Pechenegs settled in Northern Dobrudja around 1048. The village of Pecineaga, a Turkish village from the Pechenegs in the region, is still known by this name today. In the following years, the Uz (Oghuz) Turks, XII. At the beginning of the century, Cuman, Kipchak and some other Turkish tribes came to Dobruca and came under the political influence of the Pechenegs.

Mongol raids, which continued for a short time in 1241, caused the Turks here to go further south. Cuman Turks, XIII. They first came to the Carpathian-Danube region from the south in the 16th century. . (Horata, 2003, 160), (Ülküsal, 1966,4), (Önal, 1994, 181),(Kurat, 1992,44-97), (Akalın, 1987,7), (Yüce, 1987, 20-100),Çubukçu, 1995, 149), (Hafız, 1995, 212-217), (Hafız, 1995, 218-220),(Aksu, 2003,51,68-73), (Cemil, 1995,302).

As a result of the migrations that started in the 9th century, X-XII. In the eastern and southern parts of the Carpathians, Pechenegs and Cumans dominated the centuries. XIII-XIV. In the centuries, Mongol-Tatar political-military domination was established with Pechenegs and Cumans. As a result, the language and institutions of the Turks in this region have become permanent. This Turkish influence paved the way for the Turkish language and Turkish institutions to settle in these lands during the Ottoman Empire (Ülküsal, 1966,45-244), (Beksaç, 2013,37-53), (Bozkurt, 2008, 1-31).

After the arrival of the Bulgarians in the Balkans X-XII. Some of the Pecheneg, Kuman (Kipchak) and Uz Turks who migrated to the Balkans in the XV century. They have preserved their existence collectively until the century. At that time, a Cuman dictionary (Codex Cumanicus) containing up to 2500 words was prepared for the Europeans who traded with the Cumans. (İslam Ansiklopedisi Türkiye Diyanet Vakfı), Cilt 5, s. 28-29).

Photograph 1: A father left over from the Cumans, 12th century. Lugansk IX

In the first half of the century, a great migration started from the Northern Black Sea due to the pressure of the Caspian-Oghuz alliance. As a result of this great migration, the Pechenegs and after them the Oguz and Cumans headed west from this region.

In the middle of the X. century, they settled in coastal areas such as Yula (Prut), Kapan (lower Danube), on the banks of the rivers flowing into the Black Sea in 8 lengths (Gyula Györffy, Sur la question de l'établissement des Pétchenégues en Europe, s. 283-292), (Prof. Dr. İbrahim Kafesoğlu, Türk Millî Kültürü, Ötüken Neşriyat, İstanbul, 2003, s. 179-180., ISBN 975-437-236-5)

Figure 3: The attack of the Pechenegs on the "skyths" of Svyatoslav I

In the 13th century, the growth areas of Cumans in the Balkan lands expanded and they were found in many regions during this period. One group spread across the Balkan lands by crossing the Danube through the Bulgarian neighborhood, while other groups settled in the more central parts of the region.

Before the Ottoman Turks entered the Balkans, 12th-14th centuries. The outstanding historical role of Cumans in the region during the centuries has not been emphasized enough. In particular, the Cumans (Kipchak) who settled in the steppe region from Dobruca to Akkerman and converted to Christianity established various dynasties. A group of them established a principality in the Dobruca-Varna region in the second half of the 14th century. The capital of the principality is Kalliakra. Dobrotic and his brother Colpan are members of the Dobrudja

Principality. This principality was subject to the Ottoman Sultan Murad I in 1388. In 1393, Bayezid I added this principality to the Ottoman country. Before the Ottomans, this region stretching from Deliorman and Varna to the Danube was a real Turkish settlement. (İnalcık, 2005, 20)

Seljuk period: The first settlement of the Seljuks in the Balkans started in 1263. In 1261, Seljuk Sultan II. İzzeddin Keykavus was defeated by the Mongols. Thereupon, thirty or forty Turkmen tribes fleeing from the Mongol rule in 1263-1264 took refuge in Byzantium with the Sultan's uncle, Sarı Saltuk, and settled in the Kavurna region around Babadağ. Emperor VIII. Mihail (Mikhail) Palaiologos placed a group of them, including Sari Saltuk, in Northern Dobruja, on the Western Black Sea coast.

In 1264, Seyit İsmail Saltuk, son of Sari Saltuk, from the Saltuklu family, asked for a place from the Byzantine Emperor. When his request was accepted, a group of soldiers, his supporters and thousands of tents of Chepni tribe settled in the Deliorman Region and made it their home. On the other hand, the fight for the throne II. One of Gıyâseddin Keyhüsrev's children asked the Byzantine Emperor Michel 8th for a place for himself and his entourage. They were also allowed and these Seljuk lords went to the Deliorman region with Seyit Sari Saltuk and mingled with the Chepni. Initially, they came under the patronage of the mighty Nogai, the amir of the Golden Army. Seyit Sari Saltuk later went to Crimea, together with Nogay, the khan of the Golden Horde, from Crimea to Dobruca in 1281, took the Danube tribes (Dobruca region) and made their homeland. This Anatolian Turkmen group founded the town of Baba-Saltuk and other towns here. After the death of Sari Saltuk, this Turkish group converted to Christianity by the force of Byzantium. These Turks, known as the Gökoğuz (Gagauzs), continue their existence as a state in the Autonomous Republic of Gagauzia (Gagauzia) in the Republic of Moldavia today. Ibn Battuta, who passed here in 1332, stated Baba Saltuk Town as "a city where Turks resided".(İnalcık, 2005, 20-21)

He was the first Turkish Balik (Balika) to establish a state in Dobruja. The state founded by Balik, named after the Turkish fish, received its support from the Christianized Oghuzs (Gagauz) living in the south of Dobruca. Balik's brother named Dobrotic stayed in Istanbul for a year and became related to the Byzantine emperor. By occupying Northern Dobruja in 1359, it had close relations with Venice and Byzantium. Dobrotic, who established the first independent state here, gave the region

his own name, and the name Dobrudja emerged in the sense of "Dobrotic's country". (Karpat, 1994,482-486),(Dobruca, 2021, https://tr.wikipedia.org/), (Balkan Tarihi, 2021, https://tr.wikipedia.org), (Dobruca Beyliği, 2021,)

In 1282, Ismail Saltuk and Chepni tribes under his rule settled in the Dobruca Region and established the Dobruca principality. In the 13th century, there was an important migration and colonization of the Seljuk Turkmens from Anatolia to Dobruca. Turkish historians have referred to this region as the homeland of Dobruca since this century. XIII. from the middle of the XIV century. until the end of the century, upon the expansion of the borders of the Golden Horde State to the Danube; Some of the Tatar Turks in the Kipchak Steppes came and settled in the Dobruca Region (Cemil, 1995,302), (Aksu, 2003,51,68-73), (Hafız , 1995, 218-220), (Hafız, 1995, 212-217), (Çubukçu, 1995, 149), (Yüce, 1987, 20-100), (Akalın, 1987,7), (Kurat, 1992,44-97), (Önel, 1994, 181),(Ülküsal, 1972,4), (Horata, 2003, 156).

İsmail Saltuk, son of Sarı Saltuk, died in 1297 and his son Ece Halil Saltuk became the head of the principality. In 1310 (in some sources: 1306) Sari Saltuk's grandson Ece Halil Saltuk crossed the Dardanelles to Anatolia with the wife of the murdered Golden Horde Khan Nogay, Çiçek Hatun and his son Türi, along with some Nogay soldiers and all the Turkmens. He took refuge in his principality. It is stated that the number of refugees is 150 000 tents. Karesi Principality commanders Gazi Evranos and Hacı İlbeyi welcomed these Turkmen and Ece Halil, who were descendants of Sarı Saltuk, with respect and settled them in Karesi lands. Ece Halil Karesi fought against Byzantium as one of his commanders. Karesi Principality was annexed by the Ottoman Empire in 1360 and Ece Halil entered Ottoman service. Some of the events are described in the work called Saltukname. .(Demir, 2007) *More than 100 Alevi Çepni villages living in Balıkesir and Çanakkale provinces and Bergama district today are thought to be the continuation of these Turkmens. It is thought that some of them became Sunnis/grocers by mixing with other Turkmen tribes (Kiel, 1977, 205-227), (*Stānescu, 1961, 177-189).

THE PRINCIPLE OF WALLACHI

Romanians succeeded in establishing their own states for the first time in the 14th century. The Principality of Wallachia was established by Basarab I in 1310 and the Principality of Moldavia was established by

Dragoş in 1352. Erdel, which is a part of today's Romania, is in the 10th-16th centuries. For centuries it was part of the Kingdom of Hungary. (Romanya Tarihi, https://www.turkcebilgi.com/r). Wallachia and Moldavia gained their independence by fighting against the Hungarian Kingdom (Ülküsal, 1966,45-224), (Beksaç, 2013,37-53), (Bozkurt, 2008,1-31). Principalities of Wallachia and Moldavia are the last administrations in the pre-Ottoman period (Birbudak, 2014). The Wallachian Principality accepted the supremacy of the Ottoman Empire in 1462-1476 after various wars.

ROMANIA IN THE OTTOMAN STATE PERIOD

XIV. In the 19th century, after a few campaigns by the Aydınoğulları Principality to the Dobruca region, a new era began in the Balkans that would last for centuries. In 1391, Wallachia (Valahya), which accepted to pay taxes to the Ottomans, was definitely under Ottoman rule after Yıldırım Bayezit's victory in Niğbolu in 1397. With this victory, a new process began. Sultan II, who conquered Dobruca. Later, Beyazıt settled the Tatars, whom he called from the north of the Black Sea, and the Turks, most of whom were nomads (Yörüks), brought from Anatolia to Dobruca.

Dobruja (Dobrogea) is a historical region between the Black Sea and the Danube, covering Romania's Constanta and Tulça provinces and Bulgaria's Dobrich and Silistra provinces, where a dense Turkmen population lives (Dobruca https://tr.wikipedia.org/wiki/Dobruca,Erişim Tarihi, 12.09.2021).

Silistra, the most important city of Southern Dobruja, was given to Murad I by Tsar Tsar Şişman (Susmanos). Dobruja Judge Ivanko also voluntarily accepted the Ottoman domination without resisting on these dates. Dobruja remained under Turkish rule for 460 years.

As a result of the settlement policy of the Ottomans, the majority of the people of Dobruja were Muslim Turks. XV and XVI. The records in the cadastral registers of the centuries show that most of the place names in the region are Turkish and that intense Turkish settlement has occurred (Karpat, 1994,482-486), (Dobruca, 2021, https://tr.wikipedia.org), (Dobruca Beyliği, 2021, https://tr.wikipedia.org/), (Balkan Tarihi, (2021, https://tr.wikipedia.org). In this period, an intense Turkish migration towards the Dobruca region started. After the annexation of Crimea to the Russians in 1783, thousands of Crimean Turks migrated to Dobruca. Dobruca Region has become a full Turkish homeland with the Ottoman

administration that lasted for a very long time. .(Uzunçarşılı, 1996,53), (Horata, 1997, 155), (Ülküsal, 1972,55),(Ülküsal, 1966,68)

The Ottoman Empire, which reached the Danube River in 1393, became a neighbor to Wallachia. Wallachian princes Mireea cel Batran and III. Valad Tepeş entered various conflicts against the Ottoman Empire. However, Vlad III was defeated by the Turkish army between December 1476 and January 1477 and was executed by having his head cut off with a sword. Vlad's head was taken to Istanbul by Turkish troops to prove that he was dead, Sultan II. He was taken to Mehmed. (III. Vlad,Vikipedi, özgür ansiklopedi, https://tr.wikipedia.org/wiki/III._Vlad). Vlad III went down in history, especially when he killed his captive enemies with torture by driving them to stakes. Romanian people see him as a hero (https://www.hurriyet.com.tr/gundem/kazikli-voyvoda-kimdir-41154571). As a result, the Wallachian Principality accepted the dominance of the Ottoman Empire in 1462-1476 and to pay taxes every year.

After II. Bayezid's conquest of Kili (Chilia) and Akkerman (Cetatea Alba) in 1484, Moldavia was annexed to the Ottomans and Prince Stefan accepted the dominance of the Ottoman State and to pay taxes every year. When the Ottomans set foot in Rumelia, they encountered Cuman, Pecheneg and Oghuz Turks. They played an important role in the progress of the Ottomans in Rumelia and their long stay in the region.

The prince of Moldavia was III, who ruled for 47 years. It was Ştefan (The Great Ştefan). Stefan succeeded in defeating the Ottoman army at the Battle of Vaslui in 1475. The following year, the Ottoman Sultan II. Mehmed defeated Stephen at the Battle of Valea Alba, and Stephen again agreed to pay annual tribute to the Ottomans from 1486 (Büyük Stefan, https://en.wikipedia.org/)wiki/Stephen_the_Great). In the 16th century, Moldavia also came under Ottoman rule (Romanya Tarihi, https://www.turkcebilgi.com/romanya_tarihi#post).

The Erdel region was also out of the hands of the Hungarians after the Mohaç War in 1526, and after it became an independent country, it accepted the sovereignty of the Ottoman State. As a result of the Moldavian expedition of Suleiman the Magnificent in 1538, the largest port city of Wallachia, located on the Danube, Ibrâil (Braila) joined the Ottoman Empire directly. Thus, all the important Danube fortress-port cities came under Ottoman control. XV. The Romanian principalities (voivodes), whose obligations were only tribute and donation in the 19th

century, came face to face with Ottoman domination from the 1530s onwards.

XVI. A new era began in the Ottoman-Romanian relations in the middle of the 19th century. In legal terms, Moldavia and Wallachia, and after 1541, Erdel began to be considered Ottoman territory. The governorship of Budin (1541) and then the governorship of Timisvar (1552) in Banat were established. In 1541, the Transylvania (Erdel) Voivodeship accepted the dominance of the Ottoman Empire and paying taxes every year, similar to Wallachia-Boğdan, but with looser ties.

Adakale, which controlled the traffic and trade on the Danube, was conquered in 1691. Despite the granting of autonomy to Serbia in 1830 and the withdrawal of Ottoman soldiers from other Serbian fortresses in 1867, Ottoman domination continued in Adakale. The fact that Adakale was never mentioned in the Berlin Treaty of 1878 ensured that it remained under the Ottoman administration. .(Alptekin,988,340-341) It remained a Turkish island until it was handed over to Romania with the Treaty of Lausanne in 1923. Adakale was an island on the Danube on the Danube River, on the territory of present-day Romania, where the Turkish population lived, until it was flooded by the Demirkapi Dam in 1968. This island has been submerged under dam waters. (Adakale, 2021, https://tr.wikipedia.org/), Balkan Türkleri, 2021, https://www.trakyanet.com/). In international relations, Moldavia-Walakia lost its independence and remained loyal to the Ottomans until the Berlin Congress (1878).

In this rich and wide lands of the Balkans, XV. The Ottoman Empire, which first ruled in Wallachia and then in Moldavia, within the century. In 1530, Wallachia and Moldavia were forbidden to establish relations with foreign states and were fully affiliated to the Ottoman State. This dominance continued until the independence of Romania in 1877. Erdel was left to Austria with the 1699 Karlowitz Agreement.

Wallachia and Moldavia were ruled as an autonomous principality with important rights and privileges after being annexed to the Ottomans. The Romanian principalities, which were governed by an independent and local voivode in internal affairs, were obliged to remain loyal to the Ottoman Empire and pay their taxes. This established order was maintained for about three centuries (Birbudak, 2014). Ottoman Laws were not applied in the burials, and the beylerbeyi and kadi were not sent. However, border forts and military organizations were kept in the region.

Voivodes were appointed by the Ottoman sultan from among the

Romanian nobility. Voivodes paid taxes to the Ottomans and helped soldiers in wars. In addition, these principalities played an important role in meeting the food needs of Istanbul. In terms of economy, the Ottoman Empire attached great importance to the Romanian principalities, especially for the provision of Istanbul. XVIII. In the 19th century, this role of Wallachia Moldavia was denoted by the phrase "Istanbul's food warehouse". XVI-XVIII. In the 17th century, at least 500 000 head of sheep, 12.000 head of cattle, 10 000 kıyye (Okka, 1282 grams) ie 12 820 kg of salt, 12 820 kg of salt was produced every year from Wallachia-Moldova to Istanbul. honey, 19 230 kg. beeswax, 23 000 kg of clarified oil, hemp, barley, especially timber from Galatz, etc. would come. Especially the curly sheep had an important role in the Istanbul food supply (Ülküsal, 1966,45), (Beksaç, 2013),(Bozkurt, 2008,1-31).

1877-1878 PRINCIPLE AND KINGDOM OF ROMANIA

In 1859, the Principality of Romania was established in Wallachia and Moldavia. This principality demanded independence from the Ottoman Empire, but this demand was not accepted. Thereupon, Romania declared its independence on May 9, 1877 and played an important role in the defeat of the Ottoman Empire in the 1877-1878 Ottoman-Russian War (93 War). Romania's independence was recognized at the 1878 Berlin Congress, and the Ottoman Empire recognized Romania soon after. The Principality of Romania was transformed into the Kingdom of Romania in 1881, and Prince Karl Eitel Friedrich Zephyrinus Ludwig of the German Hohenzollern Dynasty became king and took the name Carol I. (Romanya Tarihi, (2021)https://www.turkcebilgi.com/).

Enver Pasha thought that the final outcome of the war depended on the success on the European fronts. For this reason, he accepted this offer to send aid forces without hesitation. At the request of Enver Pasha, the 15th Corps, consisting of the 19th and 20th Divisions, was sent to Galicia. He reached the Galician Front on July 26, 1916, after 520 officers and 32,000 privates were health-checked and vaccinated for cholera and typhoid fever. (Kurnaz, 2016,475) Thereupon, it was decided to attack the Romanian army with the forces to leave the allied fronts consisting of Germans, Austrians, Bulgarians and Turks. and most of Romanian territory, including Bucharest.

The Ottoman State declared war on Romania in August 1916 and set foot on Romanian lands, which it had to leave after the 1877-1878 Ottoman-Russian War. The 6th Turkish Army Corps under the command

of Mirliva (Brigadier) Mustafa Hilmi Pasha, which participated in the Romanian operation, showed outstanding success in the occupation of Dobruca and Bucharest. With the occupation of Bucharest, the Ottoman Empire had a say in the administration of both Bucharest and Romania. In this context, Romania re-operated in these lands together with the Ottoman Military Governorship (Romania Ottoman Military Governorate) and the Ottoman Danube Range Inspectorate it housed.

Military hospitals and convalescent rooms were put into service for the purpose of providing health services, and an officer's club, officer hotel, military hostel, military cinema, field and parcel post offices were put into service for morale services. (Çevik, 2018, 162-175)

Upon the unexpected defeat of Romania, Enver Pasha went to Romania on 10 December 1916 to inspect the 6th Corps units, which had great success at the front (Akandere, 2017,12).

After the First World War, Austria-Hungary and Tsarist Russia broke up. As a result, Transylvania (including the Banat of Timișoara), Bukovina (Moldova / northern part of Moldova) and the region between Prut and the Dniester, namely Bessarabia, were united under the flag of the Kingdom of Romania by the decision of the indigenous people of each, and on 1 December 1918 Greater Romania, (United Romania) was established (Birbudak, 2014).

Russia, which captured Bessarabia in 1821, annexed Bessarabia and Northern Bukovina regions to the Soviet Union in 1940. Instead of Bessarabia, he proclaimed the Moldavian Soviet Socialist Republic, which included Transnistria. Northern Bukovina and the southeastern part of Bessarabia (Bucak) were also given to Ukraine after a while. Thus, the borders of the current Republic of Romania were determined. (Romanya'nın Özellikleri ve Tarihi Nedir, 2021, https://www.milliyet.com.tr/), (Romanya Tarihi, 2021, https://tr.wikipedia.org/)

OTTOMAN WORKS IN ROMANIA

There are at least 15787 architectural works of the Ottoman Empire in the Balkans. However, most of these works have disappeared today. In other words, it has been destroyed by mentalities far from civilization. Today, the number of works that preserve their original form is negligible. Some of these magnificent Ottoman artifacts were neglected and left to their fate in a neglected state. Especially the structures in countries such as Serbia, Bulgaria, Hungary and Romania are in a very bad condition. Compared to Hungary or other Ottoman provinces in the

Balkans, there are far fewer Turkish works such as mosques, tombs, inns, and baths in Romania. While there were 710 Ottoman works in Hungary in the 1970s, this number was 234 in Romania. (Avrupa'da Osmanlı Mimârî Eserleri I, s. 1-2). (Ülküsal, 1966,45-244), (Beksaç, 2013), (Bozkurt, 2008, 1-31) Some sources state the number of buildings built by the Ottomans in Romania as 291, as shown in the figure below.

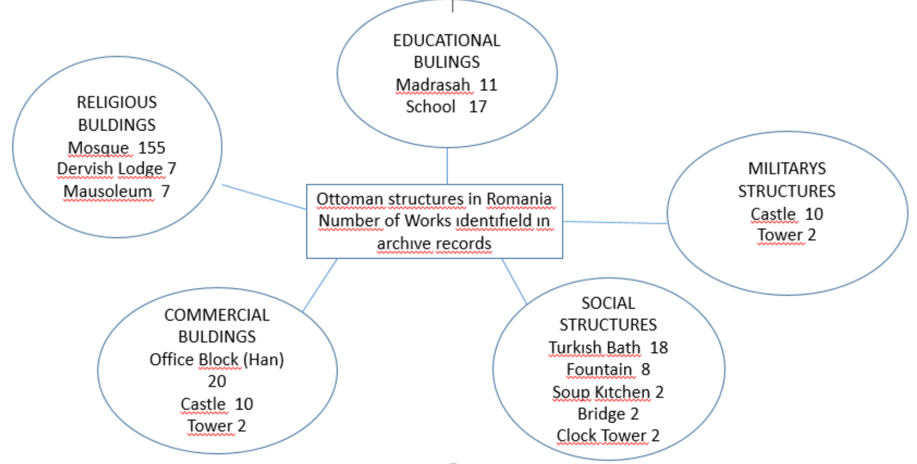


Figure-4- Inventory of 291 buildings identified from Ottoman archive records in Romania

In general, about 80-100 artifacts have survived in the region. Most of these works are in Constanta, Isakca, Tulca, Mangalya, Mecitli and Babadag. Among the important surviving structures in Romania are Manuk and Ihlamur office block, in Bucharest, Gazi Bali Bey and Hünkar mosques in Constanta and Bayram Dede Tomb, Babadağ fountain in Babadağ, Saru Saluk Tomb and Gazi Ali Pasha Mosque and Tomb, Esma in Mangalya. Han Sultan Mosque, Sultan Mosque in Mecidli, Mahmut Yazıcı Mosque in Ishakça, Ishakça castle, İshak Baba Tomb, Galati City Gate, Arad office block and Bath, Beşova Bath, Hasan Pasha Bath, Karasu Bath and Karaharman Castle are mentioned. Although some of the works such as the Sultan Mahmut Mosque in Hırşova, which are an important part of Ottoman architecture, have survived to the present day, they are facing a situation like extinction. (https://www.osmanlipadisahlari.gen.tr/balkanlardaki-osmanli-eserleri.html), (Osmanlı Mirası, 2019), (Balkanlarda Osmanlı Eserleri, 2021, https://www.osmanlipadisahlari.gen.tr/)

In addition to the ones listed above, there are 260 Ottoman

Foundation properties. There are three Turkish cemeteries in Bucharest, Braile and Slovakia. There were 238 mosques in Romania in 1850. This number decreased to 151 in 1939 and to 85 in 1976. The names of important active mosques from the Ottoman period are still used. (Ayverdi, 2000,8-9), (Aksu, 2003,42-79), (Horata, 2003, 160), (Horata, 1997, 1864), (Sayılır, 2014,808). On the ruins of Mahmudiye Mosque built in 1822, Romanian King Carol I had the King Mosque built in 1910.

In Dobrudja, an old Turkish homeland, the centuries-old Turkish domination left behind a great historical legacy. Many archaeological and historical artifacts fill Romanian museums today. Another important monument in Babadağ, which was a very prosperous town during the Ottoman period, is the Gazi Ali Pasha Mosque. Sari Saltuk Tomb, located in Babadag, Romania, is among the works that have survived to the present day. (https://www.osmanlipadisahlari.gen.tr/balkanlardaki-osmanli-eserleri.html). According to what Evliya Çelebi wrote, there were also 3 madrasas, 10 schools, 8 inns, 4 baths and 11 dervish lodges. But none of them has survived to the present day.

An important investment of the Ottomans in Rumelia is the construction of the railway. The first railway line, the Köstence-Boğazköy (Çernovada) line, was completed in September 1860 and the first navigation on the 64.4 km line was made on October 4, 1860. The Aziziye (Hünkar) Mosque, built eight years later, bears the memory of Sultan Abdulaziz.

HEALTH SERVICES IN ROMANIA IN THE OTTOMAN PERIOD

The Ottoman Empire had a strong army. The important power of this army was the janissaries attached to the janissary corps. For years, the health personnel in the Janissary quarry consisted of surgeons. Physicians were employed only in times of war and on a temporary basis. For this reason, there were no military hospitals for many years. The first military hospitals started with the efforts of Selim III (1789-1807) to modernize the army.

With the efforts of Sultan Mahmud II to modernize the army, the establishment of such health facilities continued during the reigns of Sultan Abdulmecid, Sultan Abdulaziz and Sultan Abdulhamid II, who came to the throne after 1826. Sultan Mahmut II abolished the Janissary Organization on 15 June 1826 and tried to establish a modern Turkish army instead. In addition, he opened a new military medical school,

surgery and many civilian and military hospitals. In order to meet the health needs of the modern army and to train the necessary health personnel, he opened the Tıphane ve Cerrahanesi Amire (Military Medical and Surgeon Schools) on 14 March 1827 and started school education and training.

After the Janissary corps was closed, Abdulhamid II ensured the establishment of modern armies. He formed seven armies for the Ottoman Empire. The headquarters of the Third Army was first in Thessaloniki and then in Manastır. According to the size of the military establishments, fixed military health facilities were established. A full-fledged military hospital was located in the army centers, and in the regiment centers, this establishment went down to the infirmaries. Hospitals that developed over time in army centers were called central hospitals because they met the needs of all infantry, cavalry and artillery units. Military hospitals in division centers were called local hospitals, and those in regiments and battalions were called hospitals only. They only cared for the patients of the union to which they belonged. The divisions also had resting places.

Abdulhamid II showed the importance he gave to health by establishing Gureba hospitals in various provinces in the field of civil health (Şehsuvaroğlu, 1984, 133, 134, 139). The most civilian and military hospitals in the Balkans and the first children's hospital of the Ottoman Empire were opened by Abdulhamid II.

In the Ottoman Empire, health institutions were previously called Bimarhane, Maristan, Sifahane. The name of the hospital was used for the first time in the Valide Sultan Gureba-ı Müslimin Hospital, which was built by the wife of Mahmud II, Bezmiâlem Valide Sultan, and served for the poor Muslim people. (Ak, 2016,623-629), (Ak, 2018, 19)

Russia, who wanted to go down to the Mediterranean by eliminating the Ottoman Empire on its own, declared war on the Ottoman Empire by invading Wallachia and Moldavia on May 21, 1853. Britain, France and the Piyomente States (Italian Union), who were worried about the Russians landing in the Mediterranean, signed an alliance agreement with the Ottoman Empire (Karayaman, 2008,59-75). Having promised support from France and England, the Ottoman Empire declared war on Russia in October 1853. The Turkish army, led by Ömer Pasha, conducted a strong defensive campaign and stopped the Russian advance in Silistra.

On January 3, 1854, the British and French navies crossed the Black Sea and moved to Varna, encountering no major problems other than a

minor conflict at Constanta. In September 1854 the landing was made on the Crimean peninsula and on 20 September 1854 the Battle of Alma was won and then headed south of Sevastopol, after which Sevastopol fell. After that, Russia demanded peace in March 1856 and the March 1856 Treaty of Paris was signed, ending the war. After this treaty, Russia was prohibited from placing warships in the Black Sea.

In this war, the Russian Empire lost more than 500,000 soldiers. (Kırım Savaşı, 2021, https://en.wikipedia.org), (Paris Antlaşması, 2021, https://en.wikipedia.org). Allied states also lost thousands of their soldiers due to unhealthy hospital conditions, malnutrition and epidemics. In this war, the Ottoman Empire was the state that lost the most soldiers due to health problems. Florence Nightingale, who came to Istanbul on November 4, 1854, pioneered the provision of modern nursing services by applying hygiene rules in hospitals and reduced the death rate from 48% to 2% among Turkish soldiers. (Ak, 2021,516)

The British Commander-in-Chief in Crimea stated that the health of the Turkish soldiers under his command was bad and asked for help from the Ottoman Empire. Upon this request, the Ottoman State disarmed a 62 mass frigate and turned it into a military hospital. The hospital ship with 300 beds, in which 2 doctors, 2 operators, 2 pharmacists were on duty, was sent to Crimea with plenty of medicines and medical supplies. (Besbelli 1977: 99). (Karayaman, 2008,59-75)

The Paris Agreement prevented Russia's historical and traditional ambitions on the Ottoman Empire and completely restricted Russia's further actions. However, Russia provoked rebellions by provoking the Slavic origin nations of Ottoman subjects in the Balkans. As a result of the policy of the Russians to establish small states in the Balkans under their auspices, revolts in Bosnia and Herzegovina, Bulgarian, Serbian and Montenegro took place. The Serbs fought with the Ottoman Empire and suffered a heavy defeat in the Battle of Aleksinac. Thereupon, Russia gave a note to the Ottoman Government and openly threatened it. Thereupon, the Istanbul Conference and London Conferences were held by the Great Powers. Despite the objections of the Ottoman Empire, a draft resolution that disregarded its sovereignty rights and was incompatible with the understanding of an independent state was accepted at the conference. Russian President Tsar II. After this political victory, Alexander ordered his armed forces to prepare for war on April 7, 1877.On April 24, 1877, Russian armies entered the Ottoman-dominated

territory of Wallachia-Boğdan (Romania). (Süer, 1993),(Uçar, 2012, 109-110)

When the Ottoman-Russian War began, health and veterinary services and evacuation of the sick and wounded were almost non-existent in the Ottoman armies. While each battalion should have had a doctor, a surgeon and a pharmacist, only one doctor and pharmacist could be assigned to 2, sometimes 3 or 4 battalions. Again, according to the staff, there should be 4 health officers in each battalion, and the health officers were insufficient. To make up for the shortage of doctors, about 100 doctors were brought from Europe on contract.

When the war started, the number of hospitals in Varna, Shumen, Ruse, Vidin, Tırnova, Edirne and Sofia was increased in preparation for the war. Mobile army hospitals were opened here. In addition to these measures, necessary plans were made to benefit from the civilian hospitals in the provinces and big towns. The most important problem related to military health services in this war was the evacuation and treatment of the wounded and sick. The sick warrant to transport the wounded officers and soldiers to the rear of the front was almost non-existent. 3-4 privates were assigned to carry each wounded to the rear of the front. For the evacuation of the wounded, cars were used to bring supplies and ammunition to the front and return. Due to these health services, which were not based on any planning and carried out randomly, the injured mostly died from blood loss. This situation also caused a significant decrease in the number of combat soldiers due to the soldiers assigned to transport the wounded.

The most important problem related to treatment services was the lack of medical supplies and drugs. Although European armies have been using drugs such as narcosis and drugs for a long time, these drugs were almost non-existent in the Ottoman army. Most of the operations performed at the front and behind the front were performed with primitive methods. Like the vast majority of doctors, most of the pharmacists were of foreign origin and drug production was very inadequate. As a result, human health was incomplete and irregular in every aspect, and hospitals lacked medical equipment.

The health facilities and capabilities of the Russian armies were relatively superior to those of the Ottoman armies. The Russian army collected only 4,595 doctors, 806 pharmacists and 377 veterinarians from all the health personnel who worked with the mobilization. The Russian

Armed Forces had a total of 56,012 beds, including 83 hospitals with 30,630 beds and an infirmary with 25,382 beds in peacetime. This amount was increased with the mobilization and 78 hospitals with 40,820 beds were opened for the Danube army and 64 hospitals with 16,389 beds were opened for the Caucasian army. Apart from these, domestic hospitals with 4,300 beds were opened in Odessa and Sevastopol, and 11,200 beds were opened in various parts of the Black Sea coast. Apart from these fixed hospitals in the country and in the range, there was a mobile hospital in each division and a bandage in each regiment. A medical train consisting of four cars, one for hospital equipment, one for pharmaceutical supplies, and two for the wounded, was formed in the regiment's bandages. (Süer, 1993)

In the face of the advance of the Russian forces, the Ottoman armies suffered great losses and the medical services of the Ottoman army were completely inadequate to catch up with the wounded soldier

With the Treaty of Berlin signed after the 1877-78 Turkish-Russian War, the Ottoman Empire suffered great losses. Balkan countries turned to political targets and rebellions broke out one after another. Bulgarians, Greeks and Serbs united against the Ottomans and fought between October 8, 1912 - August 10, 1913, with the Ottoman Empire, called the Balkan Wars. First Balkan War: Balkan Union won and Ottoman Empire defeated, Treaty of London signed. Second Balkan War: Bulgaria defeated; Treaty of Bucharest (1913) signed.

When the Balkan War began, “The army was very lacking in sanitary equipment and equipment. Although it was thought to provide one medic division and two mobile hospital equipment to the Nizamiye divisions, it was not possible to supply them through purchasing. The mobilization of the sanitary organization was in a confused and disorganized state, since the sanitary services managers did not have information about the mobilization and the sanitary services in the expedition. Due to the lack of sanitary equipment and equipment, the army was also losing in peace. (Uçar, 2012, 113)

By 1914, the conflict between the Entente Powers (England, Russia and France) and the Allied Powers (Germany, Austria-Hungary Empire and Italy) had reached its final point. War needs an excuse. The murder of the Austro-Hungarian crown prince and his wife by a Serb on 28 June 1914 was the expected pretext (Armanoğlu, 1997, 102). The Ottoman Empire declared its neutrality when the war started. Later, he signed a

secret agreement with Germany and declared general mobilization on the same day. The Ottoman State announced that it had bought the German cruisers Goeben and Breslau, which took refuge in it, and added it to its navy. The Ottoman Navy, including these ships, sailed to the Black Sea on October 27 under the command of the German Admiral Souchon, sank the Russian ships, and fired the ports of Sevastopol and Novorosisk. (Kuran, 1992, 196-200). Thereupon, when Russia declared war on 2 November, and England and France on 5 November, the Ottoman Empire declared war on these three states on 11 November 1914 (Çetinkaya, 1995: 89). Thus, the Ottoman Empire actually entered the war legally. The war of 1914-1918 was the first world war in history (Biçici, 2014,695,706,707,719).

When the First World War was entered, the protection of human and animal health in the Turkish army was the responsibility of the sanitary and veterinary structure, as in modern armies. The primary task of this structure was to carry out health services for the injured and sick. Military hygiene, which includes the protection of human and animal health, shelter, nutrition and clothing, was also within the scope of this structure.

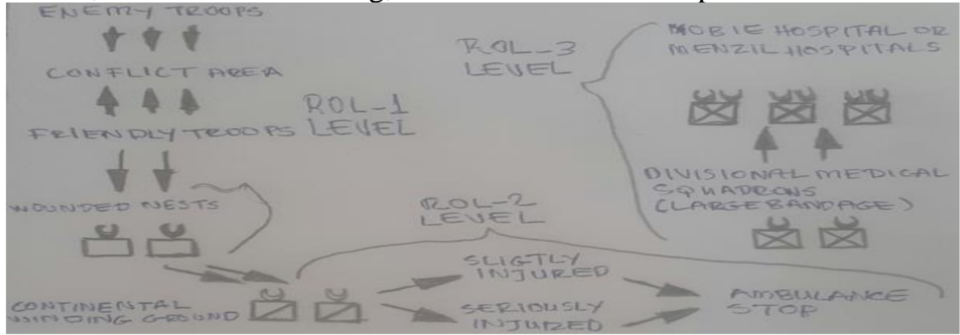


Figure:5- Military Health Structure of the Turkish Army in the First World War

Sanitary and veterinary grade in general; It consisted of doctors, surgeons, pharmacists, dentists, chemists, veterinarians and caregivers. The highest health management unit of the Turkish army was the Ministry of War Health Department. Since it is one of the basic military principles to increase the staff in peace conditions in case the army enters the war, when the First World War was entered, plans based on the expansion of the army's health care structure came into effect. It was planned to provide an inspector with the rank of lieutenant general in each army, a chief physician in the rank of medical colonel in each corps, a chief

physician in each division with the rank of medical colonel or lieutenant colonel, a physician in the rank of lieutenant colonel or major in each regiment, and a doctor in the rank of captain or first lieutenant in each battalion. (Türk Silahlı Kuvvetleri Tarihi, 1980,545-560)

Photograph-2- Military Mobil Hospital

Photo:3 -Miliitary Field Hospital

Photo:4-Patient transport horse carriage, (Ak, 2020,560)

HEALTH ACTIVITIES OF KIZILAY (RED CRESCENT)

During the First World War, the Kızılay (Red Crescent Society) sent a medical committee to the region and made a serious effort to ensure that the soldiers were treated in a planned and regular way. The Kızılay branch in Vienna collected various aids for the wounded soldiers on the Galician Front. Likewise, a thousand-bed Red Crescent hospital was tried to be established by the medical committee in Bucharest.

The first intervention to the wounded and sick soldiers at the front is generally carried out by the military medic of the corps. There were fixed hospitals created to serve the Ottoman wounded. Austria had undertaken the health and cleaning needs of the Ottoman soldiers. Many Austrian and Hungarian hospitals served soldiers. In Hungary, regular fixed hospitals were serving in two areas named "Trençin (Trencsen, Trencin)" and "Yantra". "Rezde" Hospital number two in Olmütz, Austria is just one of these hospitals. Rezde Hospital has been a center where the seriously injured and treated for a long time. The wounded were able to reach here after a long journey. The wounded who entered the hospital were transferred to their wards after they were shaved and bathed, the patient was dressed in a shirt, a crescent and star skullcap and a pair of slippers were given. However, many hospitals, in Budapest and Vienna, were serving Turkish soldiers.

The Kızılay decided to establish a hundred-bed hospital in the Galician Front in order to assist them despite the efforts of the corps military medics and the Austrian medical committees. However, the Vienna Embassy wanted this hospital to be planned as a mobile hospital, not as a fixed hospital. However, the sanitary committee in Vienna and the Vienna Embassy did not consider the 100-bed hospital necessary.

The Kızılay also took some measures to keep the morale of the wounded soldiers treated in Austria high and to have fun. He worked to find the lost soldiers. He started an aid campaign for the wounded soldiers in the European Fronts. The belongings of the soldiers who were martyred in Galicia were also delivered to the Kızılay.

The Kızılay has taken a position in support of the sanitary services on this front. By determining in which hospitals the soldiers were treated, he ensured that the procedures related to the Austrian medical committee were carried out in a healthy manner. In addition, the Kızılay carried out joint studies with allied states regarding the treatment and rehabilitation of sick officers and soldiers, and injured soldiers in hospitals, sanatoriums

and spas. (Kurnaz, 2016,475)

The Kızılay served in the Ottoman-Russian War, the Balkan Wars and the First World War behind the front lines. He rushed to the aid of hundreds of thousands of soldiers who were injured and sick on the battlefield through the fixed and mobile hospitals he established, the patient transport services, the hospital ships he equipped, the nurses he trained, and the volunteer caregivers (Hilal-i Ahmer'den Türk Kızılayı'na (2021)https://www.kizilay.org.tr/).

KÖSTENCE (Constanța)

The Ottomans, together with Constanta, conquered most of Dobruja in 1419 and made an important Turkish settlement. They changed the name of the city to Constanta. According to the Ottoman records of 1597, there were only thirty-one taxpayers in Constanța and 12.000 akçes were earned. Evliya Çelebi writes that there were 150 houses, a mosque and forty-fifty granaries here. The port of Constanta has gained more and more importance. XVIII. A group of soldiers and ship chiefs from Trabzon region settled here in the 16th century.

Due to the strategic importance of the Dobrudja region in the second half of the XIX th century, the Ottomans also paid special attention to Constanta. In 1857, the Ottoman administration started the construction of a railway between Cernavoda and Constanta on the Danube, and the railway was completed in 1860. (Er, 2012,79) In addition to the railway station, the port was expanded, a lighthouse and nearly 400 new houses were built. In the administrative regulations of 1864, Constanța became a district center connected to the Tulci sanjak of the Danube province. (Murgescu, 2002, 276-277). Hospitals were mostly established around Constanța.

CONSTANȚA BABADAG HOSPITAL

Babadağ, which was a fortified town under the rule of the Ottoman Empire, was a developed district in terms of trade. XIX. At the end of the century it had a population of 10 thousand. A barracks with a capacity of two thousand soldiers was built in 1826. Babadağ had the largest military garrison in the region. (Ustabulut, 2016, 1-16) Babadağ is a city in the Dobruca region of Romania today. (Kahraman, 2021, https://www.gazetegebze.com.tr/)

Photograph :5-Hospital in the countryside of Constanța Babadag (Eraslan, 2018, 292)

CONSTANTA GERLENGEÇ (CERNAVODA) TOWN HOSPİTAL

Photograph 6-Constanta Gerlengeç (Cernavoda) town Hospital (Eraslan, 2018, 293)

KOSTENCE PORT HOSPITAL

Photograph 7-Doctors and nurses are also seen in front of the hospital. (Eraslan, 2018, 294)

CONSTANTA PARAKÖY RURAL HOSPİTAL

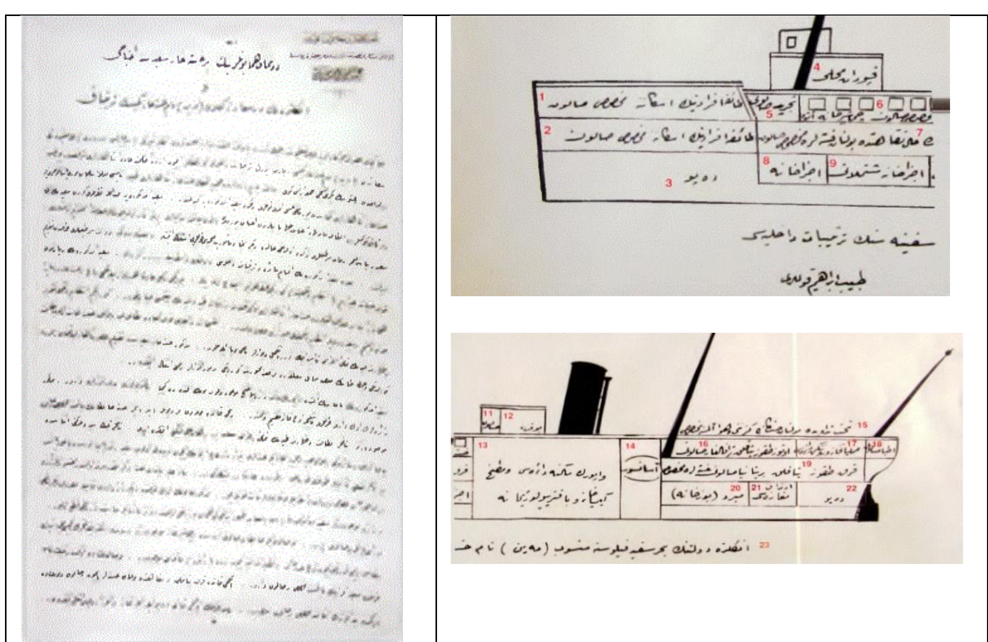
Photograph: 8-Constanta Paraköy rural hospital (Eraslan, 2018, 295), (Duymaz, 2016, 230).

HOSPITAL SHIPS

The Ottoman Empire created hospital ships to transport the wounded and sick soldiers. Hospital ships, which are generally used during war times, were used for the first time in the Ottoman Empire during the Crimean War (1853-1856). Later, hospital ships were frequently used in Tripoli, Balkan and First World Wars. The Ottoman administration made the galleons that were unused and anchored in the port, and transformed them into hospital ships. During the Crimean War, the Mesudiye Ship, which was built as a hospital ship in 1854, was allocated for land soldiers and the Memdûhiye ship was allocated for naval soldiers. There were hospital ships of the Ottomans, Russians and French in this war (Torun, 2008,85,86). In 1872, the Hümâ-yı Tevfik ferry was used as a hospital ship for a while in the Black Sea Strait upon the request of the Ministry of Health. (Temiz, 2009, 1)

In 1893, a hospital ship named "Main" came to Istanbul from England to show the sultan his respect and respect. The Sultan commissioned Medical First Ferik (general) İbrahim Ali to visit this ship and examine all the equipment inside. A delegation of three people visited all parts of the ship and its interior layout one by one, and after the necessary examinations, they prepared a report under the title of "The Need for a Hospital Ship of the Ottoman Navy and the Organization of the Hospital Ship Mein' that came to Istanbul from England".

As a result, it was stated in the report that the Ottoman navy needed such a hospital ship and that the ship named “İzmir” was very suitable to be built as a hospital ship.



Document: 1-The report prepared and presented to the sultan about the Mein Hospital Ship (Tutel, 2005), (Şehsuvaroğlu, 1965), (Doğan, 2007), (Osmanlı Hastane Gemileri, 2021, https://haber.kursistem.com), (BOA, HR.HMŞ.İŞO 67/5)

In 1911, the Naval Society bought a ship from England and named it Reşid Pasha. This ship, which was turned into a hospital ship during the Balkan War, provided great services until after the First World War.

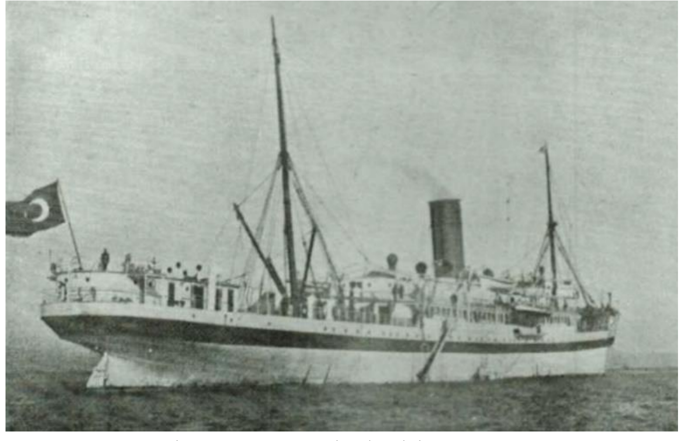


Photo: 9-Reşit Paşa Hospital Ship

Photo: 10-The medical staff of the Reşit Paşa Hospital Ship

Medical Committee on the Reşid Paşa Ferry (from right to left): 1- Mr. Neşet, Doctor of Eye Diseases -2 Doctor of Ear Diseases, Mr. Nuri 3- Operator Mr. 4- Chief Physician, Bacteriologist Mr. Fuad 5- Second Physician Ruscuklu Hakkı Bey 6- Doctor of Skin Diseases, Mr. İzzet Kamil -7 Internal Medicine Diseases Doctor Cemil Bey

Photo: 11-Military hospital patient room

ROMANIA TODAY

The name of the country comes from the novel meaning Roman and Romania meaning the land of the novel. However, the origin of the Romanians is based on the Gypsies from India, unlike the Romans known in history.

Romania; It borders with Ukraine in the north, Moldova in the northeast, the Black Sea in the southeast, Bulgaria in the south, Serbia in the southwest and Hungary in the west. (Kara, 2021, http://ungo.com.tr/) The 2018 population is 19.5 million. According to the results of the 2011 census, a total of 48,690 Turks, 28, 226 Oghuz and 20,464 Tatar Turks, live in Romania. Romanian Turks, after Dobruja came under Romanian rule, established some cultural organizations in order to protect their assets, especially their cultural assets.

During the Ottoman Empire, Turkmens who came from Anatolia, Tatar and Nogai Turks from the north settled in the Dobruca region, and Muslim-Turkish communities began to form in these regions. In particular, the governorship of Tımışvar, Dobruca and Adakale were the regions where these communities were located. Cities and towns such as Maçin, Hırşova, Silistra, Babadağ, Constanta, Mangalya, Pazarcık, Balçık had come to the fore with a significant number of Turkish communities in the 1850s. The existence of a pre-Ottoman Turkish settlement in Dobruca is known.

However, the Ottoman-Russian War of 1877-1878 led to the migration of Muslims in the region to Turkey. Most of the Turks live in the historical North Dobrudja region, especially in the province of Constanta. For Turks, an ethnic minority officially recognized by Romania, the number of seats reserved in the Romanian House of Representatives is one. They have the right to receive education in their native language. The population of Romanian Dobruja is still estimated at around 1 million. 10% of this population is Muslim Turks, and one third of them are of Ottoman origin and the others of Crimean origin.

CONCLUSION

Due to the Balkans, Romania has been the transit point of many tribes migration. In the historical process, Scythian, Hun, Avar, Bulgarian, Cuman, Pecheneg, Seljuk and Ottoman Turks and Persians, Romans, Slavs and Serbs of Turkish origin lived in this geography. The longest period of domination among them was during the time of the Ottoman Turks. The Ottoman Empire ruled Romania for 490 years and affected the society in every field. One of them is what they do in health services. Health services were provided in municipal hospital, guraba hospital, military hospitals and Red Crescent organizations. But; Only a few of the hundreds of Ottoman works have survived in Romania today. Here, information and photographs about hospitals in the field of health

are included. We hope that this study will contribute to historians and researchers working in the field of health and medical historians.

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Chapter 31

Disaster Management in Hospitals

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INTRODUCTION

Ever since humans started to live together in communities, disasters have been part of human life. Communities face disasters both natural and man-made. Undoubtedly, such disaster events also include epidemic diseases. Epidemics cause the loss of millions of human lives at different times and in different regions much like natural disasters.

With the advancements in technology and communication and transportation becoming much easier, epidemics spread much more quickly, in turn giving way to unnatural circumstances resulting in disasters. Therefore, in the modern age epidemics impact certain groups within the society more due to their cross-boundary nature and cause further deaths in such groups and natural disasters have become more destructive, devastating and damaging (Kayıpmaz, 2020).

Thus, in order to be able to decrease such damages and deaths and to ensure a return to normal life for the society in the shortest amount of time possible, it is imperative that everyone is prepared for disasters. We can summarize this with a quotation about the patriarch Noah: "When Noah started to build the ark, the deluge had not hit yet" (Özdemir, 2016:562).

SOME CONCEPTS RELATED TO DISASTER MANAGEMENT

Concerning disaster management, one can name such concepts as disaster, emergency, risk, crisis, accident, incident, natural disaster and assembly points.

Disaster can be defined as a situation where an establishment or agency's capabilities to respond to a negative happening are exceeded.

According to the WHO, disasters are defined as "sudden environmental (ecological) incidents of a scale that requires external assistance. Whereas according to the American Academy of Emergency Medicine, a disaster is the debilitation of efforts to meet the desired medical needs by the destructive impact of the nature or man-made actions (Kadıoğlu and Bek, 2009). In other words, the concept of disaster can also be expressed as an "Extraordinary Circumstance (EOC)". That is because disasters comprise extraordinary and exceptional incidents affecting the entire society, as was the case in the Covid-19 pandemic.

Disasters are man-made, technological or natural incidents which cause social, economic and physical damages to the entirety or part of society, restricting, interrupting or halting the normal life and activities of people (AFAD, 2013: II).

Also colloquially called "kıran" (pestilence) in the Turkish language, disasters are defined as natural, technological and man-made incidents leading to social, physical and economic losses for people, which halt or interrupt the work of people and affect the country negatively (Gökçe and Tetik, 2012:20). Disasters are also defined as «natural, technological and man-made incidents leading to social, physical and economic losses for the entirety or part of society, which halt or interrupt normal life and the work of people» (Law on AFAD, 2009).

Disasters should be addressed at three levels (Oktay, 2002: 136):

•***Level I:*** At this level, the local resources necessary for the care and treatment of the injured are sufficient.

•***Level II:*** At this level, regional joint resources are required for the care and treatment of the injured.

•***Level III:*** At this level, the entire resources of a country are required for the care and treatment of the injured.

The common feature of definitions given for disasters is the mention of physical, economic and social losses for people. Disasters occur as natural, technological and man-made incidents and all disasters result in negative consequences.

Emergency:

Emergency is defined as «incidents which halt the normal life and activity of the entire society or certain parts thereof and require urgent response and the state of crisis caused by such incidents» (Law on AFAD, 2009). Emergencies are defined by AFAD (Disaster and Emergency Management Presidency) as large-scale incidents, cases and

circumstances which can be managed through local means, requiring urgent response (2014). Emergencies are all such circumstances stemming from cases of fire, explosion and exposure to chemicals which may happen in the entirety or part of a workplace and all incidents requiring response, control, first aid and evacuation such as natural disasters (Regulation on Emergencies, 2013).

Emergencies are also defined as “extraordinary circumstances which occur alongside incidents defined as disasters due to recklessness, inexperience, neglect, mistake, intention and various other reasons” (Fire Regulation, 2007). Since emergencies occur before disasters and should be resolved urgently, unwanted and dangerous circumstances may be faced. In the event that emergencies are not/cannot be resolved, they can lead to disasters (Turan and Cengiz, 2021: 643).

Risk

Risk can be defined as losses and damages which may be incurred as a result of the formation of a hazard. In terms of disaster management, risk is the expected interaction between circumstances informed by natural and man-made hazards. In healthcare services, risk is defined as "cases where natural disasters, dangerous epidemic diseases, large-scale fires, significant chemical and technological happenings such as radioactive and air pollution, severe economic crises, migration and large-scale population movements occur separately and jointly" (Ak, 2018:2). A risk paints a picture of the situation before the occurrence of an incident. As risks grow, they transform into disasters. Risks have a structure which negatively impacts success against threats but boosts achievements due to the opportunities that arise (Çolak, 2017:18).

Hospitals are involved in business relationships with multiple parties. They have a complex environment which requires strict control. Relations with many various components contain various risks and hazards. The security committee, which is one of the administrative committees in hospitals, deals with such risks (Ak, 2020:537). Risks should be examined under four categories as strategic risks, operational risks, financial risks and compatibility risks.

1-Strategic Risks**:** These are risks which can have a direct negative impact on short-, medium- or long-term objectives and goals of an institution.

2-Operational Risks*:* These are risks related to the incurrence of losses which may stem from inadequate systems, processes or personnel.

3-Financial Risks: These risks express threats which may potentially lead to financial losses and comprise probable incidents, conditions and circumstances which can have a negative impact on financial issues.

4-Compatibility Risks: These are risks caused by changes in laws and legal arrangements, legal inconsistencies due to insufficient or wrong information and documentation, uncertainties in assuming liabilities, misinterpretation of regulations or delayed fulfilment of such liabilities by the personnel (Ak, 2019:**3).**

Risk-oriented disaster management is a managerial understanding encompassing the evaluation of risks, disaster preparedness, prevention and mitigation of disasters and overcoming such issues with the least damages. As a circular process, risk management comprises of the identification and definition of risks, risk evaluation, negotiation of risks and monitoring, evaluation and reporting. Many elements of and factors in a building make up the risk points in incidents which could happen during a disaster (Ünlü, 2012:12).

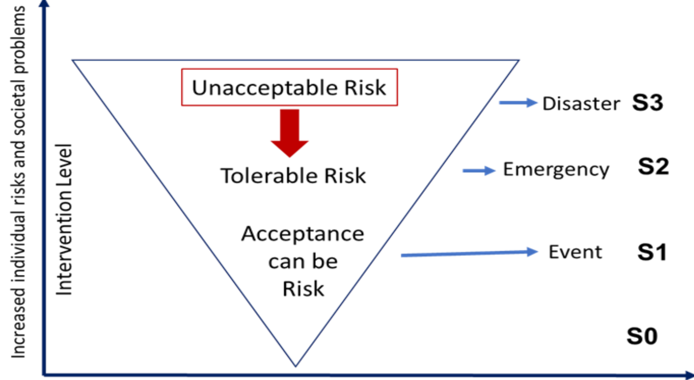

Figure 1: The Risk-Disaster Relationship (Kadıoğlu, 2017b).

Healthcare personnel are exposed to psychological, chemical, environmental, biological and physical risks at service delivery locations. The National Institute for Occupational Safety & Health (NIOSH) has put forward 29 types of physical, 25 types of chemical, 24 types of biological, 6 types of ergonomic and 10 types of psychosocial hazards and risks which are found in hospitals (Solmaz and Solmaz, 2017:148).

Crisis

A sudden and severe change in circumstances is defined as a crisis. In healthcare services, crisis is defined as a sudden malfunction caused by an

imbalance within the healthcare system or healthcare institution/organization (Ak, 2018:3). From a disaster management perspective, crises occur when incidents which disrupt the normal working order and which may lead to negative social consequences happen (AFAD, 2014). Crisis can be defined as an inadequacy to respond to unexpected, dangerous and threatening circumstances. Crises jeopardize the business life of establishments, disrupt the existing balance and render departments unfunctional (Tağraf and Arslan, 2003:150).

A crisis can be defined in four stages as the Prodromal stage, the Acute stage, the Chronic stage and the Resolution stage (Fink, 1986:20). The process of crisis management comprises of the stages of Becoming aware of a crisis, Preparation and protection against the crisis, Taking the crisis under control, return to normal and Evaluation of lessons learnt (Can, 2002: 339).

Accident:

Accidents are defined as undesired incidents occurring through the act of an external force, causing material and immaterial damages to living beings. That is because one cannot plan for accidents and they happen at an unexpected and unforeseen time, resulting in loss of life and property. They absolutely always end in some kind of damage (Güler and Çobanoğlu, 1994:11).

Incident

The term "incident" has different connotations in different contexts, but is defined as a sudden happening, a circumstance which arises, an interesting event, an incidence (TDK, 2005). Incidents comprise of purposeless and negative circumstances which harm the society in different aspects (Turan and Cengiz, 2021).

Natural Disaster:

Natural disasters are natural occurrences which harm people and cause loss of life and property, occurring in a very short amount of time and cannot possibly be prevented by humans (Velioğlu, 2010:5). In other words, natural disasters are sudden, dramatic, unplanned incidents which bring with them large losses and damages, interrupting the normal functioning of economy (Akar, 2013:186). Of the deaths caused by natural disasters occurring in Turkey, 65% are related to earthquakes, 15% to landslides, 12% to floods, 7% to rockfalls and 1% to avalanches

(Akdur, 2000:5). The term "natural disaster victim" is used for persons whose houses have or may become unusable due to a disastrous incident. Just as the number of natural disaster victims does not express the number of housing units which are completely destroyed in the fullest sense of the word or have become unusable or not safe to use, it does not give the number of right holders either (Gökçe et al., 2008:16).

Assembly Area:

The definition given by AFAD for assembly areas is "safe areas where people can convene at after moving away from a dangerous zone to prevent panic and ensure a healthy exchange of information following disasters and emergencies within the time period until temporary shelters are ready". In Turkey, safe evacuation zones are a dressed under two groups as assembly areas and temporary shelters. Local parks and sports and recreational facilities are utilized as assembly areas. Tents and containers comprise emergency shelters (Yücel, 2017:5). Regardless of the type and speed of development of disasters, disaster-related activities encompass four main stages as Damage reduction, Preparation, Response and Recovery:

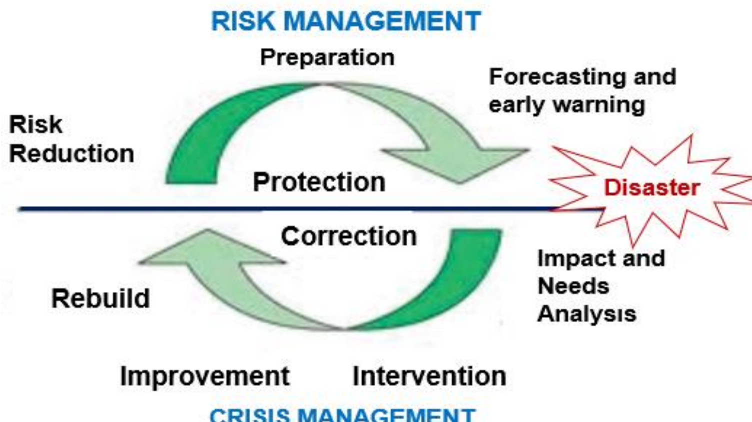

Figure 2: The Cycle of Disaster Management (Kadıoğlu, 2017b: 55).

TYPES OF DISASTER

Disasters are divided into two general categories as natural and artificial. Natural disasters are geological disasters such as earthquakes, volcano eruptions and landslides and meteorological disasters such as floods, storms, tornadoes and hailstorms. Fires, terrorist incidents,

epidemics, biological attacks etc. which occur as a result of human activities are artificial disasters (Memiş and Babaoğlu, 2020). Disasters can be grouped in two as natural and man-made disasters as well (Ministry of Development, 2014):

1-Natural Disasters are divided into two as slow onset natural disasters and sudden natural disasters.

2-Man-made Disasters include nuclear, biological and chemical incidents, transportation accidents, industrial accidents, incidents caused by overcrowding and migration.

Disasters may also be classified in accordance with the number of the injured as Minor Disasters (with at least 25 injured and 10 people being treated), Medium-scale Disasters (with at least 100 injured and 50 people being treated) and Major Disasters at least 1000 people being injured and treated at hospitals (Balçık et al., 2014:47). The types of disaster observed throughout the world are presented in the following table.

Table 1: Types of Disaster Observed Throughout the World (https://www.afad.gov.tr/afet-turleri acc.13.08.2021)

GEOLOGICAL DISASTERS	CLIMATIC DISASTERS	BIOLOGICAL DISASTERS	SOCIAL DISASTERS	TECHNOLOGICAL DISASTERS
Earthquake	Heat wave	Erosion	Fires	Mining Accidents
Landslide	Cold Wave	Forest fires	Wars	Biological, nuclear, chemical weapons
Rockfall	Earphones	Epidemics	Terrorist attacks	industrial accidents
Volcanic Eruptions	Hail and Flood	Insect Infestation	Migrations	transportation accidents
Mud Streams	Tornado, Lightning			
Tsunami	İcing			

Earthquakes: Of the 301 natural disasters which happened globally in 102 countries in 2016, 9% of disaster-related incidents and 17% of losses of life are caused by earthquakes (Ersoy, 2017:27-28). A total of 905 natural disasters occurred in Turkey within 2020, with a breakdown provided in the following table (AFAD, 2021:2).

Table 2: Natural disaster which occurred in Turkey in 2020.

DISASTERS	Number	Percentage
Raw	11	1,22
Earthquake (Magnitude 4.0+)	321	35,47
Others (Storm, Hail, Extreme Winter Conditions)	270	29,83
Landslide	107	11,82
Rockfall	17	1,88
Sinkhole	2	0,22
Flood and inundation	177	19,56
Grand total	905	100

ISSUES RELATED TO EMERGENCY MANAGEMENT

Emergencies are undesired incidents which endanger the safety of life and property of people and which must be reacted to immediately as a society. Emergency management comprises the positive management of the process of planning, making use of and organizing existing resources for being prepared against hazards which would and do arise, alleviating and preventing distress and providing an appropriate and timely response (Es, 2010:15). Issues which should be taken into attention at workplaces in emergency management can be grouped under the following headings (Ministry of Labor, 2017):

- Determination of the team to follow up on emergency-related efforts,
- Setting goals and objectives for emergency-related efforts,
- Preparation of an emergency plan and identifying the inputs from other studies and efforts,
- Planning, follow up and implementation of unit visits,
- Preparation of reports informing on deficiencies and their submission to superior administrative instances,
- Carrying out joint work with other units for the procurement of emergency equipment,
- Following up on the preparatory stages of emergency plans and ensuring their preparation for all units,
- Planning for the training of relevant teams,
- Preparation and implementation of scenarios,
- Carrying out the necessary controls and examinations.

DISASTER MANAGEMENT AND DISASTER MANAGEMENT PROCESS

In our time and day, disaster management is not just rescuing living beings from under the rubble, extinguishing fires, treating the injured at hospitals and providing similar responses and services. To the contrary, looking from the perspective of technological advances, the priorities of modern disaster management are minimizing the need for response services, protecting humans and all living beings from dangers that may arise and reducing the risks to a minimum before disasters occur (JICA, 2004:9-10). Within this context, efforts allowing people to be knowledgeable about natural incidents that happen within the environment they live in, identify their causes and not be harmed at all or be affected at the minimum level in the event of the recurrence of such incidents are called "Disaster Management" (Gökçe and Tetik, 2012:24).

Considering the phases and components of disaster management, one is faced with three main elements which comprise what is also called the golden triangle of services; namely, official power, enforcement power and local administration, logistic power and civil society (which is the people themselves). The following diagram illustrates the components of disaster management (Işık et al., 2012:91).

Figure 3: Components of disaster management.

Disaster management encompasses the process and efforts which must be made by the central government and the people living in a given neighborhood to prevent disasters, minimize their impacts, reduce damages, respond to incidents and developments that occur in a timely and quick manner, move those residing within the impact zone to safer areas and establish a good living environment (AFAD, 2014).

In Turkey, disaster management is carried out by the Disaster and Emergency Management Presidency under the Ministry of the Interior. Disaster management and coordination duties in Turkey are undertaken by governors of provinces. With the Turkey Disaster Response Plan (TAMP) becoming effective in 2014, Local Administrations started to take charge in issues such as catering, logistics and debris removal as supporting solution partners (AFAD, 2013). In Article 7 concerning disasters of the Law on Metropolitan Municipalities (Law No. 5216) it is explicitly stated that Metropolitan Municipalities are directly responsible for efforts to be made to reduce damages caused by disasters.

Apart from the need for being prepared against natural disasters which countries face over the years, in the recent times it has also become necessary and important for countries to be prepared against epidemics and pandemics as well. The Covid-19 pandemic has shown the necessity of domestic and international coordination and cooperation between all sectors. The healthcare policies and plans necessary for such coordination and cooperation should be prepared accordingly and in advance (Cansever, 2021:97). Whereas it is possible to measure the economic and financial costs of disasters, one cannot measure the social and emotional repercussions of being blindsided by such incidents (Balçık et al., 2014:48). Disaster management efforts should start much earlier than the occurrence of a disaster, continue during disaster and be resumed until recovery efforts are completed, considering the developments happening during disaster. These efforts can be put in a diagram as follows (Çolak, 2017):

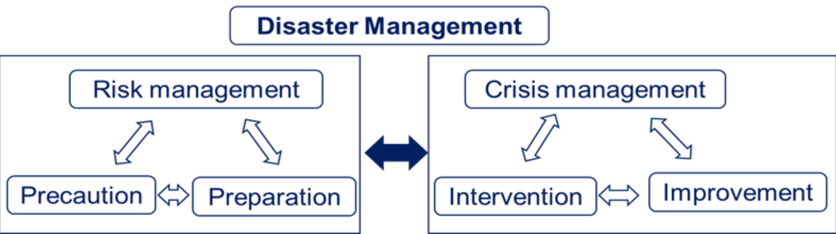

Figure 4: Diagram of Disaster Management

Regardless of their types, activities carried out with relation to all disaster incidents are addressed in 5 stages. Work to be done in each of these stages impact the work in the following stage. These continuous activities run on as a circle of disasters or a chain of disasters and comprise the stages of damage reduction, advance preparation, rescue and

first aid, recovery and rebuilding (Özmen et al., 2005).

The damage reduction stage contains physical infrastructure building, setting the standards for site selection, developing legal and economic methods on the basis of such standards, defining the measures for mitigating disaster damages and generating a social culture on relevant issues (Albayrak et al., 2020:22). Damage Reduction Efforts comprise of the following:

- Establishment of a Disaster Information System, Identification of Disaster Hazard Areas and Risks,
- Approval of Geological-Geotechnical Study Reports Serving as Basis for the Zoning Plan,
- Intense Seismic Activity Registry Network, Turkey National Telemetric Recording Network,
- Prevention of Landslide, Rockfall and Avalanche hazard and risk and activities carried out in the Area Exposed to Disaster.

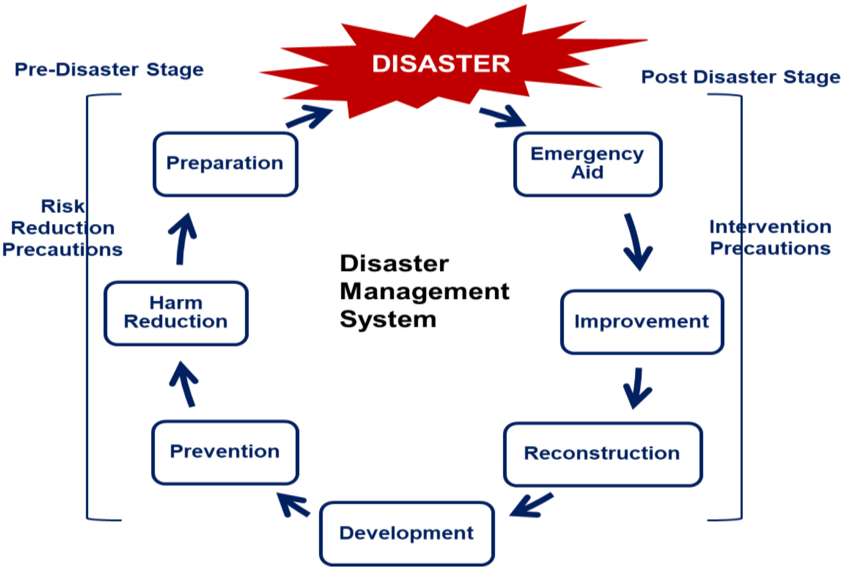

Figure 5: Circle of Disasters

The Disaster Risk Mitigation System (ARAS) Project was initiated by AFAD in 2016. With ARAS, the risk potential of units impacted by disasters are identified and a technical infrastructure is provided for the determination of safe settlement areas. Disaster Preparedness encompasses capacity building within the hospital and determining,

arranging and organizing the necessary resources in the event of a disaster.

Advance Preparation Efforts: These efforts include the preparation of Disaster Management and working plans, preparation of province-specific Rescue and Emergency Aid Plans, development of Earthquake Scenarios and delivery of Trainings and Drill Exercises.

Works Carried out During and After the Disaster:

- Identification of the magnitude and location of the earthquake,
- Estimation of Damages within a short span of time,
- Visiting the disaster area to prepare the necessary reports,
- Earthquake Area Effectiveness Approval, Emergency Subsidy,
- Damage Assessment Efforts, Temporary Housing Efforts, Rights Ownership Determination Efforts,
- Debris Removal, Infrastructure Works,
- Site Selection and Planning, Zoning Works, Permanent Housing Efforts,
- Acting as the Secretariat for the Disasters Central Coordination Board,
- Notifying the Ministry of Foreign Affairs that foreign aid would be accepted.

Integrated Disaster Management and System databases, data banks and decision support systems should be established and it should be ensured that all units take part in disaster related efforts (Kadıoğlu, 2008:3). Carrying out follow up activities and checks during the disaster management process and ensuring their continuity is of great importance in terms of reducing damages. It is essential that institutions and organizations have a sustained and dynamic disaster awareness. To provide that, stages of the disaster management process should be followed very closely (Günaydın et al., 2019):

For an effective disaster management, good management of resources such as tools, equipment, human capital and time is a must. That is because the same resources would still be needed after the disaster period, since healthcare institutions will continue to serve. Taking into account all phases of a disaster and coordinating all such phases in an effective manner to continue the cycle is called Sustainable disaster management (Güler, 2018:239). The physical, social, cultural, economic and

psychological aspects of disasters need to be addressed (Tercan, 2019:31).

Important healthcare issues during disasters

Important healthcare issues during disasters are Reducing Deaths, Care for the Injured and Triage, Prevention of Disaster-Related Secondary Diseases and Deaths, Reaching the Normal Level of Healthcare and Rebuilding the Healthcare Infrastructure (Akdur, 2001:30).

It is observed that throughout history, healthcare institutions and hospitals have made preparations and developed service plans against Covid-19 (the Novel Coronavirus Disease) Pandemic, MERS (Middle East Respiratory Syndrome), SARS (Severe Acute Respiratory Syndrome), AIDS (Acquired Immunodeficiency Syndrome), Ebola, Tuberculosis, Syphilis, Malaria, the Spanish Flu, Plague, Cholera, Leprosy, Typhoid Fever, Typhus Fever and Smallpox and successfully tackled all except for Covid-19 in the recent period (Parıldar, 2020:20).

In case of an epidemic, personnel such as Physicians, Dentists, Nurses, Caregivers, Patient Admission Personnel, Healthcare Personnel working at the Triage Area, Security personnel, personnel serving in patient transport, Health technicians, Operating room personnel, Phlebotomy personnel, the Infection Control Committee, Lift personnel, Laundry/Sterilization personnel and Morgue personnel would be under risk (Ankara University, 2020:4). Healthcare personnel serving at hospitals face biological risks such as AIDS/HIV, Tetanus, Brucella, Diphtheria, Plague, Tuberculosis, Hepatitis A, B, C and D, Influenza, Parotitis, Crimean-Congo Hemorrhagic Fever, Salmonella, Chickenpox, Measles, Rubella and Typhoid Fever (Solmaz and Solmaz, 2017:149). In such a risk environment, personal protective gear and equipment should be provided to hospital personnel. They should be informed, warned and trained about how to use such gear and equipment and how to act during their work in advance and guides concerning these issues should be prepared and distributed among all personnel.

COMMUNICATION DURING DISASTER

Communication is the clear and quality transmission of information such as sound, image and data from one area to another area. Communication requires a source where the information is generated and presented, a transmitter to convey the information, a medium for transmission and receiver circuits to receive and interpret the information (Kaçar, 2018).

Communication during disaster is essential for quick delivery of services, effective coordination and rapid communication in disaster incidents. Communication sources need to be established in a systematic manner before the occurrence of a disaster by considering the worst-case scenarios and with alternatives being proposed (Işık et al., 2012:105). All correspondence and communication must be recorded.

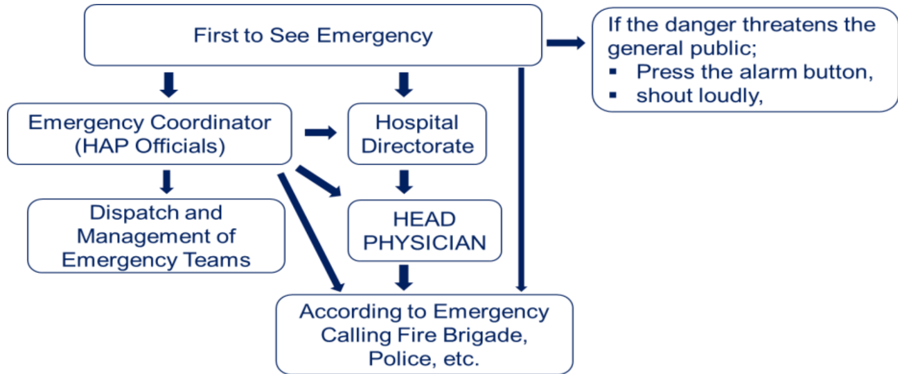

Figure 6: Communication during working hours (Istanbul University Oncological Institute HAP, January 2020:36)

Communication in hospitals during disaster is categorized under two areas as internal and external communication.

Internal communication comprises of the communication between the personnel and the patient and the patient's relatives. Communication is ensured through telephone calls, e-mails, hospital television and radio channels and public announcement systems.

External communication: It is essential that hospitals are able to function in a timely and urgent manner during disasters. External communication and logistics would be greatly facilitated with the use of information exchange forms prepared in accordance with rules previously agreed upon between institutions.

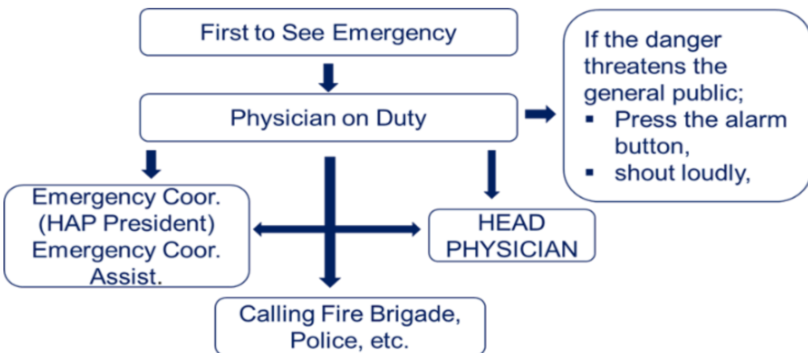

Figure 7: Communication outside of working hours (Istanbul University Oncological Institute HAP, January 2020:36)

DAMAGES CAUSED BY DISASTERS

In 2019, a total of 396 disasters and emergencies occurred throughout the world, with 11,755 people losing their lives, 94.9 million people being injured and economic losses reaching approximately 103 billion US dollars. Within the last 30 years, the number of disasters and emergencies occurring in Turkey was 247, with 25,005 lives being lost, 68,441 people being injured and the number of people affected by these incidents being 5,046,661 (Yeşil, 2021:283).

In order to reduce the damages caused by disasters, the society needs to join their forces in the advance disaster preparedness efforts. Ministries, Provincial Directorates, Local Administrations, Universities, Trade Associations, Non-Governmental Organizations and Private Institutions and Organizations are involved in such efforts to establish the union of forces (Governorate of İstanbul, 2014:39). It is also stated that the central government is legally responsible for damages and losses which may be incurred due to the actions it takes, fails to take or implements in a deficient and untimely manner.

The impacts of disasters are categorized under two groups as Primary impacts and Secondary impacts (Yılmaz, 2010:52; Tercan, 2019:30). Primary impacts consist of the loss of lives, injuries, loss of properties, damages to dwellings, recession of the industry, destruction of infrastructure and direct economic impacts. Secondary impacts include demographic impacts, psychological impacts, migration, labor losses, loss in productivity, spatial impacts and political impacts.

Waste Management During Disasters

It is also obligatory that waste management efforts are made during disasters. Such efforts can be listed as planning and control, prioritization and resource management. Disasters create large amounts of debris and waste which are informed by their characteristics and severity. These put an additional load on existing solid waste management facilities and cause negative impacts by preventing other emergency response and rescue activities. It is determined that the volume of debris created by past disasters is 5-15 times more than the total annual amount of generated waste (Güler, 2018:240).

DISASTERS IN HOSPITALS

Healthcare institutions should also be prepared against disasters. Starting with physicians, all healthcare personnel should be provided with training on disaster healthcare services and disaster medicine alongside courses on vocational training. According to October 2020 data from the Ministry of Health, over 1,500 hospitals with 934 public hospitals included render services through 1,120,000 personnel (Koca, 2020:3). Disasters may also be considered as incidents where hospital managements require resources even more under such extreme circumstances to provide their patients with the best care services. In disasters, the first few "golden" hours are of essential importance in saving the lives of the injured. The first 72 hours following a disaster are named the golden hours and of critical importance for disaster victims (AFAD, 2013).

It is very important for hospitals to remain safe and at a functioning state in the event of a disaster. Moreover, continuing the treatment of inpatients without any interruptions would prevent losses of life. Hospitals which must keep providing services before and after a disaster should be prepared against different types and manners of disasters (Kadıoğlu and Bek, 2009:5);

In hospitals, disasters are classified as external disasters, internal disasters and mixed disasters.

External Disasters: These are disasters such as earthquakes, floods, storms, fires, accidents, terrorist incidents, epidemics etc. happening outside of the hospital campus and area. Hospitals and healthcare institutions physically remain outside of the impact area of such disasters (Mete et al., 2020:95).

Internal Disasters: These are incidents which are of concern only to the hospital and have a direct impact thereon. Terrorist incidents, violence, flooding, power cuts, water service failures, natural gas service interruptions, chemical and radioactive accidents at laboratories, fires, explosions, medical gas leaks, lift malfunctions etc. can be considered within this category (Mete et al., 2020:95).

Mixed Disasters: Floods, fires, earthquakes, chemical accidents and explosions which directly impact the hospital and its surroundings even though they may happen outside of the area of the hospital can be considered as mixed disasters. Mixed disasters are the most difficult type of disaster hospitals face. Therefore, "Disaster Emergency Aid Plans" should be prepared separately for such cases by considering their unique characteristics. The plan should answer the questions of what needs to be done, how, where, when, through what means and by whom. Differently from other institutions, hospitals will be contacted with urgency in disaster incidents. Therefore, hospitals must be ready at all times and take the necessary precautions for any kind of disaster that can happen. Due to hospitals having a matrix structure, in order for their services to be continued without interruption the safety and security of facilities should also be ensured in the necessary manner (Coşkun and Evirgen, 2013:585). Therefore, one would find benefit in taking into account the following in advance:

- Hospitals should be prepared against disasters which may occur within the country. Such preparations need to be addressed during the construction phase of the hospital and what is necessary should be done to ensure the resilience of buildings and structures.
- Supply of water and energy to hospitals should be independent.
- Hospitals should store in advance the necessary materials, tools, equipment and medications to be utilized in the event of a disaster to provide instant response.
- Available bed capacities in hospitals should be determined in advance and how and to which hospitals and clinics patients and the injured will be transported should be ascertained and planned for.
- If deemed necessary, the number and location of portable field hospitals and bed capacities should be planned in advance.

The concept of safe hospital is explained by the World Health

Organization (WHO) and the Pan-American Health Organization (PAHO) as:

- Buildings which do not collapse in disasters, where activities can be performed with ease without the loss of life of service providers and patients,
- Where the necessary healthcare services are able to be provided continuously without interruption or delay,
- Where the healthcare labor force can be organized to maintain service and care activities,
- Where one can stay safely and does not need to evacuate.

Therefore, for the purposes of supporting the goal of «hospitals protected against disasters», the original «Hospital Safety Index» was developed by PAHO and WHO with contributions from various experts. The Hospital Safety Index serves as a beacon in establishing a system demonstrating which of the existing hospitals require investment to improve the functioning of service delivery systems to make a comparison between the reliability of hospitals in a country (Canatan, 2020:57,59).

Studies conducted have revealed that the risk of contracting viral diseases is higher in poorer societies. Economic inequality has a multiplying impact in epidemics, accelerating the spread of an epidemic among the society (Kocabaş, 2020:14). An epidemic is defined as an unexpected increase in the number of cases among a certain section of society within a given period of time. The most important factor in the management of epidemics is "being prepared against epidemics" (Okyay and Akın, 2020:22). Emergency epidemic plans should be prepared. An early warning system should be established with all the necessary committees. The epidemic that arises and spreads quickly needs to be assessed as soon as possible. Temporary hypotheses should be developed concerning the epidemic and these should be tested by conducting field research. The data thus obtained should be analyzed, evaluated and reported. Necessary control measures should be implemented and disseminated.

Within the process of the pandemic encompassing the entire planet, healthcare managers at all levels had to develop and implement various managerial strategies to cope with this situation and avoid damages. For this, the healthcare institution needs to have planned for epidemics and pandemics and completed the preparations in advance. In countries which

were caught off-guard by the global Covid-19 pandemic, people were left to die and situations where patients were treated in hospital gardens were observed (İşlek et al., 2021:57).

Surveillance systems play an important role in the advance planning of healthcare services and pandemic preparedness to foresee global pandemics and estimate their spread and to provide the best battling capacities against them. The establishment of surveillance systems, making use of advanced information technologies, utilizing artificial intelligence-based efforts in digital applications, translating the data obtained into correct, reliable and continuous information and reporting and sharing such information is of great importance (İşlek et al., 2021:59).

As per Article 19 of the "Regulation on the Operation of Inpatient Treatment Institutions (1983)", the measures to be taken within and outside of the inpatient treatment institutions in extraordinary circumstances need to be planned in advance. In Turkey, it is obligatory for all hospitals to prepare «Hospital Disaster and Emergency Plans» (HAP) as outlined by the Ministry of Health (Ministry of Health, 2021). HAP are specific to each hospital. The plans prepared are joined together with "Provincial Healthcare Disaster and Emergency Plans" (İL-SAP) at the Provincial Directorates of Health to provide city-specific "Provincial Disaster Response Plans". These plans and works are collected at the Ministry of Health to be integrated into the "Turkey Disaster Response Plan" (TAMP) (Yeşil, 2021:283).

HAP provides the framework plan for the hospital. HAP also contains three separate plans as Emergency Response Plan, Incident Action Plan and Incident-Specific Plans. In our hospitals, firefighting (extinguishing) team, first aid team, search, rescue and evacuation team, protection team, communication team and technical teams need to be established and put into practice in case of fire (Fire Regulation, 2007) and emergencies (Regulation on Emergencies, 2013) by taking into account the size, characteristics and the number of personnel and patients of the hospital (Çanakkale University, 2020).

Emergency Response Plan **(AMP)** constitutes an important part of the Hospital Disaster and Emergency Plan **(HAP)**. Hospital's AMP defines the disaster and emergency response organization, management system and tools. These can be put into a diagram as follows (Ministry of Health, 2016:30):

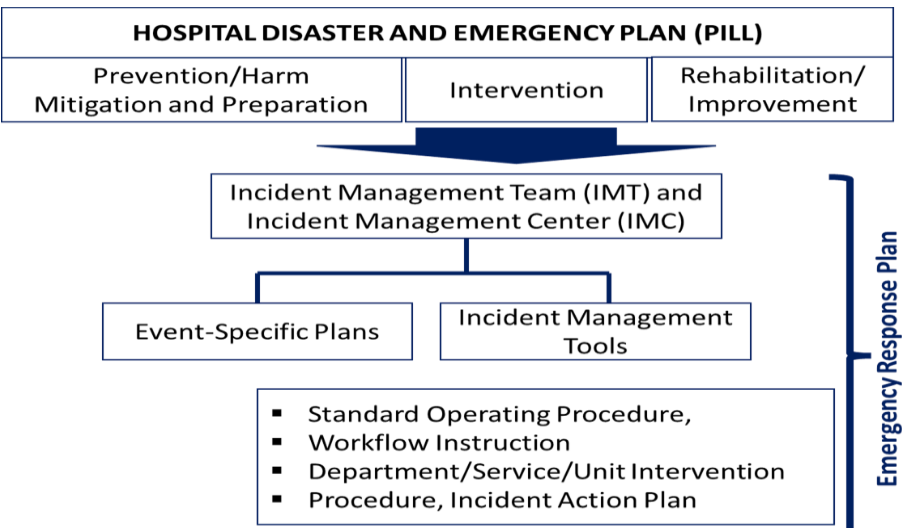

Figure 8: HAP and Emergency Response Plan

Alternative areas which must be used in emergencies should be determined. Trainings should also be provided in advance to the managers, their assistants and the relevant personnel who will serve in emergencies. The emergency plan should also be put in writing in advance and kept in the relevant areas. Emergency plans should be revised and updated at least once within a year. The Emergency and Disaster Plans prepared must include the following information (Mete et al., 2020:94).

1. Layout plan of facilities and areas,
2. Fire precautions and actions to be taken following a fire,
3. Precautions to be taken against natural gas leaks and fires and the relevant line of action,
4. Precautions to be taken against electrical leaks and fires and the relevant line of action,
5. Precautions to be taken against theft and the relevant line of action,
6. Precautions to be taken against earthquakes and natural disasters and the relevant line of action,
7. Precautions to be taken on the escape route of agitators and the information to be provided to relevant authorities,
8. Line of action to be taken against mass incidents,
9. Line of action to be taken against epidemic diseases,

10. Procedures of communicating with the relevant institutions and organizations and law enforcement units,

11. Confidential information such as assembly areas.

In order to reduce risks in emergencies and disasters in hospitals, to minimize the damages to be incurred and at the same time to ensure the safety of personnel and patients and their relatives, hospitals must prepare disaster plans (HAP). While preparing such plans, the global pandemic situation should also be taken into account. Reduction of damages to be incurred by hospitals in such cases depends on good disaster management and uninterrupted delivery of hospital services (Şahan et al., 2020:331). According to the Communique on Emergency Services (2009) on the present subject, all healthcare institutions belonging to the public and the private sector must prepare Hospital Disaster Plans (HAP) and implement these plans in the event of disasters by informing the disaster unit under the relevant directorate and 112 Command and Control Center (KKM). Duties to be vested in the institution in cases of disaster and extraordinary circumstances are determined by 112 KKM in line with the provincial disaster plan and hospital disaster plans. HAP should also include the particulars listed here below (Palteki, 2018:144):

- All processes and functions within the hospital should be consolidated, the engagement of the personnel should be ensured and necessary information should be provided,
- Hazards contained by previous and possible disasters and emergencies should be clarified,
- What needs to be done should be explained clearly by carrying out risk assessments,
- Required preparations should be made for appropriate and necessary response,
- Each stage of disaster management should be planned separately and the relevant teams should be determined accordingly.

The organizational structure related to "Provincial Healthcare Disaster and Emergency Plans" can be shown as follows (Ministry of Health, 2012):

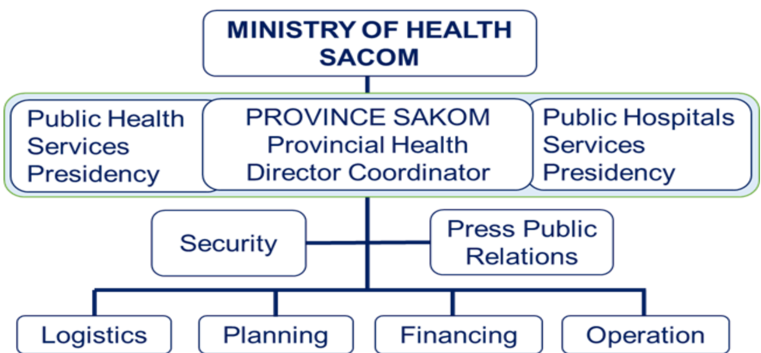

Figure 9: Structure and Functioning of Institutions and Units Under the Ministry of Health During Disasters and Emergencies in Provinces.

As an obligation, the necessary plans to increase the examination and inpatient capacities of hospitals in cases of emergency and disaster must be prepared and the names and inpatient bed capacities of public, university and private hospitals to provide services in accordance with the scale of the disaster must be determined in advance. According to the relevant Regulation on the Implementation of HAP (2020), the Hospital disaster and emergency plan preparation commission should consist of hospital management and hospital unit representatives.

In hospitals operating under the Ministry of Health and university hospitals the chief physician and in private hospitals the managing director serves as the President for HAP preparation. The President for HAP is responsible for the preparation and implementation of the HAP. HAP aims to prevent and mitigate disaster-related risks for hospitals and ensure preparedness against crises. Thus, the objectives of HAP can be listed as follows:

- Reducing damages to hospitals in disasters and ensuring the life safety of personnel and patients,
- Preventing disaster-related damages to tools, equipment, materials and hardware utilized in the treatment of patients,
- Establishing the command-and-control mechanisms and implementing rules to be followed in disasters,
- Determining the duties and responsibilities of those to serve in disasters,
- Taking the necessary precautions to enable hospitals to work within the first 72 hours of a disaster without any external assistance and support,

- Providing trainings on disaster protection and minimizing damages and performing drills to ensure disaster preparedness for all personnel,
- Making the necessary planning efforts to ensure the coordination of quick and effective response in disasters,
- Making effective use of resources to ensure the continuation of services,
- Ensuring capacity developments when required,
- Contributing to basic efforts aimed at overall healthcare response and protection of public health.

Whereas disasters and emergencies happen in all sectors, the healthcare sector is hit the hardest by such incidents. Hospitals which comprise the main element of the structure of the healthcare sector have to respond to disasters while experiencing disasters at the same time. Due to this, hospitals stand at a different place than all other workplaces. Physical and functional preparedness of hospitals can be ensured through the advance preparation of their HAP. The HAP that is prepared contains systematic plans defined clearly to inform which services need to be delivered where, how, in what manner and by which teams and the duties of the personnel to deliver such services not only during response but also in the pre- and post-disaster stages (İytemur and Yeşil, 2020:139). Four stages are observed in Disaster Planning.

At the first stage, the planning committee to carry out the emergency and disaster preparedness efforts within the hospital should be established.

At the second stage, the overall situation of the hospital should be assessed and possible threats should be identified in accordance with the features of the expected disaster.

At the third stage, the prepared and revised plans should be shared with the personnel for their feedback and contributions.

At the fourth stage, necessary trainings related to the plans prepared should be delivered and plans should be implemented.

The following phases should be followed in the given order for the Hospital Disaster Management Plan (HAP) to become effective:

- If the disaster and related incidents occur outside of working hours, the hospital manager on duty should inform the chief physician and the manager immediately.
- All authorized personnel serving in hospital management

are urgently invited to the hospital alongside the hospital's ER physician on duty.

- Teams vested with duties in disaster planning by the chief physician of the hospital are asked to be in their posts as soon as possible.
- In accordance with the severity of the emergency, physicians, non-medical personnel and all other personnel who are off duty are informed immediately.
- Necessary instructions are given to prepare all units to the extraordinary circumstances at hand.
- Required measures are taken to adapt ambulance and transportation services to the circumstances in the quickest manner possible.
- All diagnostic, prognostic and treatment units are made ready to respond to the extraordinary circumstances.
- Relevant explanations are made and instructions are given to support service managers for the procurement of required medical equipment.
- Necessary arrangements are made to ensure the self-sufficiency of the hospital within the first 72 hours.
- Disaster notification should be communicated to all personnel within 10 minutes.
- Chief physician of the hospital should be notified immediately that all preparations are completed.

It is obvious that significant differences would be present between hospitals prepared against emergencies and hospitals that are not prepared in the delivery of healthcare services during and after an earthquake. Such differences can be observed not only during severe earthquakes but also in moderate earthquakes (Palteki, 2004:5). Emergency Plans should include the responsibilities of organizations, work to be done, rules, procedures to be followed during drills and the dissemination of the plan to the relevant units. HAP trainings should involve all personnel with full participation ensured. The personnel should be informed about the drills to be performed. Drills should be performed at least twice in one year. Personnel who have just started their duty and those who have responsibilities under HAP should be trained separately.

In hospital disaster planning, nutritional issues which are among the common health issues observed in disaster victims should also be taken

into account. During disasters, nutrition-related health issues such as Protein-energy malnutrition, Diarrhea, Infectious diseases, Anemia, Vitamin deficiencies, eating disorders and Chronic disease complications may be faced (Ministry of Health, 2007). The psychological impacts of the Covid-19 pandemic can be observed in three dimensions as social relationships, Uncertainty and Biological fragility (Taştan, 2020:17).

Emergency Organization and Responsibilities

Teams responsible under the emergency plan are established in accordance with the need to be determined by the superior officer responsible for the implementation of internal regulations issued as per the Fire Regulation (2007) and upon the approval of the most senior manager. Firefighting and rescue teams consist of a minimum of 3 persons per each team and protection and first aid teams of a minimum of 2 persons per each team. If civil defense services are established within the institution, the duties of said teams will be coordinated by these services. The overall disaster organizational structure in hospitals can be illustrated as follows:

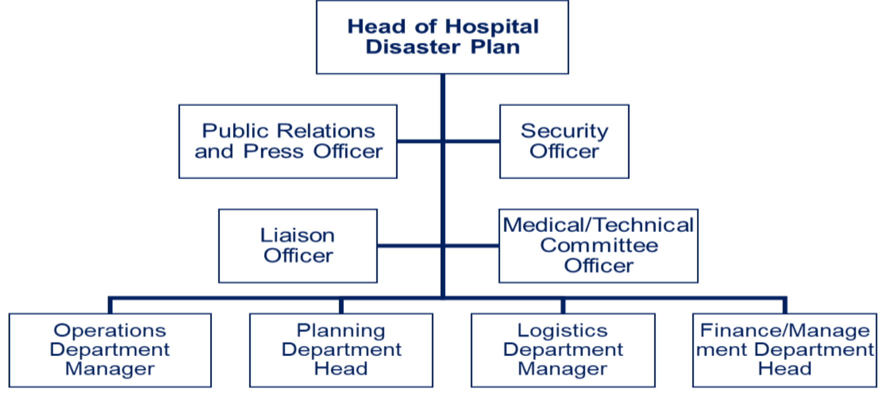

Figure 10: Hospital Disaster Plan Board Members

Working areas of the ***Medical Technical Advisory Committee*** can be listed as Biological/Infectious Incidents, Chemical Incidents, Radiological/Nuclear Incidents, Clinical Management, Risk Management, Medical Personnel, Pediatric Care and Medical Ethics (Ministry of Health, 2016:31).

Operations Officer implements practices to achieve the goals previously set by the President for HAP, organizes response centers,

manages resources and assigns duties to the supporting units. In doing so, the Operations Officer cooperates with the Site Officer, Medical Care Officer, Infrastructure Officer, Security Officer, Hazardous Materials (CBRN) Officer and Psychosocial Support Officer.

Planning Unit Officer must work together with the Personnel and Materials Management Officer, Status Evaluation Officer, Documentation Officer and Emergency Termination Officer.

Logistics Unit Officer organizes and directs the procurement of services, personnel, tools and equipment, food, water, medication and medical equipment necessary for the functioning of the hospital during a disaster. In doing so, the Logistics Unit Officer must work together with the Human Resources Officer, Tools and Equipment Officer, Medicine and Medical Equipment Officer and Hospitality Services Officer.

Financial Management Unit Officer monitors the use of finances, makes expenditures and follows up on accounting matters. To do this, the FM Unit Officer works in close collaboration with the Procurement Officer, Invoicing/Costing Officer, Legal/Indemnities Officer and Accruals Officer.

Disaster Management President

Chief Physicians of hospitals also serve as the president of the disaster management unit. They have such duties as:

- Having Hospital Disaster Plans prepared and putting them into practice,
- Initiating and terminating Hospital Disaster Plans,
- Assigning assistants to provide aid during the relevant efforts,
- Establishing, coordinating and managing the Hospital Disaster Management Center,
- Making amendments to the hospital security policy and plan in cases of disaster, when necessary,
- Making new proposals on issues not covered in the action plan,
- Determining the personnel to be sent to the field in external disasters,
- Ensuring the timely procurement of the required tools, equipment and materials,
- Taking the decision to evacuate the hospital and patients when faced with a grave threat,
- Ceasing the activities of the institution if deemed necessary

during disaster,

- Increasing the number of personnel rendering services within the disaster area when required,
- Providing information to the entire management team on priority issues and working plans,
- Ensuring the best communication and a healthy flow of information within the hospital,
- Keeping the public continuously informed about the disaster,
- Organize meetings with the HAP Management Team at least twice within a year and follow up on the developments.

Services Unit Officer is the Deputy Chief Physician of the hospital. They are responsible for the timely and full execution of medical care services.

The **duties** of the ***Support services unit*** are undertaken by the Directorate of Administrative and Financial Affairs. The personnel working under this directorate are of primary importance and priority and must arrive at the disaster site within the first two hours. In the event of a delay, these duties will be undertaken by the authorized Deputy Director.

Interinstitutional Coordination Officer: It would be most appropriate for this duty to be undertaken by a commission established under the chair of the Social Services expert assigned by the hospital management, if any. This commission undertakes the functions of coordinating and documenting the external cooperation to be needed in accordance with the characteristics and state of the disaster.

It is found as a result of the studies conducted that nurse on duty who report they have no knowledge about the HAP consist of younger nurses (İytemur and Yeşil, 2020:147). Therefore, HAP-related awareness raising trainings should be delivered in the right place and at the right time. HAP trainings and drills should be done before the occurrence of a disaster to ensure the hospital personnel's knowledge and experience concerning these plans. Moreover, having the personnel know about their duties would facilitate efforts during disasters greatly. Thus, the panic experienced during disasters would be relatively eliminated (Yurdakul et al., 2014:79). In their study, Şen and Ersoy (2017) have revealed that the level of disaster preparedness knowledge of the personnel within the hospital disaster management team increases as a result of trainings they receive. The Emergency Color Code System increases the safety of personnel and enables their appropriate and quick response. The

following table displays the color codes utilized with their meanings:

Table 3: Emergency Color Code System (İstanbul University School of Medicine HAP, 2020:35)

BLUE	Adult / Child Medical Emergency (Cardiopulmonary Arrest) / Vital Risk
GREY	Aggressor Armed Person or Active Fire or Hostage Situation
GREEN	Emergency Termination
ORANGE	Hazardous Substance Leakage / Spread
PINK	Baby / Child Abduction
PURPLE	Emergency Response Plan Activation
RED	Fire
WHITE	Attack on Employee
YELLOW	Evacuation
TURQUOISE	External Collective Injury
BLACK	Bomb threat

To ensure better efficiency of services delivered during a disaster, human resources must be well planned in advance. The negative circumstances and stressful conditions experienced by the personnel also has an impact on their mental health. Serving during disasters and helping people brings positive contributions to people, making them feel good about themselves. The psychological wellbeing of a person during a disaster also ensures a continuous social unity. Thus, the capacities of personnel to cope with and recover from negative happenings are increased, which contributes to the normalization of the current state (Pür, 2021:2747).

Plans should also be prepared against Chemical, Biological, Radiological and Nuclear (CBRN) Disasters as necessary. While preparing such plans, the manual titled "Threshold Values in Response to Chemical and Radiological Incidents" published by AFAD should also be taken into account. Moreover, efforts should be made within the framework of the "Regulation on Tasks Related to Chemical, Biological, Radiological and Nuclear Threats and Hazards". In order to treat people who are injured as a result of the spread of CBRN agents at the hospital due to various reasons, units need to be established near the triage area in front of the emergency department. This is the only way to prevent the contamination of other people. At the same time, cooperation and coordination should be ensured with AFAD, National Medical Rescue Teams (UMKE), the fire department and law enforcement units (Tekin and Bayramoğlu, 2019:293).

Since radiation and radioactive materials are used extensively in industry, medicine and nuclear power plants in our day and time, they may cause accidents to happen. In hospitals with radiotherapy departments, Next Generation Radiation Technology Practices and Cobalt-60 (Co-60) Gamma Ray Facilities are utilized. The incorrect calculation of treatment dosages in such devices may cause patients to be irradiated at high levels and in turn patients may lose their life. This constitutes an internal disaster within the hospital (Günalp, 2017:187). Therefore, said departments within hospitals and their personnel should be supervised more frequently by the Turkish Atomic Energy Authority in terms of radiation safety.

As per Article 4-d of the Law No. 2690 on Turkish Atomic Energy Authority (TAEK) and other relevant legislation, a "Hospital Radiation Health and Safety Committee" needs to be established as a requirement of the Radiation Safety Internal Regulations. In the Pandemic COVID-19 (Sars-cov2) Action Plan prepared by the Pandemic Commission established by the chief physician's office under Ankara University School of Medicine İbni Sina Hospital, the duties of said commission were explained in a clear manner.

The main objective of these efforts is to ensure the highest quality of patient services and protect healthcare professionals from the pandemic as much as possible. To do this, relevant plans need to be prepared in advance before the pandemic in a manner to allow for the creation of "gradual strategies" under relevant circumstances. Establishing a "Pandemic Scientific Committee" to direct and coordinate efforts to be made within the institution would be the best way to organize. Having administrative unit superior officers and medical unit responsible officers serve together within the Pandemic Action Plan Commission would bring great benefits in terms of service delivery (Gönen, 2020:283-287). Since hospital personnel who have direct contact with COVID-19 patients during treatment are considered to be within the risk group, necessary precautions should also be taken for their protection. In order to ensure this, personal protective equipment should be procured and necessary trainings concerning the disease should be delivered.

It is of essential importance for healthcare services to go on uninterrupted, patient applications to be responded to immediately, pandemic risks to be minimized and pandemic preparedness to be ensured. During a pandemic, providing effective and high-quality services

is as important as organizing within a short amount of time and is proportional to the number of persons to be served. It is essential that a feasible plan is prepared to do this. Within this process, trainings to be received and practical exercises during the preparatory stage facilitates the flow of work (İşoğlu, 2020:5).

While organizing disaster preparedness trainings in hospitals, apart from "Disaster Awareness Raising" sessions, First Aid, Fire and Fire Fighting, Non-Structural Hazard Mitigation and Non-Structural Risk Mitigation trainings and trainings for Rescue teams should also be provided (Ministry of Health, 2015'a). UMKE trainings are also delivered to volunteer healthcare personnel by the Disaster Healthcare Services UMKE Unit under Provincial Directorates of Health. The name of the training delivered is "UMKE Basic Training" (UTE) (Ministry of Health, 2015b). The necessary technical work should be performed with relation to non-structural risk mitigation (NSRM) in hospitals and the efforts of the technical workshop should be supported in the due manner before the occurrence of a disaster. Moreover, required works related to non-structural hazard mitigation (NSHR) should also be completed and relevant trainings should be provided.

Facilities under the Ministry of Health should have certified personnel who are trained in first aid and occupational health and safety as a legal requirement. The number of such certified personnel is determined in accordance with the hazard groups of the facilities. Workplaces containing minor hazards, moderate hazards and major hazards are obligated to have first aid personnel at the rates of 1/20, 1/15 and 1/10 respectively. First aid trainings are provided by public and private first aid centers and certification examinations are done by Provincial Directorates of Health. It is specified under the "HAP Implementation Regulation (2020)" that a hospital disaster team (UMKE team) should be established and maintained in accordance with the bed capacities of hospitals. Below 100 beds, at least 1 hospital disaster team should be established. In hospitals with a bed capacity of up to 300 2 teams, in hospitals with a capacity of over 2,500 beds at least 3 teams, in hospitals with a capacity of up to 1000 beds 4 teams and in hospitals with a capacity of up to 2,000 beds 8 hospital disaster teams should be established and maintained. Each team consists of 5 personnel (Ministry of Health, 2020).

PROVINCIAL DISASTER HEALTHCARE PLANS

Due to disasters having different characteristics, it is considered that five disaster phases as the Quiet period, Alarm period, Isolation period, External assistance period and Rehabilitation period exist. The services to be rendered by the healthcare sector are planned and organized in accordance with these phases (Akdur, 2000:5).

Against Covid-19, all states have adopted two battling strategies with the same features; namely, suppression and mitigation. The suppression strategy is one where the central government is active and various restrictive measures are taken. In the mitigation strategy, the perspective is on slowing down the pandemic over time, protecting risk groups against the pandemic and ensuring mass immunity (Cansever, 2021:92). It would be beneficial for incident management centers to take into account the following particulars while working and preparing plans (Vatansever, 2001:87-88):

- Which ambulance or patient transport vehicle will go to which hospital using which roads should be determined in advance,
- Personal information belonging to those referred to hospitals should be recorded,
- Treatment capacities of hospitals to which people are to be referred should be examined and evaluated,
- How many disaster victims are referred to which hospitals should be known and recorded?
- Patients and the injured should be referred in company with a physician or healthcare professional,
- The personnel to accompany the patient or the injured should be selected from among those who know the hospital to be visited,
- Where the ambulance delivering the patient or the injured to the hospital will return should be determined in advance.

Disaster plans prepared by public and private healthcare institutions are related to one another. Such relation continues at the Hospital Level, Provincial/Local Level and the National Level (Yeşil, 2017:236). Hospitals located in the same province and district should make a protocol to cooperate with and inform each other in emergency practices. In doing so, it is important that the following particulars are clarified. It is beneficial for the institutions to be knowledgeable about each other in

advance.

- Number of available beds in different services / units,
- Capacity and number of beds in functional units,
- Number of personnel serving under different services / units and their expertise,
- Number and posts of personnel providing support services,
- Contact information belonging to the unit officer to be contacted in the following steps,
- Emergency Department capacity, number of personnel and number and type of equipment,
- Existing polyclinics and capacities.

In order to render these services appropriately and in a timely manner, the personnel should be provided the necessary trainings on "Triage principles, Categories and Color Coding". In order to make a good plan for disasters, international standards, basic planning principles, disaster management principles and the existing national legislation should be taken into account (Kadıoğlu, 2017'a:6).

Table 4: Triage Principles, Categories and Color Coding

PRIORITY	COLOUR	SYMBOL	DEFINITION	DURUM
First	Green		slightly injured	Treatment can be delayed for hours / days. Patient monitored standing or on a stretcher.
Second	Yellow		delayed injured	With treatments given within a few hours salvageable.
Third	Red		critically injured	Simple in minutes can be saved with interventions.
Fourth	Black		Dead / Dying the wounded	Patients with very low chance of dead / living

The first step of triage in disaster is keeping large numbers of people alive and providing benefits to them. While classifying the injured, those that can be provided with benefits should be prioritized. Healthcare professionals should follow the 4 basic ethical principles of Respecting Autonomy, Causing No Harm, Providing Benefit and Being Fair as specified in "Principles of Biomedical Ethics" (Şen, 2018:58). In order to prevent the crowding of hospital emergency departments with patients with minor injuries and to eliminate the possibility of those critically injured being left for dead, a proper and effective triage system should be developed.

The Disaster Management and Decision Support System (AYDES) was established by AFAD to set forth an effective management model in providing the informatics infrastructure meeting the requirements for an effective implementation of Disaster Management procedures and supporting decision mechanisms. Within the scope of the Turkey Disaster Response Plan (TAMP), it is possible to prepare, check and submit for approval such plans as Service Group Plans at the National Level, Provincial Disaster Response Plans and Service Group Plans at the Local Level over the system (https://www.basarsoft.com.tr/wp-content/uploads/2016/12/11.afad-aydes.pdf e.10.08.2021). Considering the large-scale earthquakes which happened throughout the world from 1900 to 2018, Turkey ranks the fourth with 77 earthquakes (AFAD, 2018'a) (https://www.afad.gov.tr/kitaplar e.12.08.2021)

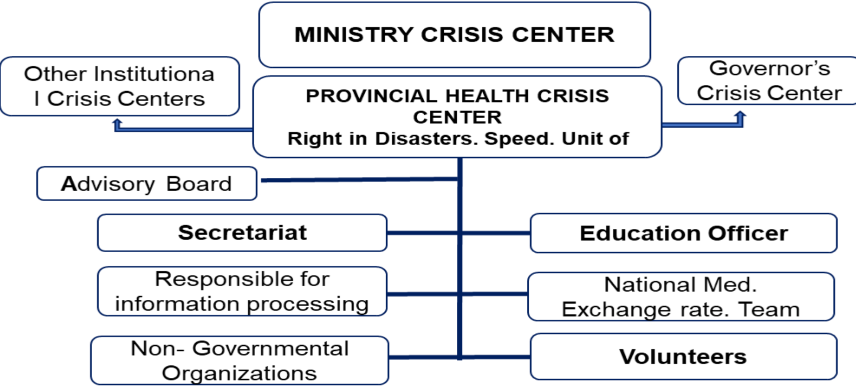

Figure 11: Healthcare Crisis Management Structure at the Provincial Level

The "First Aid and Healthcare Services Group" included within the provincial level plans should also be organized to render services under four units as First Aid and Ambulance Service, Hospitals Service, Basic Healthcare Services and Service for the Identification and Burial of the Dead. In order to ensure regular, timely and appropriate flow of information under extraordinary circumstances (EOC), institutions and organizations should be coordinated in the manner displayed in the following chart (Ministry of National Education, 2011:21-23).

Figure 12: Extraordinary Circumstance (EOC) Information Flowchart

LEGISLATION ON DISASTER MANAGEMENT

For hospital managers, the international and national legislation on disasters at hospitals are very important. This is also included in the Constitution of the Republic of Turkey with Article 125 thereof stating that "the central government shall be legally responsible and accountable for all consequences arising as a result of the efforts that it makes and does not make and measures that it takes and does not take" (Şengün and Sipahi, 2017:128).

In an effective management, legal arrangements defining, explaining and supporting the communication, relationships and mutual rights and responsibilities between healthcare institutions are needed. It is also essential to ensure the sustainability of healthcare legislation arrangements to be made by taking into account the new needs, priorities and regulations which arose with the COVID-19 pandemic (İşlek et al., 2021:58). Concerning disaster management, a large number of legislative instruments such as the Emergency Law, Hospital Disaster and Emergency Plans (HAP) and Regulations on Emergencies at Workplaces, Disaster and Emergency Management Centers and 112 Emergency Call Centers exist in Turkey.

CONCLUSION

As is the case with disasters, epidemics and pandemics increase fear, concern and pessimism within the society with the acceleration of their spread. Such fear and concern also impact healthcare personnel psychologically. In the event that the disaster process is managed well, a sense of trust and safety is instilled in the society and healthcare

professionals. Within this scope, the timely and appropriate response of our healthcare institutions and hospitals free of any concerns and their providing services in the most appropriate manner can only be possible through the advance planning of efforts, delivery of trainings and providing the necessary logistics. Execution of planning in the desired manner depends on ensuring the necessary organization and coordination.

Both the public and private healthcare sector must be prepared against anything and cooperate when necessary. To do this, provincial healthcare plans should be prepared in the correct and feasible manner. Moreover, all necessary legislative arrangements should be done in a timely and appropriate manner. Senior authorities and politicians are vested with great duties in these regards. As our hospitals stand and continue rendering services, the number of deaths will decrease and contributions will be made to the normalization of the social standing of the country.

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Chapter 32

Future Trends in Financial Management of Healthcare Institutions

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INTRODUCTION

Information multiplies very quickly. Technology is advancing at the same pace. Scientifically, many new inventions, inventions, methods, applications, etc. emerge as a result of innovation studies and researches related to health, medicine and health technology. The implementation of these innovations leads to developments. These developments also require the rapid adaptation of healthcare professionals. The Covid-19 pandemic process has shown us that nothing will be the same as before. Now, in the new world after the pandemic, not only the health system, but no system will be the same. Then what will be the situation in the health system, health methods, health demands and patient demands, health technology, health stakeholders, health economics, health expenditures, health financing and costs in the future? In this study, answers to these questions will be sought in the light of current literature on these subjects and predictions about the future. In this context, predictions about the future trends in the financial management of health institutions and information about the dimensions of financial needs will be included.

SHAPING THE FUTURE

In the future, health services policies will be formed according to the expectations of the information society, targets will be determined and strategic, medium and short-term plans and investment programs will be made (Ak, 2007,8-10; Ak, 2019, 2-3; Ak, 1990, 12-17). The widespread use of computers in business life has enabled applications in every field and the development of businesses to be faster. Great increases in the capacity and speed of computers and high-speed electronic information transfers have enabled global markets to function as a single market.

Because; It has made it possible to instantly deliver information about economic, political, cultural and consumer trends (Ak, 2019,633; Ak, 20211,590). Dynamic environmental conditions and an intensely competitive economic environment force health services and hospital businesses to produce error-free, quality products and services in accordance with patient expectations. It also directs health managers to make predictions about what the future expectations might be. Future expectations or future trends will provide important information to health and hospital managers about not only making profits or growing, but also being aware of the dynamics that threaten their existence.

In the information age, it seems inevitable that the dynamic of change will make important moves in the health sector, as in all sectors. There are two major problems in predicting the future: the direction of change and the time of change (Ak, 2018,3-9). At the organizational level, the time of change is difficult to predict. This challenge reveals once again the need for continuous planning. The most dominant prediction for the direction of change is that health expenditures and costs will continue to increase. There are five factors that are thought to shape the future in health institutions: demographic characteristics, technology, public expectation, limited resources and ethics.

CHANGE IN PATIENT REQUESTS

Changing consumer behaviors will also change the health services sector from top to bottom. Apart from hospitals, there will be a growing demand for centers where healthcare services are cheaper and more convenient. People now want to receive service from where they are. Providing this service at the maximum level is the reason for preference for patients (Gülez, 2021). In the new world, people want all services such as home shopping, home entertainment, home care and home health to come to them wherever they are. For example, Millennials prefer to use the telemedicine method (Güzel, 2021). When developments in fields such as genetic technology, nanotechnology, robotic surgery and telemedicine are combined with rapid developments in information technologies, it is seen that medicine has begun to change shape, and the perspective on health and disease issues and expectations from health services are different (Hayran, 2021, 1).

In the future, patients and their owners will have to adapt to changing needs, demands and expectations. Organizations that understand how patients, their relatives and consumers who demand various health

services want to use wearable digital health technologies, their needs and expectations on these issues and act accordingly will help people make informed health decisions and develop patient participation strategies. Developing technologies will help to increase self-awareness and help people to play a more active role as a patient in their own diagnosis and treatment. For example, it is predicted that in the future, people will create a diet suitable for their own DNA and make changes regarding their living conditions (Colin, 2021).

Health sector; rather than curing diseases, it leads us to focus on sustainable healthy lifestyles, preventive approaches and early detection. The ability of today's health service sector to adapt to the future; It requires adapting to developing digital technologies, meeting the needs and expectations of changing patients and their relatives, even anticipating needs and expectations and creating synergy (Yilmaz, 2021).

There is a rapid change in demands for health services and health behaviors. In the USA, it is estimated that in 2030, home care and telemedicine services will increase and the number of hospitals will decrease critically. There are increasing expectations for cheaper and affordable care, as well as better management of chronic disease treatments. Young people prefer to receive a one-time service rather than a regular health service. Today, despite the prolongation of the life span of people; It is also expected that they will suffer from diseases such as diabetes, heart, hypertension, cancer, high cholesterol and anxiety more. It is estimated that the number of people with 3 or more chronic diseases in the USA will reach 83.4 million in 2030 (Tahiroğlu, 2019).

FUTURE EMPLOYMENT AND NEW OCCUPATIONS

Serious general problems that will affect the future medical care system; It is seen that changing technology, population structure, living conditions, nutritional conditions and the disease tissue that develops together with them. Due to the pace of change in the healthcare industry and the complexity of healthcare organizations, the manager will play an important role in leading innovation and leading change management. Health care organizations will not remain static. As traditional business systems become standard and pervasive for effective day-to-day management, the increase in the use of clinical systems will continue to pose a unique challenge for those managing affected areas. In particular, healthcare administrators must be comfortable and confident with information technology to manage their administrative responsibilities.

Healthcare managers must anticipate the need to be flexible and will need to train staff as new tools become more common in the areas they manage (Nancy, 2017,8).

The continuous and rapid increase in the population causes changes in the employment of the labor force in the high technology service industry. In the future, primarily there will be changes in professions and approaches, and new professions will emerge. On the one hand, the increase in knowledge paves the way for the emergence of new specialties, minor specializations and new professions (Hayran, 2021, 1). Future hospitals will operate as structures that are more digitally integrated and have professional role distribution. In this direction, different professions such as computer doctors, technician nurses, legal doctors will begin to emerge (Colin, 2021, 1).

Today, medical knowledge is increasing and changing at an extreme rate. The number of published medical articles indexed by PubMed database alone in 2014 is over 750 000 (United States National Library of Medicine, 2021, www.nlm.nih.gov/bsd/),(Fan,2021,1). The knowledge that a newly graduated physician learns at school soon loses its validity. Therefore, it becomes a necessity to constantly monitor new studies and publications and to update information. On the other hand, it is almost impossible for a physician to regularly monitor new publications in his field of expertise. For example, according to one determination, it has been calculated that the number of newly published articles on primary care medicine is 7287 each month, and a physician should spend 628 hours a month just to read them (Alper, 2004,429-437). In medical education, they will integrate technology with decision-making, teamwork and mobile health, as well as evidence-based medicine. Virtual reality applications are being developed to be used by surgeons in operating rooms. With augmented reality glasses, students in medical education will be able to better understand lessons such as anatomy and interactive physiology. Health literacy will be strengthened, healthy people will be prevented from coming to the hospital, and the energy spent on them will be used to strengthen health services (Birinci, 2020, 1).

Top talent will need to be recruited, developed and retained. An aging healthcare workforce, the ever-increasing demand for healthcare services and the decrease in physician working hours create a shortage of qualified personnel in economies. Having a say, health service industry leaders should also invest in health education institutions that train

competent and trained personnel, health scientists and these valuable health professionals for a sustainable future, to solve the short-term lack of competent and expert human resources.

Digital technology-based health services are gaining importance day by day. For this reason, sufficient number of health informatics managers should be trained in order to ensure the continuity of digitalized health services. Devices used in home care for remote treatment in various branches will need to be integrated and managed with many devices such as HIMS and laboratories in the hospital. In order for the technology to reach this level and maintain it in hospitals, there will be a need for a visionary, technology knowledge, talent and experienced health informatics manager who can make strategic planning, persuade managers for this plan, negotiate with technology companies, follow technological developments. These managers will follow the innovations and technologies that will affect the competitiveness of the hospital, and will inform the health and hospital management about the strategic importance of these technologies, the use of technologies, their management, possible risks and opportunities.

FUTURE TRENDS IN HEALTHCARE

The healthcare industry has its own characteristics. Healthcare organizations have significant differences from other businesses. The healthcare industry is one of the four largest industries. Health institutions and organizations are very high cost enterprises working with high technology and expert personnel. Hospitals are also defined as human-machine systems (Ak, 1990,85). The most important component and resource of modern health institutions is information and information technologies. We live in the information age and the characteristics of information society members differ. People's education and knowledge levels increase, their income levels increase and accordingly they act more independently. Individuals become more inquisitive and seek rights, demand quality and are willing to pay for it. In addition to these, social and professional organizations are gaining importance and power (Ak, 2010,4). It is necessary to design everything for the future according to the demands and expectations of such a society. It is necessary to consider what kind of changes or problems are foreseen in the field of health in the future. In order to say what the health sector, health economics, health finance and health informatics will be in the future, it is necessary to talk about what will happen in the future in health. The following problems

are foreseen as urgent health problems for the next ten years: elevating halth in the climate debate, delivering health in conflict and crisis, making health care fairer, expanding access to medicines, stoping infectious diseases, preparing for epidemics, protecting people from dangerous products, investing in the people who defend our health, keeping adolescents safe, earning public trust, harnessing new technologies, protecting the medicines that protect us, keeping health care clean (Öztek, 2020, 138-143; Ak, 2021; Tarcan, 2001, 29-43; Yıldız, 2010, 39-49).

Here are industry experts' predictions about developments in the healthcare industry over the next 20 years; with the widespread use of information technologies, health providers will be made more efficient and effective in diagnosis and treatment. Advances in DNA chips, cloning, new drugs and bionics will significantly improve people's life expectancy and quality. Strengthening the technological structures of hospitals will result in a reduction in the number of beds and other vehicles. The lagging hospitals in terms of technology will have to serve primary patients due to insufficient manpower and equipment for complex surgery. There will be an increase in long-term patient care and a presentation structure will be formed, especially supported by home care services. Rather than healthcare professionals, patients and patient owners will be involved in decisions about health insurance coverage. Government intervention and regulation in the health sector will increase.

Based on the experiences of the Covid process, considering that the world is now one, the concepts of volatility, uncertainty, complexity and ambiguity are mentioned. Based on these new concepts, a new VUCA world has emerged as Vision, understanding, clarity, agility. The COVID process has actually shown that in service delivery, the 5W1K has to change the answer to the questions of how and where the service will be delivered. There will be changes in the areas where the current business model is questioned and opportunities for new ones arise and patient safety comes next to quality (Genç, 2021).

Demographic, scientific and technological developments will seriously change the understanding of health and expectations from health services. With the future slogan for health, new services that are “personal and need-specific” will develop. Individual service will be provided by bringing many services such as home baby care, home nursing, chronic disease management and ambulance service to the person's feet. There will be solution partnerships of corporate companies

in the field of health, with different services such as occupational health, occupational safety, nursing services and check-up (Sağlık için Gelecek, 2021, https://www.acibademmobil.com.tr/). In case of need, initiatives that send a doctor to the home or provide medicine service, that is, home health service, which are still being implemented, will develop further. In addition, health services connected to the home network will also become more efficient. With smart first aid systems that can be used connected to the Internet, what to do will be explained in detail when needed, video calls will be made with doctors when necessary, and values such as blood pressure or blood sugar will be measured at all times with integrated analysis equipment (Sağlık Setörünü nasıl bir gelecek bekliyor? Gazete Duvar Ekonomi Servisi https://www. gazeteduvar.com.tr/saglik-sektorunu-nasil-bir-gelecek-bekliyor-haber-1511355). Diagnostic methods will be developed and it will be ensured to receive service remotely. If tomography, colonoscopy, stethoscope or echo cardiography for internal branches can be taken to the patient's home, the physician will be able to make the diagnosis. If patients are to be diagnosed and treated remotely, it will be necessary to develop laboratory and imaging methods as well as diagnostic methods. There are predictions that mobile systems with remote regional MRI will be implemented in the upcoming processes (Gül, 2020).

In the future, care services will change, the rate of urbanization will increase and access to health centers will be a serious problem. For these reasons, home care, residential care, health counseling and chronic disease management will gain importance. Human lifespan will increase and the Earth's population will age rapidly. It is predicted that the elderly population will increase by 56% by 2030, which will greatly increase the need for more efficient health services (Sarıyıldız, 2021). The diversity of services will increase in order to respond to the aging society, the increasing need for care, the digitalized life and the changing needs. The elderly seek care in their own homes rather than hospitals and clinics, and this demand is on the rise, but this type of service requires patients to accept telemedicine methods (Güzel, 2021). As the elderly population increases, the number of people with chronic health problems will also increase. Four out of every five people over the age of 65, which is considered the old age limit, have a health problem (Wolf, 20022269; Fu, 2006,389-396; Hayran, 2021,1). The burden of disease in all societies is increasing rapidly. Most of the health problems in advanced age groups require long-term care; These are problems that require monitoring and treatment at home, in daily life, rather than in a hospital. All this means that more and more different health services will be needed. (United States National Library of

Medicine, 2021). After-hospital care, therapeutic and preventive health services for the rehabilitation of neurological, orthopedic and cardiological disorders will be provided to the elderly and those in need of continuous care, in the company of health professionals who have adopted a multidisciplinary approach. In addition, services will be provided in line with personalized care programs within the framework of the bio-psycho-social model. Training, support and follow-up programs aiming to increase treatment compliance of patients with rare diseases will be carried out. With the program to be created; Doctors will be supported to follow their patients, and patients will be educated and reminded about the principles of treatment. Physiotherapists and physical therapy services will be carried out by taking them to the places where the person experiencing these diseases is present. (Future for Health, https://www.acibademmobil.com.tr/saglik-icin-gelecek/)

Socio-economic, environmental and behavioral factors that are outside of traditional health services strongly affect the health of the individual. future health services; will prioritize mental health and well-being services by identifying social factors in health through cooperation with non-governmental organizations, charities, business world and public administration (What kind of future awaits the Health Sector? Newspaper Wall Economy Service. https://www.gazeteduvar. com.tr/ saglik-sektorunu-nasil-bir-gelecek-beklenen-haber-1511355). Our current understanding of hospital and almost all of its systems are organized according to acute diseases. The understanding of the hospital also has to change. The spread of virtual visits, tele-consultation applications and the understanding of hospitals beyond the walls will become more widespread (Hayran, 2021,1), (e-visits, 2014).

Today, the digital hospital and green hospital approach have started to come to the fore. All information systems in the health institution/hospital are fully integrated with all kinds of medical and non-medical technologies, reliable data flow standards are determined, physicians, nurses, etc. A hospital that provides mobile access, does not require any manual operation, works without paper and film, activates the work processes of healthcare professionals, where the right drug and medical treatment applications are controlled, where all operations are carried out and controlled with a full automation system, and are managed and advanced. Hospitals equipped with technology, aiming to provide effective, efficient, economical, accessible and quality health services to hospital staff, patients and their relatives are called digital hospitals. It means an integrated system and paperless hospital (Ak,

2021; Ak, 2010,4).

It is inevitable that there will be changes in the architecture of health institutions and organizations where health services will be provided. The hospital architecture will include smart and green building designs where new areas will be created where patients can spend more time with their relatives, the emergency center will be equipped with more technological devices, and diagnostic devices will be located in operating rooms. Different colors and decorations that can affect human psychology will be included in the architectural plans in various parts of the hospital in order to accelerate the healing processes of the patients (Colin, 2021,1). In the new designs; flexible, changeable single room, independent ventilation system, normal bed that turns into an intensive care bed, equipment change is in question (Gulez, 2020:1).

On the other hand, changing patient demands, applications such as telemedicine and home health services will cause the closure of existing hospitals. Between 2013 and 2017 in the USA, there was a 100 percent increase in the number of hospitals closed in rural areas. The American Hospitals Association also states that around 30 hospitals are closed in the country every year, 8 percent of the existing 6 thousand hospitals are expected to close, and 10 percent have a weak chance of surviving. These predictions will lead to the development of retail clinics and visual care methods (telemedicine, etc.) (Güzel, 2018,1)

There will also be changes in doctor-patient relationships. More and more tools, devices and technologies will come between the physician and the patient. The profession of medicine, which used to be considered an art and summarized with "touch", is almost at risk of turning into a technical profession. Thanks to information technologies, medical information is no longer the monopoly of physicians, it is made available to all people. Access to information has become much easier, and the power of many professions arising from the information monopoly has begun to erode rapidly. Medicine is one of these professions. Before coming to the doctor, patients can search for information about their health, have an opinion on possible diagnosis and treatment options, and expect counseling from physicians instead of an authoritative approach (Hayran, 2021,1).

Possible future developments; augmented reality, digital brain, cyborg Human, medical 3D printers, gamified behavior correction,

medical VR, E-knife, virtual keyboards, social network knowledge store, nano suits, micro test devices, surgery simulations, optogenetics, robot assistants, wearable devices, real-time data, health screening devices, artificial intelligence doctors, gene map and equal health care. (Twenty Medical Developments That Are Likely to Happen in the Future What Awaits Us in Medical Technologies in the Future? In the future, health trends will be gathered under the sub-title of individual awareness and monitoring of individual health, patient and hospital management, and the future in medicine (Colin, 2021,1).

There are many ethical debates about health. As their lives get longer, there will be many who will have to continue their daily lives dependent on others and advanced technologies and struggling with multiple health problems. For them, issues such as where and how deaths will occur, the most appropriate death conditions, the scope and delivery of recent health services will continue to be one of the important topics of discussion in the coming period (Wilner, 2015).

One of the most important issues of future trends in hospitals will be hospital accreditation. As the number of accredited institutions increases, the country's health system will improve. In addition, the accredited institution will have a system that ensures that its quality can be measured. Thus, it will benefit from the advantages of providing health services in accordance with international standards. Those who use the service will be able to benefit from quality health services at affordable prices. The paying institutions will have the chance to prefer the accredited health institutions when making the contract.

The adoption of innovations in health and technology also necessitates having vision and capabilities that go beyond traditional healthcare organizations. Healthcare leaders need to build an ecosystem that embraces innovative players and knowledge resources.

MEDICAL TECHNOLOGY TRENDS IN THE FUTURE

The key to the future of healthcare lies in rapid changes in medical technology. One of the areas most affected by the development of technology is the health sector. The future of health services is shaped by innovative technologies. Technology plays a key role for better healthcare. Technologies enable healthcare professionals to stay up-to-date. Technologies also provide convenience, cheaper and more effective solutions where the face-to-face relationship between medical professionals and patients is less needed. (Kesayak, 2021). Although the

costs of investments in new technology are high for health care consumers in this new world, using less workforce will reduce costs over time.

Although hospitals are labor-intensive businesses, they are businesses that have to follow technological developments very closely and adapt new technologies to their organizations as soon as possible, since the technology they use is directly related to human life. For this reason, technological investments of hospitals will be among the financial issues that financial managers will deal with in the future. All hospitals have to manage the post-COVID-19 digital transformation and integration process well. Because digital technologies will become a part of health service delivery very quickly. Technology companies will play an important role in shaping the future of healthcare and will transform healthcare delivery in a devastating way. The role and market shares of hospitals and similar healthcare organizations that provide digital transformation will increase (Gülez, 2021).

There will be a serious competition between technology companies and health service providers. It is also thought that the state will be the biggest technology player providing health services with the principle of social state. Medical know-how will become an input of technology companies and knowledge will change form. The world will witness the era and dominance of global technology giants (Rose, 2021).

It is necessary to monitor digital innovations and invest in transformation. Blockchain, cloud-based computing, virtual health, artificial intelligence and robotics, digital reality, internet of medical things (IoMT) etc. digital innovations will contribute to shaping the future by making health services more effective and accessible. Many companies that take action to save human life are adapting technological developments to the medical world. The ability to monitor the patient's health remotely is being talked about more and more every day. For example, providing remote data tracking by analyzing human sweat with wireless devices attached to the skin and tracking many values belonging to the human body are good examples of this. (Colin, 2021) Smart contact lenses, prototypes of which have been released, are currently used in the follow-up of glaucoma and diabetes patients, but in the near future, they will contribute to the solution of many health problems by transmitting the analysis results from tears and eyeballs to information centers. Thanks to genetic technology, applications such as tissue engineering, spare organ

production, human replication, which were the subject of science fiction novels until a short time ago, have become possible. The time has come to have hand labs that will allow you to do your own DNA analysis in a short time, at a reasonable price (Hayran, 2021,1). Elastic electronics will be put into service. Since these devices will be made of silicone, they will be bendable and will shape themselves to different parts of a patient's body and be worn in different places. They will consist of waterproof sensors that monitor people in real time and communicate via bluetooth with the application on a mobile device. This information may then be shared with healthcare professionals. With Augmented Reality (AR) Anatomy technology, it will enable the digital world to be superimposed on an image of the real world. It will be beneficial in terms of explaining medical conditions to patients and planning medical procedures with precision. With the global mobility of drugs, medical supplies, technology and innovation in healthcare services, that is, the supply chain will be more resilient to future crises, with more agile, transparent and continuous production becoming the norm.

A revolutionary communication and information technology will undoubtedly change the precondition of society, economy, culture, etc., but it will never solve all our problems. (Bard, 2015, 19) There will be digital transformation in the future, but the process will not progress as fast as desired. Digital technology will not progress at the desired speed, since human factors such as doctors and nurses will always need to be present in health services, and patients who act with a traditional structure will want to use simple applications. According to those who hold this view, digital technologies will not play a meaningful role in the provision of health services, and the physical contact process and health care institutions will continue as a traditional habit. However, in a very short future, healthcare services will be almost completely digitalized with Big Data management, namely CRM. The investment costs of digital transformation will also increase. On the other hand, the digitalization of communication channels and methods will impose important responsibilities on everyone from the management staff to the medical staff in the health sector. Managing the digital world and ensuring the correct flow of information is one of the most important responsibilities. For this reason, everyone involved will experience a rapid adaptation process in technology and digitalization. Digitalization in health and hospital management; CRM and Big Data concepts and systems, which

provide many opportunities for archiving, accessing records, obtaining detailed information, quality, etc. will also gain importance. Technology and digitalization will provide comfort for everyone, from health managers to physicians, from patients to patient relatives. The free time of healthcare professionals will increase with digitalization. In particular, 70% of the time that doctors and nurses spend on management will be wasted. As things like paperwork and patient records will get faster through mobile devices, this increased time will free up to focus on patient treatment and care. University Medical Departments; They will try to ensure that technologies in rapidly developing fields such as medicine, biotechnology, artificial intelligence, robots, nanotechnology, engineering and space tend to medicine by following the interdisciplinary applied cross-education model. Problems such as mixing up the analysis and being exposed to wrong operations will be eliminated because digitalization provides a definitive solution to them. Health literacy will increase with digitalization (Sarıyıldız 2021).

Sometimes, although the technology is ready, the timing may not be right and the ecosystem may not be ready. Everyone should have the same level of awareness. When these are done, it will be necessary to have a business model that will survive. However, even if you make this innovation and technology, when the audience is not found, the application cannot gain scale and can be shelved at early levels (Gülez, 2021).

Mobility is an important component of digital hospitals. In the race against time and speed, mobility apps are an important tool (Ak, 2010-119). With Mobility, access to hospital and patient data and information is provided from anywhere, regardless of location. With the active use of mobility applications, medical errors decrease, patient safety increases, and the motivation and self-confidence of hospital staff increases (Ak, 2005.7). mobility; It is an application that transforms the paper-based management and solution system into an information-based management system by transferring the institutional and operational practices in the health sector to the contemporary information technology environment (Ak, 2010,34). As our information becomes more mobile, we won't need to be at the doctor's office or hospital to be "seen". (Ak, ECOMSA, 2021,59). Mobile applications, which have already been implemented, will become an important part of our daily lives and everyone will be able to track health data themselves. Not only patients, but also healthy people

will be able to follow their own data. There are currently over 8,000 health apps available on smartphones and iPads.

Mobile health brings health to work with corporate solutions. Employees' health checks and laboratory tests are carried out at their workplaces, in their mobile infirmaries, by fully-equipped health teams, thereby increasing productivity without losing time and labor. Psychological counseling and dietitian services are also offered in the workplace. Within the scope of mobile health services, it also takes part in organizations such as emergency health services, concerts, sports events, fairs, seminars and competitions (Colin, 2021, Baykal, 2005).

During the pandemic period, applications that read tomography for COVID-19 and many different applications have started to help physicians. This ability and habit, especially in software, new investments made out of necessity in health IT will continue with different applications after the epidemic (Birinci, 2020,1). Among them, robots in particular draw attention. Chat robots that listen to the complaints of the patients and make suggestions according to the symptoms, reminding the need to take your medications on time or providing psychological support will be a part of our lives in the near future. Medical robots will not replace surgeons, but will be guided by them. Humanoid robots, on the other hand, will perform complex tasks that human hands can accomplish and provide great benefit and support. With the application called the third edition, it is stated that various vital things such as stem cells, tissues and organs can be printed and even lives can be saved in this way (Gossen, 2020,1).

The healthcare of the future will be analytics-driven thanks to analytics-based modeling platforms. With the help of real-time data collection, scenario planning and artificial intelligence techniques in some cases, healthcare institutions will be empowered to meet patients' needs more effectively with the resources at their disposal, to provide regular and customized patient care between examinations, and to overcome communication barriers in information systems. For this, the integration of medical and IT devices will be provided. It is estimated that 25 billion smart devices will soon be connected to each other. 99.5% of the 1.5 trillion connectable devices currently in existence are still disabled (Hayran, 2021, 1). Such a rapid change will bring chaos along with the wind of transformation such as putting the changes into practice, learning and being integrated. However, if it does not learn, develop and adapt, a

basic need such as health will begin to weaken (Sarıyıldız, 2021).

It is expected that healthcare services will become increasingly digitalized and more organized in a connected healthcare environment, with digital hospitals proliferating. Despite some regulatory rules being a cause for concern - cybersecurity currently tops the list. Organizations will need to adopt a systematic, proactive, well-planned and collaborative approach to protect their systems and sensitive private data from cyber threats. Turkey closely follows the digital change and development in Health. Turkey is in the second position in the world after the USA, with 177 hospitals that receive HIMSS EMRAM level 6 and 7 (Ak, Ecoemsa 2021).

Data, Internet and Telemedicine: Medical records; It is the information or images recorded about the patient in the registry / form or digital environment of a health institution and organization. (Ak, 2011,7). Patient records are also the main source of information on subjects such as patient care in the institution, hospital management, legal record on medical processes, clinical research and education. Ideally, the medical record serves as a repository for all information about the patient and their treatment, as well as information to assist in the decision-making process. The basis of medical informatics applications is the systems known as electronic medical record- EMR), electronic patient record (EPR) or electronic health record- EHR) (Baykal, 2005:8, Ak, 2005:8.1).

Data; (Data) is a virtual term used by human or machine to denote numbers, letters and symbols used to describe any purpose, subject, situation, condition, idea or other element for communication, explanation and processing purposes (Ak, 2017, 23). In the future, medical data will guide people's health. Today, many data such as the steps we take while running, our heart rate, the altitude we climb, our sleep times are measured by our wearable devices and smartphones. These data will become more detailed in the future, and doctors will be able to make more accurate diagnoses by making use of these data when they go to the hospital. Thus, this application will be much more effective in the decisions to be taken about health. The healthy production and storage of data, data security, the competencies of health informatics experts will increase the need for technology information. The amount of data that is constantly produced every day through smart devices is unbelievable. This data pool, called big data, will continue to increase geometrically with the increase of connections and will enable many unknowns to be

revealed and many health events to be closely monitored thanks to its analysis.

People develop their health information with the effect of their searches about health from internet sites. With wearable digital fitness devices, life functions can be analyzed and information about the general health of the society and possible health risks of individuals can be obtained (Hayran, 2021,1). Due to this need, new investments in health technology will continue with different applications. There is a period when the data warns the person from the point of searching and finding the data, and the data that will prevent bad reflexes are put in front of the decision makers in a timely manner and prevents them from making mistakes (Birinci, 2020,1). Cloud technology helps organizations create a holistic platform for storing, processing and digitizing data. As the volume of information on individual health and safety records grows, cloud technology will play an important role in managing the growing data.

The patient's medical data can now be adapted to smartphones. If the ethical and legal infrastructure progresses in parallel, it will be seen that patient data and personal health follow-up will be possible with the devices on our arm (Colin, 2021). Although health is more important than privacy, some people today do not see a problem in sharing some of their personal data in exchange for personalized treatment and better products and services (Güzel, 2021).

The intense impact of Covid-19 on health services has made trends such as telemedicine and data-based modeling, which started to enter our lives before the pandemic, gain importance and priority. The Covid-19 pandemic is expected to accelerate developments in the field of health virtualization, analytics-based modeling platforms, improvement of supply chains, and social determinants in health.

Telehealth will be used very frequently in places where the patient's access to the doctor is not easy. With telehealth, the decrease in treatment visits will continue. Telehealth applications include powerful imaging, face recognition, remote control of mobile devices and chat features. The focus of these applications is to enable healthcare professionals to provide service from anywhere they wish in processes that do not require a medical device or contact where the patient cannot be reached, and to provide services to patients independent of time and location. Telehealth is used in health services, mental and spiritual

health, prenatal care, drug monitoring and management, diabetes, sleep medicine, family health, cancer treatment, dermatology, oncology (Gülez, 2021).

Telehealth (Telemedicine) services are a health service that aims to improve the health of the individual and society for diagnosis, treatment evaluation and medical purposes by using information and communication technology between places far from each other. This service; Digitization of healthcare processes and smart technologies and solutions improve operational efficiencies, public awareness and patient care quality in many parts of the world (Sarpaş, 2020).

The spread of the Internet, the emergence of the concepts of the Internet of Things (IoT) and the Internet of Everything (IoE), mean that everything will be connected virtually in the near future (Hayran, 2021,1) IoT (Internet of Things) helps businesses maximize resources and better engage and connect between service providers and consumers. Health care providers can be authorized to monitor patients remotely. Inevitably, health will become virtual. With the development of technologies such as video examination, home diagnosis, and wearable monitors, healthcare services are now rapidly shifting into digital realms. With the transition of R&D and clinical studies to the virtual environment, various members of the workforce working in this field will continue to work remotely. These virtualization efforts will move the system from irregular healthcare interaction to continuous care model. It is a well-established practice to monitor the elderly, who have been microchipped with tele-medicine services, in their home environment for various health problems. Thanks to the interconnection of ingestible cameras and sensors, electronic tattoos, sensors placed in the places we live, on our beds, on our clothes, on the walls of our house, it will be possible to monitor our health on a regular basis. Thus, the ordeal of waiting in hospital and laboratory queues will end. Thanks to new technologies, more effective treatment opportunities will emerge, as personalized medicines and treatments will begin to be organized (Hayran, 2021,1).

The Telemedicine Association of America estimates that by 2030, 50 percent of healthcare services in the United States will take place virtually. Telehospital and telehome segments will be added to the telemonitoring and cardiology segments in the health market between 2020-26. Consumer adoption of mobile applications has accelerated during the pandemic period. Value can be increased with video health

consultancy services, e-Doctor, e-Doktor's hospital or home nursing and doctor services for physical examination and further examinations when necessary. With virtualization products, wearable technologies and mobile devices, continuous and instant patient follow-up, artificial intelligence supported applications, symptom control and patient referral, mobile applications and home care services will strengthen health service delivery “anywhere”. With telehealth applications, health services will grow in international markets, applications such as big data, augmented / virtual reality (AR / VR), genome project, 3D printing, phone-based diagnosis, etc. will be realized. For this, there is a need for legal infrastructure (Genç, 2020,17-19).

Artificial Intelligence: The use of artificial intelligence in medicine will increase in the future. Accordingly, devices related to the use of artificial intelligence emerge that are faster, more accurate, focused on more communication and more patient satisfaction. Artificial intelligence embedded in mobile x-ray devices is being studied. Artificial intelligence categorizes chest radiographs as 'normal, not normal', that is, prioritizes them and presents them to the doctor. Again, in the emergency; In order to take quick decisions about patients and take action, an application with artificial intelligence added to the device will be used, which shows the four chambers of the heart and aorta with a single probe touch and directs the doctor, reducing the error in the decision-making mechanism (Colin, 2021). There will be serious artificial intelligence applications in areas such as radiology and dermatology. With a technology embedded in the tools used by ophthalmologists, it will be able to detect blinding of diabetics in advance.

With IoT (Internet of Things), it will contribute to operation processes such as infection control and infection reduction, reducing in-hospital footprint, clinical asset management, work demand management, fixture sterilization tracking and isolation tracking. Wearable wristbands will come into play. Mobile solutions will provide maximum efficiency and high service in hospitals. IoT solutions, in order to be ready for possible second wave or future crises with limited capacity and high efficiency, support decision processes with accurate data in hospitals, improve patient experience, increase patient and employee safety, improve supply chain, support decision processes with accurate data, increase income, fix fixtures and will improve test management. With IoT, awareness will be gained in the fields of monitoring, reporting, rule

engine and descriptive analytics. After gaining this awareness, rationalization will be made with artificial intelligence systems and predictive and prescriptive (recommendative) analytics. If he trusts the accuracy of the incoming data, this data will be transferred to artificial intelligence systems and it will be predicted what may be encountered in all health systems in the future. As a result of the works carried out in line with these estimates, service quality and efficiency will increase (Eryürek, 2021).

Artificial intelligence and robots are an important part of the Industry 4.0 revolution. With the introduction of biotechnology and nanotechnology, it will contribute to the realization of a greater industrial revolution. Although artificial intelligence has affected the field of Radiology the most, it deeply affects every field of health. The field of artificial intelligence will expand to include virtual biopsies, practice-oriented diagnostics, and more. The amount of health data is increasing at an unprecedented rate. Intelligent algorithms that can quickly gather and evaluate this data for humans will be important for better healthcare delivery. Artificial intelligence algorithms; It will also be beneficial in preventing medical errors and learning new information from health data. Artificial intelligence will destroy many of today's professions. Artificial intelligence will cause great changes in our lives and the way we do business. For this reason, it is important to retrain employees in line with technological developments, to increase their digital skills and to prepare socially for this great change. There is no doubt that physicians who use artificial intelligence better will gain an advantage over their peers. All useful technologies, by definition, provide comfort and convenience by assuming some of the work done by humans. Artificial intelligence is not expected to replace physicians in the short term. It is more likely that artificial intelligence and physicians will work together in a collaborative manner (Kesayak, 2021). By 2025, it is predicted that 90 percent of hospitals in the USA will start to use many advanced technologies, especially artificial intelligence, for diagnosis and treatment (Güzel, 2021).

Health and Hospital Information Systems: Information systems are used to support management activities in health institutions. It assists management in making decisions regarding finance, personnel, materials and institution management. Increasing competition and public regulations force healthcare institutions to obtain timely and accurate

financial information to monitor their performance and provide guidance. With financial information systems, it will be possible to provide the management with quantitative data for the most cost-effective investment decisions and information to control and evaluate activities, develop effective and effective financial subsystems, analyze past and current financial activities, and predict future financial needs. With this system, information about receivables, payments, stocks and general accounts, financial reports, statistics for effective financial decisions, inflation rate, and market information will be collected.

FUTURE TRENDS IN HEALTH ECONOMY AND FINANCE

The report published by the World Health Organization (WHO) revealed that health care expenditures in the world amount to 7.3 trillion dollars per year, which corresponds to 10 percent of the global gross domestic product (Gündüz, 2021,1). As can be seen, the global financial size of the health sector is very large. It is estimated that this 7.3 trillion dollars will increase much more in the future with global health expenditures, per capita health expenditures etc. Because, it is said that in the next few years, 1.2 trillion dollars will be spent on global pharmaceutical expenses, 622 billion dollars for diabetes, 818.1 billion dollars for heart diseases, 175 billion dollars for telemedicine market, 612 billion dollars for wearable medical devices and remote patient monitoring systems.

Considering the reflections of these trends in the health sector on the financing aspect, it is seen that cost control will maintain its importance, and when the trends in health and hospital financial management are examined, it is seen that the equity structures and borrowing levels of hospitals will become more important in the competitive market. Hospitals will need to have high liquidity ratios and strong equity structures in order to survive in intensely competitive markets and to enter new markets. In addition, hospitals will have to constantly increase their physical investments in order to keep up with the rapid developments in medical technology.

Cost of Health Services: The most important indicator that reveals the rapid increase in medical care costs is the ratio of health care costs to Gross National Product. This rate will increase in the future. In this case, it will be necessary to create more additional resources for hospital enterprises. Making effective use of these resources will be one of the main concerns of financial managers of hospital enterprises. Another

indicator related to the costs of health services is the relationship between the increase in medical care costs and the increase in consumer price indices. For many years, medical care costs have been increasing faster than consumer price indices in many countries. The rapid increase in medical care costs is expected to continue, and accordingly, costs will continue to be the focus of the hospital managers trying to control hospital costs (Akar, 2001; Akar, 2002; Ak, 2018).

Health Economics, Health Financing and Health Expenditures: COVID-19 has brought the need to inform the society by simplifying communication by reducing the pressure on the health system and using resources optimally. The result of simplifying communication between patient and doctor, or between the environment, has put great pressure on telehealth. However, if you look at 1-2 years ago, you will see that the world's largest venture capital companies started to invest in telehealth rapidly. Because the prediction that such a virus could come at its root was on the agenda of venture capitalists and they started to invest in it very quickly. Between 2018 and 2022, global health expenditures are expected to increase by 5.4% annually. Health expenditures per capita in the United States are expected to be $ 11,674. When evaluated in general, the factors that cause the increase in global health expenditures are; the population over 65 years old, which corresponds to approximately 11% of the world population, chronic diseases such as cancer, diabetes and heart diseases, which are becoming more common, and innovative but costly digital technologies. Although digital technologies seem to increase expenditures, new business and service distribution models created by digital technologies; It is also foreseen that by solving current problems, it will help to provide more easily accessible, low-cost, high-quality sustainable health services in the future.

Pharmaceutical industry, one of the sub-industries of the sector, is expected to grow by 6.5% in 2018-2022 and global revenues to be $ 1.2 trillion. The main source of growth is new therapies to address previously unmet needs and new global pricing policies to increase access to medicine. Factors that will negatively affect growth are stated as patients' reluctance to pay for drugs, decreased sales due to generic drugs, and finally increased competition due to biosimilar drugs.

It is expected that transactions in virtual health care will reach one billion a year all over the world. This is an incredible number and the infrastructure needs to support it. The number of virtual visits is expected

to reach 900 million in one year all over the world. It is predicted that the global telemedicine market will reach 175 billion dollars in 2026. (Genç, 2020). Telehealth applications are moving towards a process such as wellness, virtual triage, virtual visit, virtual emergency care, remote follow-up, home health, acute telehealth and virtual intensive care. Telehealth will increase access and quality in health services and reduce costs (Gülez, 2020).

Type 2 diabetes is predicted to affect 55 percent more people in the United States over the next 10 years than it is now. The sum of the annual medical expenses of diabetics and the lost productivity they create reaches 245 billion dollars. It is thought that this figure will increase by 53 percent to 622 billion dollars in 2030. A 10% increase in heart disease is expected over the next 20 years. In 2030, it is predicted that the total cost of heart diseases will reach 818.1 billion dollars. A 100 percent increase in Alzheimer's cases is predicted by 2030. It is expected that the total health expenditures of Alzheimer's patients will increase to 20 trillion dollars in the next 40 years (Tahiroglu, 2019,1). Global health expenditures in the world will reach 10 trillion 59 billion dollars in 2022. Health expenditures will inevitably increase due to the aging population and chronic diseases (Güzel, 2018)

Instead of the fee-for-service model, a value-based payment model is envisaged. Value-based approach is an approach that enables healthcare organizations and hospitals to establish patient and patient relatives relationships based on trust, and to increase hospital profits by identifying patient needs, creating an advantage over their competitors, choosing the right patient (health consumer/customer) (Seyfioglu, 2019,799-822). There is a need for third-party independent provisioning institutions in Social Security institutions, health insurance and private health insurance. This is a must for the duration of the service, its effectiveness and the invoice control process to be in line with the current conditions. It will be inevitable for suppliers and service providers to produce services with the understanding of strategic partnership (Güzel, 2018).

Financial sustainability needs to be created in a volatile health economy. The emergence of personalized medicine, technological advances, ruthless and formidable competitors, expanding distribution areas and renewed payment models are creating uncertainty over the

global health economy. This situation also increases the pressure on organizations' struggle for survival. Health care providers adopting new business, health care and risk models; they will be able to offset the disruptive potential of strong market participants and emerge as leaders in the new ecosystem of affordable healthcare solutions.

The health effects of artificial intelligence, which is today's most trending technology, are important. It is seen that the enterprises that receive the most investment in the world are in the fields of health technology, biotechnology and cyber security (Kesayak, 2021). Different health expenditures and problems that appeal to the elderly population will be faced. It is quickly falling into the elderly category and this will cause unusual problems. For this, individual disease follow-up will gain importance.

Urbanization is progressing very rapidly; an inactive middle class is forming and the diseases it brings are increasing day by day. The proliferation of these diseases increases the financial burden on the health system. There will be huge increases in health expenditures. About half of global health spending will be devoted to cardiovascular, cancer and respiratory diseases. The number of diabetics and diabetes expenditures are increasing day by day. For this reason, digital monitoring of individual and social health will gain importance day by day. A digital tracking application for athletes has significantly reduced injury rates by 60% and health expenditures. If health can be followed digitally and preventive health can be implemented, a significant decrease in health expenditures will be achieved. (Colin, 2021) In health financing; Changes in digital health, changes in payment systems, consolidation and efficiency in the health sector, and adaptation of patients to new changes will be effective.

The internet of things will increase the effectiveness of health services, which will immediately warn those who need treatment, those who do not comply with the treatments given, and those who do not take their medications. In addition, billions of dollars of economic losses arising from expired drugs will be prevented (Hayran, 2021,1). The global market for wearable medical devices and remote patient monitoring systems is expected to reach US$ 612 billion by 2022 (Serpas, 2021).

They will integrate with evidence-based medicine along with technology, decision making, teamwork and mobile health. According to the statement of the Council Covering Pennsylvania Health Care Costs,

there was no significant decrease in expenditures between 2012 and 2014 in keystone public hospitals. Evidence-based medicine alone is not enough. For this, it should be developed in a way that covers the priorities of physicians and insurers, patient welfare, and patients' values and preferences (What will happen in health in the future?, 2016)

Health institutions have to provide access to reliable and quality health services while managing increasing costs. (What kind of future awaits the health sector? 2021 https://www.pwc.com.tr/) New models of healthcare are needed to increase access and affordability. The increase in the aging population and the rise of diseases such as heart, cancer and diabetes, which are not contagious but very common, will encourage the health care sector to prevent, manage and emphasize the good life in the long run rather than curing diseases in the short term. Health care systems; they will need to account for change that can reduce costs, improve quality, and increase access and purchasing ability. In line with this change, the new job will require the development of care delivery and risk models such as special care and health services that will address the expectations and needs of older people (Güler, 2019).

In the health sector, overworking, few patients, stock costs and sterilization methods cause costs to increase. Changes in the supply chain and access to resources; It will increase cooperation between countries, companies and service providers. Employees, their training and changes in workplaces; It will require more government involvement and coordination. Digital technologies will quickly become a part of healthcare delivery and increase their role and market share. According to one view; this transformation will not be at the desired speed, traditional habits and health care institutions will continue as they are. However, technological investment costs will increase (Gülez, 2020). Thanks to digitalization, every home and every person will have access to health services at less cost, without borders (Sarıyıldız, 2021).

Financial Information System: The establishment of hospital information systems connected to a national network will emerge as the most important managerial need of the coming years. Manpower, infrastructure, management and technology will be developed at all levels of health service delivery, including hospitals, and a health information system that includes all activities will be created. Within this integrated system, the financial information system and personnel structure should be taken into account. It is seen that health expenditures will increase a lot

in the future trends and the health economics and health financing function will be very important in health systems and health institutions.

Alternative Payment Models for Health Services: Today, charge-based reimbursement method is widely used as a basis for the costs of services provided in health institutions and hospitals. Persons or institutions paying the cost of the health service pay the service fees charged to an invoice issued by the hospital based on this accrual. However, it is thought that this method will not be used for a long time in the future, and the parties purchasing services will use the cost-based reimbursement method, which is a more realistic approach, instead of the cost-based payment method. Both repayments mentioned are retrospective methods, and future (prospective) payment methods will be on the agenda instead of these methods in the future. Such payment methods; They are called per diagnosis reimbursement, per diem reimbursement, per admission reimbursement and capitation reimbursement. Hospitals are becoming increasingly autonomous and private hospital organizations will increase over a longer period of time. Paying persons or institutions will increasingly work with the rules of the private sector. Future-oriented payment methods will become increasingly relevant in hospital financing. DRG's (diagnosis-related groups) payment method will also become increasingly common as a reimbursement method per diagnosis (Akar, 2002), (Ak, 2019,6-31).

Health Insurance: The developments in private health services, the increase in the interest of the society and the inadequacies in the provision of health services provided by social health insurance institutions have caused more people to take out private health insurance. In addition to private health insurance, the increase in the number of insured in public insurance institutions will also increase the demand for health services. Therefore, all healthcare providers will need to be prepared to meet the increasing demand. Insurance risks are one of the issues that insurance companies will be interested in in the future. It is very important to determine the risks for those who pay the health insurance premiums and for the insurance companies that finance the health service. In health insurance systems, as bad risks increase insurance premiums, good risks should also have a premium reducing effect on premiums to be paid. Good risks; not smoking, not drinking alcohol, and having a good blood pressure. Measuring good risks and including them in actuarial accounts and having a reducing effect on the premiums to be paid will be an issue

that should be considered and evaluated by insurance companies if it will lead people to live more sensitively in the future.

Another important area within the scope of health insurance is maptaktis insurance. Malpractice is a concept used for medical malpractices. After the concept of patient rights was established in developed countries, it came to the fore with the violation of patient rights as a result of medical malpractices. As one of the important branches of insurance, it will maintain its feature as one of the problems of the contemporary health system due to its dimensions that also concern the criminal law.

Mergers in Health Institutions: It seems difficult for health institutions to achieve their financial goals alone in today's conditions, where costs are constantly increasing and the competitive environment is increasingly intense. Due to changing health practices, hospitals have started to close. Institutions still operating in the healthcare sector tend to re-adjust their financial goals and plans in line with the competitive environment or completely change them by merging with larger hospital complexes. Hospital mergers are common in countries such as the United States. In the USA, the sharing of beds by hospitals with other users or intermediaries will continue to increase in the future. Hospitals will therefore have to diversify their service delivery plans and cooperate with a wide variety of intermediary organizations.

Expansion of Outpatient Services: There is a general change and trend towards outpatient care of patients who do not require inpatient treatment and those who are not sick in order to save costs and facilitate service delivery in health institutions. Therefore, more advanced outpatient clinics, laboratories, outpatient and surgical centers will be needed in hospitals.

Home Care and Services to be Provided to the Elderly: Home care services can be provided cheaper than hospital services. In general, more satisfactory results can be achieved for both the patient and the family with home care services. For these reasons, the tendency of people in this regard is increasing day by day. The population is getting older. In the future, there will be a greater need and importance to accommodate the elderly population in need of care and to solve their health problems. Housing the elderly population in need of care in future trends is a problem that can be solved with the efforts of local administrations. However, it is thought that the investments to be made in the hospital

industry regarding the treatment of aging diseases will increase rapidly in the coming years. In addition to independent geriatric institutions, it is thought that the number of beds in geriatric services within general hospitals may increase. In addition, old age diseases are expected to lead to large increases in investments in physical therapy and rehabilitation services within hospitals.

Conclusion

It is very important for healthcare managers to predict, forecast or trend analyzes about the future without much bias. Because it is of great importance to make strategic programs and plans by considering quantitative techniques as well as subjective estimations. As seen in the information above, the roles of healthcare professionals will change in the future, new professions will emerge, patient expectations and demands will differ, adaptations will be required to adapt to the speed of medical knowledge and technology, applications and methods in healthcare applications will differ, healthcare services will become digital, remote access to healthcare, wearable technologies, etc. will increase the health financing need, the reimbursement methods of health insurance companies will be affected, the health economy will grow and there will be trillions of dollars in health expenditures. Then, the importance of health technology and finance will increase, and there will be a need for health and hospital managers who can manage information and technology, who are more specialized in health economics, finance and costs. Healthcare managers also need to prepare themselves for this radical and digital transformation in the future.

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Section 7: Health Science: OTHER TOPICS

Chapter 33

Notch Signalling and Cancer

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In cancer development and metastasis, there are cell signaling pathways that manage processes such as cell division, cell migration, differentiation, metabolic order. Paracrine and juxtacin signals play an active role in initiating intracellar response in the regulation of these processes. Paracrine signals; growth and differentiation factors, Wnt, Hedgehod, transforming growth factor-β, while justracrin signals; The Notch pathway is integrins and gap junctions. Notch signaling pathway is one of the most widely activated signaling pathways in cancer, which is related to cell proliferation and differentiation. This pathway is a mechanism that plays a role in determining cell fate in the embryonical period. Notch receptor activates by initiating signal exchange between neighboring cells. Thus, it takes part in organogenesis and morphogenesis, differentiation and proliferation of the cell and apoptocytic events. The Notch pathway controls stem cells and precursor cell layers to make decisions about whether the cell will remain a tissue precursor or go differentiated. At the same time, Notch signaling also includes decisions about whether a differentiated intestinal cell will switch to T or B cell sub-lines in the enterocyte, goblet, or lymphocyte line. Mutations and amplifications in the Notch signaling pathway contribute significantly to cancer progression.

Notch Signal Pathway

The Notch receptor family contains 4 notch genes, Notch-1, -2, -3 and -4. These genes encode proteins that have important physiological roles in determining cell fate, such as cell proliferation, angiogenesis, cell survival, and regulation of immune response. It has been reported that these processes with abnormal notch activity have complex effects on tumorigenesis.

The Notch cell receptor consists of two parts, intracellular and extracellular. There are four Notch receptors (Notch 1,2,3,4) inside the cell, and delta-like ligands (DLL1,DLL2,DLL3) and Serrate-like ligands (JAG1 and JAG2) outside the cell (Fleming, 1998). In the interaction between two cells, one cell has Notch receptor and the other cell has Notch ligand. (Acar, 2008; Miele, 2006). One of the cells has more ligand than the others, and it acts as a signaler (Artavanis-Tsakonas et al., 1999). The interaction between Notch receptors and their ligands initiates a signaling cascade that governs cell differentiation, proliferation, and apoptosis decisions (Ohishi et al., 2000). Notch signaling pathway suppresses the expression of p53 signaling pathway, which is effective in apoptosis, and contributes to cancerization time (Dang, 2012).

During activation of the Notch signaling pathway, the Notch receptor undergoes a minimum of three dissociations. First, conversion to Notch proteins heterodimers occurs by furin-like proteases in the golgi, called 'S1 cleavage'. This cleavage is required for cell surface expression of the notch receptor. After the synthesis process is finished, the Notch receptor matures and settles on the cell membrane. The Notch receptor, which is a transmembrane protein, consists of three parts; intracellular, extracellular and membrane-spanning region. Thanks to EGF-like repeats located in the extracellular region of the Notch receptor, the ligand of the Notch receptor connects with the extracellular region. They connect with receptors in ligands via DSL domains. When this connection is made, the second separation, called the 'S2 separation', takes place. And the extracellular region of Notch is released. This separation process takes place thanks to the ADAM17 metalloprotease located in the cell membrane. Immediately after, the so-called 'S3 separation' occurs. The transcriptionally active intracellular domain of the notch protein (NICD) is separated from the membrane and activated Notch formation occurs. The Gamma secretase complex, which includes presenilin and nicastrin, located in the membrane, is responsible for this final separation, which is a proteolytic process. Gamma secretase interrupts the carboxyl end of NICD, and the intracellular part is released into the cytoplasm (Kramer, 2000). After this process, the activated NICD passes into the nucleus with the help of a carrier protein. E3 ubukitin ligases and phosphorylations regulate the metabolism of NICD in the nucleus. While NICD is activated by phosphorylation, ubukines are destroyed and thus the cell is restored to its original state, preparing for the next round of Notch signaling. NICD

associates with only one transcription factor, CSL, in the nucleus. In the absence of NICD, CSL is transcriptionally repressed by binding with histone deacetylases or corepressors. When NICD binds to CSL, it displaces the NICD corepressor complex and binds to active NICD/CSL histone acetylases (HATs) or Mastermind/Lag3, which can activate transcription of target genes and induce chromatin rearrangement. In addition, the NICD/CSL complex can link with RBPJK, one of the Notch-related transcription factors, to provide transcription of target genes (Kopan, 2002).

The Relationship of Notch with Apoptosis

Apoptosis, called programmed cell death, is an important mechanism in the organogenesis stage of multicellular organisms and ensures the proper development of tissue homeostasis. Notch signaling pathway regulates apoptosis by playing important roles in both embryonic development and organ formation process (Dang, 2012). The relationship between Notch signaling pathway and p53 and NF-κB signaling pathways may contribute to the cancerization process by affecting apoptosis in various ways.

P53; If irreparable DNA damage is detected during the cell cycle, it acts as a regulator of the cell cycle by initiating apoptosis. When a cell is exposed to UV light, ionizing radiation or chemotherapeutic agents that damage DNA, p53 expression increases, resulting in the activation of the tumor suppressor gene p21. At this point, depending on the reversal of the damage in the cell, it is either repaired or the cell is directed to apoptosis (Lane and Lain, 2010). Mutations that inactivate the p53 gene are seen in most human cancers.

The Notch signaling pathway is associated with the p53 signaling pathway, as it has an effect on apoptosis and cancer. Expression of activated Notch suppresses p53 expression and activity (Beverly et al., 2005). INK4a/ARF is a tumor suppressor and normally co-occurs with Murine double minute (Mdm2) and inactivates Mdm2. When this complex is separated, the half-life of Mdm2 is prolonged. Mdm2 E3 released in the medium inactivates p53 through its ubiquitin-ligase activity. This event prevents the cell with damaged DNA from being directed to apoptosis. Activated Notch suppresses the expression of the tumor suppressor gene, INK4a/ARF, leading to the release of more MDM2. MDM2, which is in excess in the medium, binds to p53 and inactivates it. In addition, RBJK, a Notch-related transcription factor, can

bind to the promoter region of p53 and inhibit its transcription. With these mechanisms, the Notch signaling pathway suppresses p53 functions and contributes to the cancerization process (Sanchez-Cespedes et al., 1999) (Ladanyi et al., 1993).

Nuclear factor kappa B is a transcription factor that is active in the nucleus, inactive in the cytoplasm in all cell types. There are 5 types of NF-ƙB, these are NF-kB1, NF-kB2, RelA (p65), RelB, and c-Rel. NF-ƙB is involved in vital cellular events such as immunity, proliferation, inflammation and apoptosis by regulating the expression of the immunoglobulin kappa (Iƙ) chain in B cells. This signaling pathway plays an active role in oncogenesis (Basseres and Baldwin, 2006).

The Notch transcription factor RBP-JK acts as a promoter element in the NF-ƙB pathway and represses the transcription of the NF-ƙB precursor p100. In Notch activity, the promoter activity of RBP-JK is suppressed, which causes an increase in transcription (Cheng et al., 2001). In addition, RBP-JK represses the transcription of IƙB-α and is reactivated in the presence of intracellular activated Notch, similar to transcription. Through these mechanisms, Notch contributes to the cancerization process by increasing NF-ƙB activity and inhibiting apoptosis (Oakley et al., 2003)

Association of Notch Signaling Pathways with Cancer

The Notch signaling pathway is involved in various processes such as cell proliferation, differentiation, determination of cell fates such as apoptosis and maintenance of stem cells. The activated Notch receptor may function as an oncogene or tumor suppressor gene in the tumorigenesis process. The oncogenic effect of the Notch signaling pathway was first described in 1980 in acute T-cell lymphoblastic leukemia. With the binding of its ligand to the Notch receptor, notch signal is activated, initiating cancer development.

Notch 1 and Cancer

A meta-analysis study using 21 studies involving 3867 patients revealed that Notch1 expression is significantly higher in breast cancer than in normal tissues, and that higher Notch1 expression is associated with transition to metastasis (Yuan et al., 2015). It was also noted that patients with overexpression of Notch1 exhibited significantly worse overall and relapse-free survival. Abnormal expression of the Notch1 signaling pathway is also associated with the development of ovarian

carcinoma. Ovarian cancer tissue was characterized by high expression of Notch 1 protein (Rose et al., 2010)

Studies have shown that Notch-1 induces epithelial-mesenchymal transition in pancreatic cancer cells consistent with the cancer stem cell phenotype. In a study by Wang et al., it was stated that downregulation of Notch-1 in pancreatic cancer cells contributes to cell growth inhibition and apoptosis (Wang et al., 2006) Since Notch-1 is known to cross-talk with NF-KB, another major cell growth and apoptotic regulatory pathway, down-regulation of Notch1 was found to reduce NF-KB activity (Wang et al., 2006)

In recent studies, Notch receptors (Notch1-Notch3) and Notch ligand Jagged 1 were found to be expressed in human gastric cancer. In a 2009 study, activation of the Notch1 Signaling Pathway was Associated with the Progression of Gastric Cancer by activating the Cyclooxygenase-2 signaling pathway (Yeh et al., 2009). The Notch 2 signaling pathway is activated in gastric cancer after chronic infection of H. pylori. In addition, activation of the Wnt signaling pathway has been shown to accelerate gastric cancer progression. It has been noted that β-catenin-mediated Wnt signaling is suppressed by the Notch1 receptor on keratinocytes (Lowy et al., 2006). Oncogenic noth signals have been found in T-cell acute lymphoblastic leukemia (T-ALL), including the (7;9) chromosomal translocation (Ellisen et al., 1991).

Notch 2 and Cancer

In many types of cancer, Notch 2 is overexpressed and causes notch mutations. These changes in Notch2 were associated with tumor progression and shortened. Upregulation of Notch2 also causes dysregulation of certain miRNAs.

Notch-2, together with Noth1 receptors, plays crucial roles in cell fate determination through interaction with the Delta/Serrate/Lag-2 ligand family. There are studies showing that there are abnormal levels of Notch-2 in breast cancer tissues compared to normal breast tissue. Parr et al., examined the clinicopathological parameters of breast cancer patients, reported that high levels of Notch-1 may be associated with a worse prognosis for breast cancer patients, while high levels of Notch-2 are associated with a higher chance of survival (Parr and Jiang, 2004). Notch1 and Notch 2 also have opposite functions in the differentiation of breast tissue. Notch-1 expression was increased in aggressive tumors, while Notch-2 expression was higher in benign tumors. Therefore, in

human breast cancer, Notch-1 has tumor-promoting functions, while Notch-2 may play a tumor-suppressing role (Parr and Jiang, 2004).

Increased Notch2 expressions have also been observed in bladder cancer. Overexpression of the intracellular domain (N2ICD) of Notch2 has been reported to promote cell cycle progression and cell proliferation by epithelial-mesenchymal transition (EMT). It has been stated that these effects are mediated via the canonical NOTCH signaling pathway and that these effects are abolished by silencing the CSL (Hayashi et al., 2016). Notch-2 has been thought to have a tumor suppressive effect on the development of colorectal cancer (Chu et al., 2009). Notch and Wnt signaling pathways are important regulators of the intestinal epithelium, and mutations in these pathways can lead to the development of colorectal cancer (CRC). Mutations in the genes in the Apc/β-catenin and Wnt signaling pathway in CRC affect intestinal epithelial cells by activating Notch signaling and thus contribute to its formation (Ungerbäck et al., 2011).

In both humans and mice, expression of Notch1 and Notch2 in morphologically normal gastric corpus epithelial tissue helps maintain normal tissue homeostasis and differentiation. Human gastric adenocarcinoma cells have been found to exhibit Notch2 intracellular domain (N2ICD) activation, and this activated protein directly promotes high expression of cyclooxygenase-2 (COX-2). COX-2 stimulates the expression of prostaglandin E2 (PGE2) and promotes epithelial-mesenchymal transition (EMT) in tumor cells (Tseng et al., 2012).

Moreover, Notch2 expression in the hippocampus and cerebellum plays a central role in governing negative regulation of glial cell differentiation during brain development (Tanaka et al., 2015). It has been observed that Notch2 is overexpressed in brain tumors, especially in tumors of hypothalamo-chiasmatic origin (Aurélie et al., 2009). It has been found that Notch1 and Notch2 play opposite roles in regulating cerebellar granule cell proliferation in normal tissue, while Notch2 is responsible for promoting their proliferation (Xiu and Liu, 2019). In general, medulloblastoma (MB) tumors overexpressed Jagged1, which resulted in increased Notch2 activation and signaling. This event facilitates MB cell survival and disruption of Jagged1 expression may reduce survival through downregulation of Notch2 target Hes1 (Fiaschetti et al., 2014).

Notch-3 And Cancer

The effect of the Notch3 signaling pathway was first observed in vasculogenesis. Recent studies suggest that Notch-3 signaling plays an important role in maintaining tumor viability and resistance to chemotherapy drugs. Its main function is oncogenic, but it appears to act as a tumor suppressor in some types of cancer. Increased upregulation of Notch-3 and its target gene Hey1 has been observed in prostate cancer (Pedrosa et al., 2016). Studies have been conducted showing that Notch3 improves drug resistance to cisplatin chemotherapy in the treatment of urothelial cancer. It is thought that Notch3 may be a new chemotherapeutic target for the treatment of urothelial cancer, with the observation that Notch3 degradation reduces cancer progression in the bladder cancer cell line (Zhang et al., 2017).

While Notch 3 is expressed in the early stages of T-cell development, it is down-regulated in later stages as cells pass into the double-positive stage. Notch3 expression is observed in most cases of T-cell acute lymphoblastic leukemia (T-ALL). Although mutations are rare, Notch3 has been shown to play an important role in the survival of T-ALL. (Lee et al., 2007). DLL4, another Notch activator, promotes T-ALL cell proliferation by activating Notch3 signaling when expressed in endothelial cells (Indraccolo et al., 2009). Besides the Ras/MAPK pathway, NF-κB is one of the transcription factors that interacts with the Notch signaling pathway. Transgenic mice expressing the Notch3 intracellular domain have been shown to develop T-cell lymphomas with Notch3-induced NF-kB activation, and the protein kinase Cθ, Notch3, responsible for NF-kB activation in T-cell leukemia, has been shown to be downregulated (Felli et al., 2005; Bellavia et al., 2000).

Notch expression was found mostly in squamous cell carcinoma (SCC) in epithelial tissues. In a recent study, when 74 pathological samples were examined, Notch3 expression was found to be higher in SCC than in adjacent normal tissue cells (Zhang et al., 2011). In the study by Man et al., Notch3 expression was found in 18.2% of head and neck squamous cell cancers and in more than 92% of primary nasopharyngeal carcinomas (Man et al., 2012). In addition, increased Notch3 mRNA expression was observed in esophageal SCC cell lines compared to non-cancerous squamous esophageal cell lines. This increased expression has been associated with esophageal cancer cell aggression and resistance to 5-FU (Liu et al., 2013). Recent studies suggest that high expression of

Notch3 is associated with a worse prognosis in SCC. It has been observed that patients with cervical SCC have a shorter overall survival when they have Notch3 expression compared to those who do not (Krikelis et al., 2014). Notch 3 generally acts as an oncogene in the development of breast cancer. Caused mammary tumor development in transgenetic mice (Hu et al., 2006). The downregulation of Notch3 significantly suppresses cell proliferation and promotes apoptosis of ErbB2-negative tumor cell lines, making Notch3 signaling more important than the other Notch family (Yamaguchi et al., 2008). The active role of Notch3 in breast cancer has not been fully elucidated. In a study, it was shown that the induction of NICD3 caused the accumulation of p21kip1 and prevented the development of breast cancer by stopping the cell cycle in the G0/G1 phase (Chen et al., 2016).

Overexpression of Notch3 was significantly higher in ovarian cancer compared with healthy ovarian cells and benign ovarian tumors (Liu et al., 2016). Overexpression of Notch3 was observed in more than half of serous ovarian carcinomas (Jung et al., 2010). Serous cancers have been associated with high Notch3 protein expression, and suppression of Notch3 has been observed to induce apoptosis and arrest cell proliferation only in cells with high Notch3 expression (Hu et al., 2014). Notch3 is expressed at high levels in colorectal cancer compared to normal tissue. High expression levels were found especially in poorly differentiated tumors (Ozawa et al., 2014) (Serafin et al., 2011). Overexpression of Notch3 increases tumor growth rate proportionally, and suppressing Notch3 slows tumor growth (Serafin et al., 2011). Overexpression of Notch3 was associated with high tumor metastasis in 38 percent of stage 2 and 3 colorectal cancers (Ozawa et al., 2014). Notch3 plays an important role in lung development. In a study with mice, Notch3 activation in the perinatal period caused an increase in undifferentiated epithelial cells and delayed lung maturation (Dang et al., 2003). Notch 3 is highly expressed in 40% of non-small cell lung cancers (NSCLC) (Konishi et al., 2007) (Haruki et al., 2005). After lung cancer treatment, Notch3 has been shown to be involved in cancer stem cell formation with the anti-EGFR antibody erlotinib. Cell death was observed in lung cancer with EGFR mutation after erlotinib treatment, and it was stated that aldehyde dehydrogenase (ALDH) positive stem cell-like cell groups were formed as a result (Arasada et al., 2014).

Notch 4 and Cancer

Expression of Notch4, an important Notch receptor, is effective on tumor behaviors that affect cancer development, such as stem epithelial-mesenchymal transition, resistance to chemotherapy drugs, and angiogenesis. Notch4 is overexpressed in hepatocellular carcinoma (HCC), oral squamous cell cancer (OSCC), breast cancer (BC), lung cancer, gastroenteromic cancers and leukemia. Low expression of Notch4 was found in endometrial cancers and CRC tissues (Aburjania et al., 2018). In a study of 256 CRC and 1648 ovarian cancer patients, it was noted that low Notch4 expression reduced patients' survival(Yamaguchi et al., 2008). These studies have proven that Notch4 expression levels vary in different cancer types.

In prostate carcinoma (PC), Notch4 signaling has been shown to activate NF-κB signaling, resulting in increased rates of epithelial-mesenchymal transition, growth and metastasis in tumor cells (Lee et al., 2007). Notch4 signaling promotes drug resistance in different types of cancer. It develops resistance to docetaxal by upregulating the expression of fascin and akt in pancreatic carcinoma (PC). By inhibiting Notch4 signaling, PC cells can be resensitized to the action of docetaxel (Krikelis et al., 2014).

Conclusion

With the discovery of signaling pathways that are effective in cancer formation and metastasis and understanding of their mechanisms, important developments are taking place in oncology. Notch signaling pathway, which is effective in embryonic period and organ development, causes cancer by suppressing apoptosis through various pathways. Notch signal is a factor that contributes to the progression of the disease by facilitating the proliferation of cancer stem cells. To date, four subtypes of notch (Notch 1-4) receptors have been identified, which play different roles in cancer development and progression. Targeting these receptors separately in oncogenesis and inhibiting their signals is an extremely promising development in terms of cancer treatment.

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Chapter 34

The Importance of Laboratory Technicians in Health

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INTRODUCTION

Almost all countries in the world are trying to strengthen their health systems and improve accessing to healthcare for their populations. However, the world experiences a common set of health challenges, including an increase in the burden of non-communicable diseases and Coronavirus disease (COVID-19) and a need to promote both public and private investment in health systems. Globally speaking, all people in the world should benefit from more effective and efficient health systems, more innovation, more health care choices, and faster access to new treatments to ensure a healthy future.

The candidates who seek for the degree of being laboratory technicians are required to learn certain skills which will make them valuable in any setting.

Continuing medical education seems to facilitate lifelong learning through focusing on maintaining and developing knowledge, skills, and relationships to ensure competent practice, Balmer (2013); Kasvosve et al. (2014).

For all medical laboratory community as well as healthcare practitioners, continuing education can facilitate better achievement of goals. However, for medical laboratory technologists, the purpose of continual education and training activities can be learning and enhancing their knowledge concerning new equipment and to keep themselves up to date with current practices and recent advancements, Kasvosve et al. (2014); Giri et al (2012).

The Field of Laboratory Technicians in Brief

The field of laboratory technicians reflects an area of health care that has undergone a lot of improvement in recent years. The introduction of different laboratory tests and diagnostic techniques due to and after technological advancements has provided a new perspective to the field of

laboratory technicians. Since the future role of the field of laboratory technicians is strongly challenged by new technological pressures, it is needed to perceive the development of this field to address curriculum as well as training-related issues of this discipline. In fact, there is a need for continuous professional development and highly specialized training in the field of laboratory technicians.

It seems that the true role of laboratory technicians can be reflected through setting up specialized institutions, updating, and standardizing the curriculum. Bringing this important profession up to date should be highlighted.

Development in technology utilized by laboratory technicians is one of the most dynamic and rapidly growing issues. It might be implied that the practice of modern medicine is incomplete without the function of laboratory technicians to some extent.

Waheed et al. (2013) mentioned that laboratory technicians professionals play a critical role in the management of modern health care through helping in the diagnosis of diseases.

In terms of education in the field of Medical Laboratory Techniques and laboratory technicians, this kind of program is for students who are eligible to enter the biology, chemistry, mathematics, and the humanities. The purpose of this program is assay laboratory techniques that can work in health institutions is to train health staff.

The primary aim of the Medical Laboratory Techniques is educating and training technicians who can make an analysis in clinical biochemistry, microbiology, pathology, molecular biology, and genetic laboratories. In other words, the aim is to educate healthcare technicians who are preferred in the needed area with the modern and unique education and training programs which are going to be supported by qualified teaching staff and medicine and other health sciences departments, with the advantage of the fully equipped foundations and opportunities.

Care should be taken to educate personnel who are knowledgeable, experienced and who apply their profession with passion by complementing theoretical information with practical aspects in various health settings such as hospitals equipped with modern technology. It is to be ensured that these students who study in Medical Laboratory Techniques field receive both social and scientific training under the guidance of professional teaching staff during their entire education.

In addition, the aim of Medical Laboratory Techniques program is to educate health personnel who can make reliable and precise analyses requested by the doctor to help diagnosis and treatment of the patients. Generally, each Department of Medical Laboratory Techniques provides laboratory facilities and equipment to students to conduct their experiments alone. These laboratories are designed for the students to get used to the laboratory conditions in the first year. Beginning from the second year, students who are accustomed to laboratory conditions continue their internship and practices in the hospital environment and become qualified medical laboratory technicians.

The graduates can study and work in various hospitals, university hospitals, private hospitals, private clinics, diagnostic centers, public health centers, family practice centers, in-vitro fertilization centers and research centers. In addition, they can study and work as technicians at research centers of nutrition or drug institutions.

Importance of Laboratory Technicians in Health

In the context of health, it is obvious that hospitals and doctors' offices depend on the crucial work of laboratory technicians. These professionals are a critical part of an effective functioning healthcare facility. Their work is supervised by physicians, laboratory directors or laboratory technologists to perform laboratory tests on specimens. In fact, the work laboratory technicians conduct behind-the-scenes assists doctors to make diagnoses, detect diseases or illnesses, and determine treatment plans.

Although we may not often contact directly with laboratory technicians as a patient, it does not mean that their work is not important in health and medical care.

Simply put, we know that laboratory technicians conduct laboratory tests. These tests can be chemical analyses of body fluids such as blood or urine by means of using a microscope or other advanced laboratory equipment. These tools assist medical laboratory technicians detect abnormalities or diseases, which are going to be recorded and reported in digitalized system (computer system). These chemical analyses can be thought as being the primary duty for them, however, they may apply mechanical and electrical devices to ensure their test results conform to specifications as well.

Laboratory technicians must have associate degrees. Setting up, maintaining, calibrating, cleaning, and testing the sterility of lab

equipment, preparing solutions or reagents to be combined with samples, collecting blood, tissue or other samples from patients are parts of their job. Under some circumstances, matching blood compatibility for transfusions, analyzing the chemical content of fluids or examining immune system elements can be added to their responsibilities. They may also search for parasites, bacteria, and microorganisms in the samples with sophisticated laboratory equipment when needed.

The above-mentioned tasks are generally vary based on the specific area in which a laboratory technician specializes. For instance, laboratory technicians focused on phlebotomy are going to have duties regarding collecting and testing blood. Some other laboratory technicians can be trained in the areas such as Microbiology, Blood banking, Immunology, Clinical chemistry, Molecular biology, and the like.

It should be noted that much of laboratory technicians work is around the laboratory. Therefore, various precise technical skills are required for them. Yet, there are several transferable skills which are very important for them to be quite successful and professional in this work.

Laboratory technicians should receive education and training in both theoretical and practical aspects. Some areas are medical terminology, Clinical Chemistry, Clinical Microbiology, Phlebotomy, Hematology, Urinalysis, Immunology, and Immunohematology.

Besides a formal education and training, some countries and health institutions may also require laboratory technicians to be licensed based on the specific requirements in each case.

Laboratory technicians work to analyze different biological specimens. They are responsible for conducting scientific testing on samples and reporting results to doctors.

Laboratory technicians do complex tests on patients' samples through applying sophisticated equipment like microscopes. The data they collect plays a significant role in identifying and treating cancer, heart disease, diabetes, and other medical and health conditions. It is assumed that some aspects of all decisions in terms of a patient's diagnosis, treatment, hospital admission, and discharge are based on the results of the tests laboratory technicians conduct.

In terms of laboratory technicians' scope of practice, laboratory technicians collaborate very closely with doctors concerning diagnosing and monitoring disease processes as well as monitoring the effectiveness of therapy and treatment plans. Areas of laboratory technicians training

cover microbiology, chemistry, hematology, immunology, transfusion medicine, toxicology, and molecular diagnostics.

Laboratory technicians have a wide range of responsibilities and duties to be performed. They can include examining and analyzing blood, body fluids, tissues, and cells, give / send / inform test results to doctors, using microscopes, cell counters, and other high-precision lab equipment, cross matching blood for transfusion, monitoring patient outcomes, conducting differential cell counts searching for abnormal cells to help in the diagnosis of anemia and leukemia, and establishing quality assurance programs to monitor and ensure the accuracy of test results.

Regarding work environment for laboratory technicians, it can be said that laboratory technicians work in diversified settings such as hospitals, clinics, forensic or public health laboratories, as well as pharmaceutical industries, biotechnology companies, veterinary clinics, or research institutions. To become a successful and professional laboratory technician, he / she should have effective communication skills with a sound intellect and interest in science and technology. Having excellent eye-hand coordination, dexterity, and visual sharpness are crucial to skillfully conduct and analyze tests.

Their work also includes using sophisticated biomedical instrumentation and technology as well as highly skilled manual techniques. They are also assigned to examine and analyze body fluids, tissues, and cells, identify infective microorganisms, analyze the chemical constituents of body fluids, identify blood-clotting abnormalities, crossmatch donor blood for transfusions, test blood for drug levels to measure the efficacy of treatments, and evaluate test results for accuracy and help interpret them for doctors when needed.

Laboratory technicians deal with collecting, processing, and analyzing biological specimens, performing laboratory procedures, maintaining instruments, and relating findings to common diseases or conditions.

In some situations, laboratory technicians should receive more training to gain more extensive theoretical knowledge base to perform more advanced testing such as molecular diagnostics and highly involved microbiological testing and cross-matching blood for transfusion. They may also evaluate and interpret laboratory results, integrate data, solve problems, consult with physicians, conduct research, and evaluate new test methods.

Laboratory technicians collect samples from patients and perform tests to analyze body fluids, tissues, and other medical samples.

They can be specialized in several areas. A blood bank technologist, also known as an immunohematology technologist, collects and classifies blood samples and prepares materials for blood transfusions. Clinical chemistry technologists conduct tests that analyze the chemical and hormonal levels in body fluids. Immunology technologists test the human immune system through their research, yet microbiology technologists identify bacteria or other microorganisms in body fluids.

Laboratory technicians rely on several critical skills to conduct their work. They are expected to possess a strong background in technology, especially computerized laboratory equipment. They must also have a detail-oriented perspective to effectively do tests and collect results. Most laboratory technicians work in hospitals, medical or diagnostic laboratories, or doctors' offices.

The identification, diagnosis, and treatment of disease in the healthcare field need a skilled team. Being called a hidden profession, laboratory technician is one of the members of this team. They have a broad base of expertise in the areas of chemistry, hematology, microbiology and more. They are often the first people to be suspicious of cancer, diabetes, and other life-threatening conditions in the patients.

They are said to be among the most integral parts of healthcare teams. They analyze a large spectrum of biological specimens from cells to blood and other bodily fluids, and their analysis can be a kind of help to guide doctors’ decisions and diagnosis.

Laboratory Technician and Work Environment

In terms of working as a laboratory technician in a laboratory or similar settings, biosafety among laboratory technicians is a crucial aspect and should be assessed. Awareness of biosafety precautions among laboratory technicians working in laboratory must be increased. Developing the knowledge, attitude, and practice of universal precautions among laboratory technicians must be realized.

There exist various types and a great number of hazards which may be encountered in laboratories. Code of practice and guidelines are documented that specify safe practices for specific task or occupations. Laboratory technicians in different settings generally are faced with many hazards and their health and safety may be severely jeopardized provided that adequate preventive protective measures are not taken. These hazards

can include physical, chemical, and blood-borne (cross) infections and even legal actions. The prevention of occupational hazards in laboratories needs a comprehensive knowledge of the risks and practical measures to be taken (Ogunbodede, 1996).

Universal precautions apply to blood, other body fluids containing visible blood, semen, and vaginal secretions. Universal precautions also apply to tissues and to the fluids such as cerebrospinal, synovial, pleural, peritoneal, pericardial, and amniotic ones.

Universal precautions cover the use of protective barriers such as gloves, gowns, aprons, masks, or protective eyewear, which can decrease the risk of the health care workers' and laboratory technicians' skin or mucous membranes to potentially infective materials. Furthermore, it is suggested that all health care workers as well as laboratory technicians take precautions to prevent injuries caused by needles, scalpels, and other sharp instruments or devices. Laboratory technicians are exposed to a great pool of specimens from patients suffering from infections such as Hepatitis B Virus (HBV) and (Human Immunodeficiency Virus) HIV, Nwabuisi and Olatunji (1999); Falope et al. (1998) while processing these during the tests. Yet, they might not strong and enough perception regarding the risk of infections and are not compliant with the primary principles of universal precautions, Adebamowo and Ajuwon (1997); Brusaferro et al. (1997).

CONCLUSION

Laboratory technicians have an important role in the healthcare system. They collect samples from patients and conduct tests to analyze body fluids, tissues, and other medical samples. In addition, they operate the laboratory equipment applied to do medical tests, record data from these tests, and discuss the results with doctors.

Healthcare is one of the most demanding fields regarding human resources, skills and knowledge, equipment, and medical research. To meet the requirements in terms of the high skills and knowledge of the profession, continuing medical education is essential for healthcare practitioners' accreditation. With having continuous need for new medical breakthrough in the world, it seems that here is an increase in the demand of laboratory technology in the current era as well, Beletic and Zima (2013); Giri et al (2012); Davis (1996); Davis et al. (2010).

Knowledge and compliance with universal precautions among laboratory technicians must be continuously developed.

Some recommendations can be elaborating in terms of continuous training on universal precautions. In different settings, laboratory awareness regarding safety should be increased among laboratory technicians. In fact, laboratory safety must be a part of the overall quality assurance program in hospitals.

Continuous training for laboratory technicians is very critical to improve their knowledge and professional skills. It is a tool to keep them updated on new developments in the medical field. Continuous training should focus on relevant needs and enabling these technicians to get familiar with the changing trends in healthcare.

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Chapter 35

Etiology of Hyperacusis: A Short Review of the Literature

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INTRODUCTION

Hyperacusis is one of the pathologies considered important in Audiology. Studies conducted especially in recent years help us to understand the importance of this condition. This study will try to focus on the causes of hyperacusis. Results of studies conducted have shown that concrete causes of hyperacusis have not been fully revealed. For this reason, the objective of this study is to to review the current known causes of hyperacusis and the different hypotheses concerning its etiology. Therefore, firstly, hyperacusis will be defined and in another title the causes hyperacusis will be explained.

1. Definition of Hyperacusis

Hyperacusis is defined as an exaggerated sensitivity to environmental sounds (Vernon, 1987). It has been stated that individuals with hyperacusis develop a state of discomfort against sounds that others will not be disturbed by when they hear (Klein et al., 1990). For example, people with hyperacusis may be disturbed by low-intensity environmental sounds such as doorbell, refrigerator sound, making noise while eating and clock ticking. These sounds may be perceived by individuals with hyperacusis as more intense than they actually are and even to the extent that they sometimes cause a feeling of pain. Although different definitions of hyperacusis have been made by many researchers and its formation mechanisms have been examined, it has been seen as a result of the studies conducted that the concrete causes of hyperacusis cannot be fully revealed. However, in order to evaluate the possible effects of hyperacusis and to determine intervention methods, examining the possible causes of

hyperacusis can provide a general perspective on hyperacusis.

2. Causes of Hyperacusis

Hyperacusis draws attention as a discomfort that has negative effects on human life. What are the mechanisms that constitute the etiology of hyperacusis? What are the causes of hyperacusis? Based on these questions, in order to evaluate the effects of hyperacusis and to determine intervention methods, we found it appropriate to describe the causes of hyperacusis under certain headings. We categorized these causes as follows: biochemical causes, the effects of noise, ototoxicity, auditory deprivation.

2.1. Biochemical causes: Hormonal changes have many psychological and physiological effects on human life. In particular, it is observed to affect many mechanisms in the body in a positive/negative way. Stress is one of the most important factors affecting hormonal structure. A great number of researchers have stated that hyperacusis increases with anxiety, fatigue and stress (Blaesing & Kroener-Herwig, 2012; Juris et al., 2013). For example, Wallen et al. (2012) examined the relationship between stress and hyperacusis by applying hyperacusis survey to individuals who have experienced stress for certain periods of time. They have reported that individuals who experienced stress for a longer period of time got higher scores in hyperacusis survey, while those who had lower stress got lower scores in hyperacusis survey. According to the results of this study, it is expected for individuals with higher level of stress or who have experienced stress for a longer period of time to have more hyperacusis complaints when compared with individuals who have experienced stress for a shorter period of time. Sahley and Noddar (2001), who explained the relationship between stress and hyperacusis according to their hypothesis, suggested that the level of stress, which plays a stimulating role in the inner hair cells, causes an over activation in hair cells. However, like many mechanisms that are thought to play an active role in the formation of hyperacusis, the fact that this model has not been supported with experimental studies has caused questions about its validity. Serotonin is known to be effective in depression, migraine or post-traumatic stress disorder (Marriage & Barnes, 1995; Møller, 2007). While Sammeth et al. (2000) supported the view that hyperacusis patients are more inclined to anxiety disorder, different studies have found significant relationship between anxiety and hyperacusis (Blaesing &

Kroener-Herwig, 2012; Juris et al., 2013; Schaaf et al., 2003). When studies conducted in literature are reviewed, it has been reported that psychiatric disorders like depression, anxiety and post-traumatic stress disorder have been observed in almost half of hyperacusis patients (Juris et al., 2013). One of the potential pathophysiological mechanisms is serotonin dysfunction (Marriage & Barnes, 1995). Thompson et al. (1994) stated that serotonin dysfunction has an effect on the regulation of central gain in auditory system. In another study, Carman (1973) advocated that auditory startle response increased when serotonin levels were decreased in rodents. Serotonin chemical, which plays an active role in blood besides the brain, can affect many psychological and physiological systems in the body simultaneously. As a result, it is possible that situations that develop due to irregularity of certain chemicals in the body such as stress or depression may cause a functional change in the system by changing the chemical structure in the blood supply of the inner ear structure or gain mechanism in the auditory system (especially at inferior colliculus level) and thus may be effective in the formation of hyperacusis.

2.2. Noise : In some of the studies in literature, exposure to noise has been reported to be the most important factor causing hyperacusis (Anari et al., 1999; Kähärit et al., 2003). In a study conducted on animals, it has been emphasized that the increase in neural activity that occurs in a single frequency following exposure to noise decreases hyperacusis, while the results found cannot be explained only with hyperacusis (Brozoski et al., 2002). Noreña et al. (2010) found that acoustic trauma and high dose salicylate similarly cause activity changes in auditory thalamocortical pathways and stated that these changes can be considered as a reflection of hyperacusis. In a study conducted on individuals who have witnessed a bomb explosion in a shopping mall, hyperacusis complaint had been reported in 28% of the individuals who had been exposed to trauma with high intensity sound (Mrena et al., 2004). In a study which examined Tonic Tensor Tympani Syndrome (TTTS) in tinnitus and hyperacusis patients, Westcott et al. (2013) found that in patients who developed symptoms compatible with TTTS, the possibility of going through an acoustic event that triggered tinnitus or hyperacusis was statistically significantly higher. These results are consistent with the study that serotoninergic system affects middle ear muscle functions (Thompson et al., 1998). On the other hand, Tyler et al. (2014), who did not support this

view, emphasized that tensor tympani was not associated with acoustic reflex and the aetiology of hyperacusis that may occur due to acoustic shock might be based on fear (psychological).

2.3. Ototoxicity: Ototoxicity is defined as the damage that occurs in cochlear and vestibular organs as a result of exposure to various foreign agents and chemical substances. Sensitivity of the inner ear to various chemical substances has been known for years. While ototoxicity is known as an important factor that causes hearing loss and balance disorder, it can also cause hyperacusis. Although the mechanism of causing hyperacusis has not been fully defined, there are studies in literature which show that various ototoxic drugs cause hyperacusis. The most common symptoms of drug-induced ototoxicity are tinnitus, hearing loss and dizziness. In a study which examined the relationship between hyperacusis, tinnitus and ototoxicity, Chen et al. (2015) evaluated the effects of ototoxic drug use in participants with behavioural, electrophysiological and fMRI methods. As a result, it was found that ototoxic drug use disrupted the neural activation of cochlea and created a sense of over-activation in the amygdala, medial geniculate body and auditory cortex. It has been emphasized that this over-activation state may play a role in the formation of hyperacusis. Lu et al. (2011) thought that salicylate decreased the effects of GABA and glycine and as a result increased neural activity. In addition, Kimitsuki et al. (2011) found that salicylate-maintained depolarization by affecting the potassium cycle in the inner hair cell, which causes an increase in the firing rate in the auditory nerve. In their study on pharmacological drugs triggering ototoxicity, while Cianfrone et al. (2011) focused especially on vestibular symptoms and tinnitus, they also showed hyperacusis among symptoms indicative of toxic damage.

2.4. Hearing loss: With hearing loss, many abnormal changes occur, such as deprivation of the sound stimulus or overstimulation of nerve fibres due to the decrease in input from the auditory system. Salvi et al. (2000) stated that partial sound stimulus due to hearing loss had to show more activation on the nerve fibres of the individual than normal because of the compensation mechanism of auditory system and thus more nerve fibres became activated to compensate for the loss in the area with hearing loss. It has been emphasized that this situation may in turn cause hyperacusis formation. With hearing loss at certain frequencies, cortical

neurons collect information from the nerve fibres specific to damaged frequency and distribute it to the neighbouring areas of the brain that are working actively. As a result, it is thought that the changing neurological structure is affected by a similar plasticity and causes hyperacusis formation. Hazell (1987), who supported this thought, stated that as a result of the individual not getting sufficient input due to hearing loss develops an abnormal gain control mechanism to compensate for this. However, the fact that individuals who have normal hearing can also have hyperacusis complaints or many individuals who have hearing loss do not have hyperacusis complaints contradict this theory. In their article entitled. The relationship between tinnitus, hyperacusis and hearing loss, Nelson and Chen (2004) stated that they believed these three symptoms had common pathophysiology. According to researchers, the function loss in cochlear hair cells cause hearing loss, as well as the inability to send signals appropriate to auditory centres. In response to these inconsistent neural messages, high level auditory centres adapt or remodel the transmitted signals. This neuroplasticity can cause an increase in the perception of violence in the auditory cortex, in other words hyperacusis, and phantom sound perceptions, in other words, tinnitus.

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Chapter 36

The Need of Medical English for Medical Students

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INTRODUCTION

English language is used as a common and international medium of communication for science and academic work. It has been taught in various institutions in the world for many years to meet academic as well as professionals' needs of diversified groups of people. Regarding medical education, this kind of learning is called English for Medical Purposes and is implemented with medical students, medical doctors, and health care staff. When the medium of instruction of medical programs is English, medical English in medical education has a crucial status in medical settings. The reason is that much of the updated medical information found in textbooks, articles, documents, newspapers, and similar ones is in English language. Medical students and doctors should be aware of the importance of Medical English in their profession. They should improve themselves in this aspect. They are to be able to demonstrate their knowledge of medical English in different settings.

The Need of English for Students in Brief

Since English language has become a device for international communication, teaching and learning English as a second / foreign language seems to be widespread in today's world (e.g. Wardhaugh, 1986; Coury, 2001; Crystal, 2003; Jenkins, 2004; Kurfürst, 2004; Schwarz, 2003; Seidlhofer, 2005; Yang, 2006). It is a fact that English language, being a means of communication, has a crucial role in diversified academic disciplines including medical field. Furthermore, Pritchard & Nasr (2004) expressed that English is of particular significance for science students as it is the main international language of science and is considered as an influential means to prepare those students to become familiar with professional texts written in English. Since almost most of the new medical textbooks are in English, Kang (2004) elaborated on the

role of English language as an international one in medical studies. Kurfürst (2005) and Joesba and Ardeo (2005) emphasized on the importance of the English for Medical Purposes in a way that medical students are to be able to read medical textbooks, journals, and write English articles while learning English. Also, these students are going to prepare themselves for participating in various class discussions and international medical events. Additionally, Kurfürst (2005) stated that through learning English, medical students can write patients' history, orders, and prescriptions in their future profession.

Van Naerssen (1978) stated that English for General Purposes (EGP) programs are not going to meet medical students' academic and professional needs. Accordingly, medical students should receive English language programs which dierctly focus on their medical profession language needs.

Based on many researchers (e.g. Al-Tamimi &Shuib, 2008; Al-Fadly, 2004; Hull, 2004; Kavaliauskienė & Užpalienė, 2003) most of the English for Specific Purposes (ESP) learners have accumulated low proficiency in the English language. Furthermore, despite having completed their academic studies and graduated from the university, these students may not take the advantages of the ESP programs which they were offered during their medical education.

Silva (2002) and Anne (2004) mentioned that English for Medical Purposes (EMP) as a field of English for Specific Purposes (ESP) should be developed and taught in a way to encourage the communication skills of medical doctors and provide them with appropriate situations and tools to be able to use the English language effectively in diversified medical circumstances.

The Need of Medical English for Medical Students

In current situation in the world, the English language has become the means of language of communication in most of the academic and scientific disciplines including the field of medical science.

It is a fact that medical English teaching and learning should be mainly centered on stable linguistic competence in English, which is focused on medical language and needs, created by means of content and context-based curriculum. Accordingly, preparing medical students for active use of medical English during their active profession can be achieved. Hence, it is very crucial that medical English language teaching and learning be based on medical real circumstances in which medical

language is to be applied. Furthermore, medical students are to be encouraged to adapt and practice practical skills applicable in their medical future professional setting. Medical English teaching and learning represent continuous challenge for medical English instructors since both medical instructors and students are required to be flexible and open to new approaches and methods, make decisions, and adapt themselves to continuous changes.

Shirvan (2008) described some reasons for learning and improving medical English. He mentioned that medical students need to read academic literature in English, medicine included. They also should be able to make discussion with their colleague from English speaking countries or from non-English speaking countries for medical interrelated determination. Besides, they have opportunities to study or practice in English speaking countries, and to use English widely in their future career.

In terms of reading skills and sub-skills, medical students need to read articles and textbooks in medical contexts. Also, reading medical articles in medical and health related journals is required. Besides, these students should be able to read medical and health related manuals. Of course, reading medical texts on the net is an immediate need. Reading instructions of medical instruments is necessary. Reading medical education programs pamphlets is important as well. During their medical education, medical students must become familiar with reading instructions of drugs. Reading medical notes is also needed to be emphasized.

Regarding writing skills and sub-skills, medical students should learn how to write patient history. They also need to be able to write articles related to medical and health issues. Writing test answers is also important. Writing notes, class assignments, and relevant projects are needed to be taught, learned, and practiced.

Concerning listening skills and sub-skills, medical students should be able to listen to the medical lectures and understand them well. Listening to the recorded classes is essential since they can have the chance to be exposed to the lessons over and over. Listening to instructions and explanations of medical instruments can be a big help. Listening to presentations in conferences in English can expand their academic, professional, medical, and personal perspectives. Listening to explanations of class assignment is inevitable.

For speaking skills and sub-skills, communicating with classmates, peers, colleagues, patients, and people is a primary need. In addition, asking questions in class, participating in class discussions, and giving lectures are the points which cannot be ignored at all.

It must be noted that medical English programs for medical students are planned to fully prepare these students to successfully follow their studies. These programs should aim to sufficiently consider medical students' learning needs, present available sources in terms of staff, materials, equipment, finances and time constraint, the skill of the instructors, and the instructors' knowledge of medicine and health related aspects.

English language is now the language that connects the knowledge and achievements in different scientific and academic fields, including medicine.

There are some fundamental reasons for the need of medical English for medical students. Knowledge of medical English makes it possible to transfer the experience, skills, and knowledge of medicine globally.

Medical English is the specialized way of communicating with medical students, medical doctors, healthcare professionals, and clinical researchers.

Generally, medical students and doctors being proficient in medical English can be better aware of current trends in medicine. Through applying medical English, they can read foreign medical textbooks, articles, journals, most of the modern books on medicine, and communicate with publications on medical websites. Besides, possessing medical English knowledge can facilitate their improving medical and professional skills continuously and can make them be exposed to advanced medical developments, diagnostic, and treatment methods. The reason is that most of the scientific publications and in our context medical ones are available for a wide range of readers merely in English. Broadly speaking, in the scientific world, English seems to be the language of international communication.

Another point is that when medical students are equipped with medical English Knowledge, they can have better opportunity to experience and continue their medical education abroad to expand their professional perspectives.

Another case is that having knowledge of medical English can facilitate participating actively in international medical conferences and in

various scientific and medical events for medical students in the world.

Another important point is that knowledge of medical English can help medical students work in a team with foreign medical students, different medical specialists, and healthcare staff, and cooperate with foreign medical institutions. These medical students can be invited to participate in international clinical trials as well.

Another significant issue of knowing and need of medical English for medical students is that with having enough medical English knowledge, they can have the opportunity to meet and examine foreign patients in various settings. It can broaden these medical students' experience and professional practice.

In short, some additional issues can be considered regarding the importance and need of medical English for medical students globally speaking. They can be communication with patients and medical staff, explaining medical procedures to the patients, colleagues, and health care staff, conducting medical examinations, taking histories, and writing reports in different medical and health situations.

Medical English Program in Brief

Medical English program is generally designed for medical students who already have a good command of general English. It aims to meet the specific language needs of medical students required for successfully continuing medical education and improving their confidence in communicating in English through a variety of activities.

Medical English program mainly focuses on developing academic and medical language skills with special emphasis on experimental research report writing, techniques and requirements of scientific oral presentation in medical contexts. The topics are adjusted to medical students' relevant pre-clinical studies and if needed more.

Medical English program aims to help students improve their communication skills as well as writing skills in medical settings. Broadly speaking, it includes basic communication skills between a doctor and patient, medical terminology, practice in specialist vocabulary and a review of basic grammatical structures as well as medical report writing.

In medical English program, language development will be facilitated using case scenarios, dialogues and discussions related to body systems, medications, and medication administration as well as health care contexts. Through applying reading for general meaning, word expansions and vocabulary building, medical students as well as health

care providers can acquire medical language development.

The reason why Medical English is becoming so important is that English is the international language used both in written and oral medical communication. English is used mostly in medical research writing. Furthermore, the knowledge of medical English provides access to a wide range of up-to-date professional themes for students entering the medical profession.

Some issues which are covered in any medical English program are mentioned below:

- Introduce the concepts of medical terminology.
- Provide a straightforward guide to the conventions of scientific and medical writing.
- Present model texts through which medical students learn how to make correct choices about rhetorical form, grammatical structure, and key vocabulary in medical contexts.
- Learn how to use all relevant written material (the written genres of medicine).
- Learn how to communicate professional information and ideas clearly and efficiently in writing in different situations related to medical aspects.
- Learn how to give a concise and productive oral presentation of medical topics.

In terms of learning outcomes, after completing medical English programs, medical students are expected to demonstrate English language skill and comprehension related to:

Body systems - anatomy and physiology, function, and failure.

Interviewing, reporting, and recording for the purpose of obtaining a health history.

Medication terminology and abbreviations.

Pharmacology and medication administration.

Wounds, viruses, and infections.

Treatments and interventions.

Some of the main topics covered in medical English programs can be:

Concepts of Health and Wellness

Professional Caring

Pharmacy Communication

Physician Office Communication

Organs of the Body and Body Systems
Body systems as a Whole
The Musculoskeletal System
Cardiovascular and Circulatory Systems
The Respiratory System
The Gastrointestinal System
The Neurological System
Wounds, Viruses, and Infections
Pharmacology and Medication Administration

CONCLUSION

All medical students and doctors seem to be aware that medical English is indispensable in their professional lives regardless of the circumstance they experience. Thus, medical education curriculum and medical English program are supposed to meet the General and medical English needs of medical students.

Medical students' English language learning needs as well as their perceptions of medical English programs in academic settings should be investigated. Some believe that reading skill should be given priority by the students regarding frequency of use, importance, and proficiency while studying medical English. Some think that those medical students need to be trained in speaking, listening, and communication skills in medical English. It should be noted that English language skills must be incorporated in medical English programs, textbooks, and study materials for the medical students. In addition, the allocated time for medical English program is supposed to be compatible with the medical English language learning needs and wants of medical students.

It is likely that that both medical students and instructors value reading skill higher than the other language skills. The reason can be the fact that English reading skill is much more important in medical discipline. Medical students and instructors require developing their medical English language proficiency in other skills as well and acquire a high level of medical English skills to be knowledgeable and experienced enough for their professional lives in various situations.

In conclusion, needs analysis of medical student' language learners in medical education and profession must be conducted profoundly to develop effective medical English program for medical students.

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