



Evaluation of Surgical Procedures Needed for Refugees in a Tertiary Center in Turkey

Türkiye'de Bir Üçüncü Basamak Merkezdeki Mülteciler için Gerekli Cerrahi İşlemlerin Değerlendirilmesi

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Abstract

Objective: Surgical procedures are critical components of healthcare services; however, they are usually neglected during public health interventions due to misperceived high costs and limited benefits. Estimating surgical needs for refugee individuals in the host country would help humanitarian aid planning and strategical development of national surgery capacity for resource allocation. The present research aimed to analyze the surgical procedures of refugees.

Material and Method: 2703 of 15725 hospitalized refugee patients, underwent a surgical procedure during February 2015 and December 2018. Demographic data of the patients such as age and gender, risk classification according to the American Society of Anesthesiologists (ASA), the anesthesia type, type of the surgical procedures, intraoperative blood transfusion rates, admission incidence to intensive care unit (ICU), and mortality rates were recorded. The surgical procedures divided into groups according to the surgical branches and analyzed.

Results: Distribution of two-thirds of the surgical procedures among medical branches was obstetrics and gynecology, orthopedics and traumatology, general surgery and plastic, reconstructive, and aesthetic surgery. The most common surgical procedures were C-section, appendectomy, disorders of bone integrity, and wrist injuries.

Conclusion: Approximately one sixth of the refugee patients treated in our hospital underwent various surgical procedures. Our results should be taken into account by governments in planning humanitarian assistance, budgeting sources, and improving surgical capacity for the rapidly growing number of refugees worldwide. In addition, the support of international organizations such as WHO (World Health Organization) will be needed for a country to meet the health expenses arising from these refugees.

Keywords: Healthcare, refugee, surgery

Öz

Amaç: Cerrahi işlemler sağlık hizmetlerinin kritik bileşenleridir; ancak yanlış algılanan yüksek maliyetler ve sınırlı faydalar nedeniyle halk sağlığı müdahaleleri sırasında genellikle ihmal edilirler. Ev sahibi ülkedeki mülteci bireyler için cerrahi ihtiyaçların tahmin edilmesi, insani yardım planlamasına ve kaynak tahsisi için ulusal cerrahi kapasitesinin stratejik olarak geliştirilmesine yardımcı olacaktır. Bu araştırma ile mültecilerin cerrahi prosedürlerini analiz etmeyi amaçladık.

Gereç ve Yöntem: Şubat 2015 ve Aralık 2018 tarihleri arasında hastaneye yatırılan 15725 mülteci hastadan 2703'ü cerrahi işlem geçirdi. Hastaların yaş ve cinsiyet gibi demografik verileri, American Society of Anesthesiologists'e (ASA) göre risk sınıflandırması, anestezi tipi, anestezi tipi cerrahi işlemler, intraoperatif kan transfüzyon oranları, yoğun bakım ünitesine (YBÜ) kabul oranları ve ölüm oranları kaydedildi. Cerrahi işlemler cerrahi branşlara göre gruplara ayrılarak analiz edildi.

Bulgular: Cerrahi işlemlerin üçte ikisinin tıp dallarına göre dağılımı kadın hastalıkları ve doğum, ortopedi ve travmatoloji, genel cerrahi ve plastik, rekonstrüktif ve estetik cerrahiydi. En yaygın cerrahi prosedürler sezaryen, apendektomi, kemik bütünlüğü bozuklukları ve el bileği yaralanmalarıydı.

Sonuç: Hastanemizde tedavi gören mülteci hastaların yaklaşık altıda birine çeşitli cerrahi işlemler uygulandı. Sonuçlarımız, insani yardımın planlanmasında, kaynakların bütçelenmesinde ve dünya çapında hızla artan sayıda mülteci için cerrahi kapasitenin geliştirilmesinde hükümetler tarafından dikkate alınmalıdır. Ayrıca bir ülkenin bu mültecilerden kaynaklanan sağlık harcamalarını karşılayabilmesi için DSÖ (Dünya Sağlık Örgütü) gibi uluslararası kuruluşların desteğine ihtiyaç duyulacaktır.

Anahtar Kelimeler: Halk sağlığı, mülteci, cerrahi



INTRODUCTION

An asylum-seeker is identified as an individual who leaves his/her country, takes a refugee to another country and requests international protection because of concerns about his/her life due to war, conflict, attack, natural disaster or about discrimination of race, religion, social status, political view or national identity. According to the report published by the United Nations (UN) High Commissary for Refugees and International UN Department of Economic and Social Affairs, the number of the refugees and those who were forced to leave their home-places has reached to 70.8 million.^[1]

Turkey has become a country of asylum and an intense receiving country by the refugee influx which has started with Balkan countries and continued with Middle East, Africa, Asia, and Iraq in 1988 and 1991.^[2] Since Turkey is a safe and close country for Syria, Turkey was preferred much for migration after the civil war occurred in Syria.

The refugee rights are preserved within the frame of international law, and the refugees have right of asylum and receiving healthcare services. For the refugees worldwide, 2.78 million surgical procedures are performed every year.^[3] However, a limited number of governments and humanitarian aid organizations makes a plan for basic surgical needs of displaced people.^[4] However, the estimation of surgical needs for refugee individuals in the host country would help humanitarian aid planning and strategical development of national surgery capacity for resource allocation. The present research aimed to make an analysis on the surgical procedures most of which are performed on Syrian refugees and to evaluate the incidence of surgery need.

MATERIAL AND METHOD

The study was carried out with the permission of Medical Speciality Committee of Konya Training and Research Hospital (Date: 1.11.2018, Decision No: 48929119/774). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

The refugee patients who referred to KTRH and had surgery between 1 February 2015 and 31 December 2018 were enrolled into the study. Demographic and surgical procedure data of the patients were accessed from the hospital information system. Total number of refugee patients between 2015 and 2018 were accessed from statistics department of the hospital. Demographic data of the patients such as age and gender, risk classification according to American Society of Anesthesiologists (ASA), the anesthesia type, type of the surgical procedures, intraoperative blood transfusion rate (Erythrocyte suspension; ES or Fresh frozen plasma; FFP), admission incidence to intensive care unit (ICU), and mortality rates were recorded. The surgical procedures implemented were divided into groups according to surgical branches. Diagnoses of the diseases which require surgical procedure most were grouped by diagnosis coding system of

"International Statistical Classification of Diseases and Related Health Problems" (ICD-10) in the database recommended by the World Health Organization. Also, diagnoses of the surgical procedures performed on the patients who have died in ICU were classified according to ICD 10 coding system. The surgical procedures were evaluated in 5 groups as follows; A: specific surgical procedures and interventions; B: special surgical procedures and interventions; C: large surgical procedures and interventions; D: moderate surgical procedures and interventions; E: minor surgical procedures and interventions.^[5]

Statistical Method

The data obtained in this study were transferred into SPSS for Windows 15.0 (Statistical Package for Social Sciences) computer program and the analyses required were performed on this program. Descriptive statistical methods were used for data evaluation. Continuous data were presented in mean±standard deviation (SD) whereas qualitative data were presented in number and percent.

RESULTS

Totally 262,124 refugee patients have referred to KTRH between February 2015 and December 2018; patients' distribution, according to the years, was presented in **Table 1**. It was detected that 5.9% of the patients were hospitalized, and 17.1% of the hospitalized patients have undergone a surgical procedure. The patients who have undergone a surgical procedure included 1,213 females and 1,490 males with an age average of 26.60±16.47. Distribution of the patients according to age and gender was presented in **Figure 1**, and distribution by ASA classification was shown in **Figure 2**.

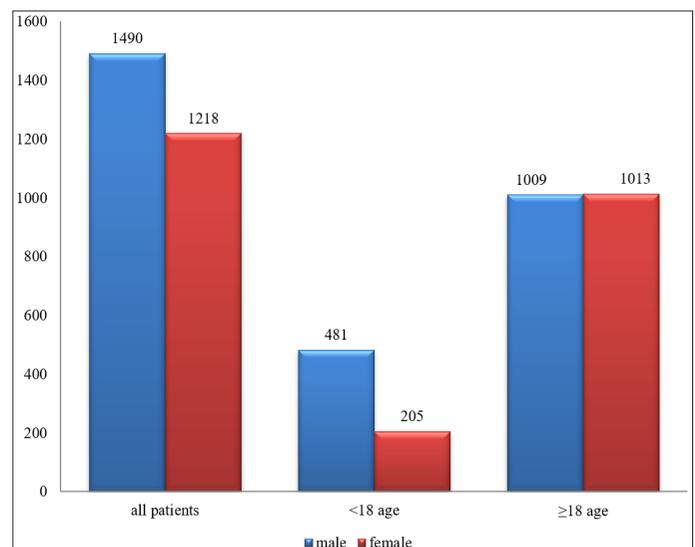


Figure 1. Gender distribution of the patients

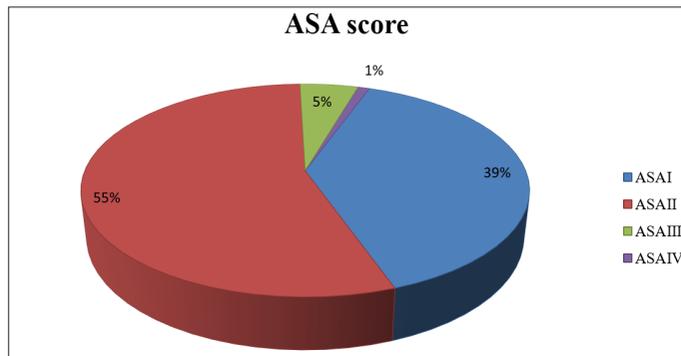


Figure 2. Patient distribution according to ASA classification

Year	Polyclinic and emergency department referral (n)	Number of the patients hospitalized (n)	Number of the patients who had surgical procedure (n)
2015	19.226	1.519	490
2016	54.744	3.263	1.233
2017	96.144	5.453	475
2018	92.010	5.490	505
Total patient	262.124	15.725	2.703

The general distribution of total surgical procedures according to medical branches for all years was Obstetrics and Gynaecology (24.3%), Orthopaedics and Traumatology (19.1%), General Surgery (14.7%), Plastic, Reconstructive and Aesthetic Surgery (8.7%), Paediatric Surgery (7.9%), Ear-Nose-Throat (7.2%), Urology (5.8%), Neurosurgery (4.6%), Cardiothoracic Surgery (2.7%), Thoracic Surgery (2.3%), Ophthalmic Surgery (2.4%) and Dental Surgery (0.2%). The distribution of the surgical procedures for each medical branch according to each year presented in **Table 2**.

In refugee patients, the most frequently diagnosed diseases requiring surgical intervention, grouped according to the ICD-10 diagnostic coding system is given in **Table 3**.

Branch	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)
NRS	13 (2.7)	64 (5.2)	28 (5.9)	19 (3.8)
ORTHO	124 (25.3)	234 (19.0)	67 (14.1)	92 (18.2)
PREC	51 (10.4)	94 (7.6)	43 (9.1)	48 (9.5)
URO	31 (6.3)	61 (4.9)	36 (7.6)	29 (5.7)
PC	35 (7.1)	87 (7.1)	54 (11.4)	38 (7.5)
DS	0 (0.0)	5 (0.4)	1 (0.2)	0 (0.0)
GC	72 (14.7)	199 (16.1)	69 (14.5)	58 (11.5)
TC	14 (2.9)	26 (2.1)	9 (1.9)	14 (2.8)
OC	13 (2.7)	20 (1.6)	16 (3.4)	15 (3.0)
ENT	26 (5.3)	123 (10.0)	18 (3.8)	28 (5.5)
OB/GYN	92 (18.8)	283 (23.0)	131 (27.6)	151 (29.9)
CVC	19 (3.9)	37 (3.0)	3 (0.6)	13 (2.6)
TOTAL	490 (100)	1233 (100)	475 (100)	505 (100)

NRS: Neurosurgery; ORTHO: Orthopaedics and Traumatology, PREC: Plastic, Reconstructive and Aesthetic Surgery; URO: Urology; PC: Paediatric Surgery; DS: Dental Surgery; GS: General Surgery; TS: Thoracic Surgery; OS: Ophthalmic Surgery; ENT: Ear-Nose-Throat; OB/GYN: Obstetrics and Gynaecology; CVS: Cardiovascular Surgery

Table 3. ICD Diagnosis Codes Used in Surgical Procedures of the Patients

ICD Diagnosis Codes for surgical clinics	n (%)
1. Plastic, Reconstructive and Aesthetic Surgery	
1.1.(S69) Other and unspecified injuries of wrist, hand and finger(s)	49 (20.8)
1.2.(S66) Injury of muscle, fascia and tendon at wrist and hand level	41 (17.4)
1.3.(Q35)(Q36)(Q37) Cleft palate/cleft lip/cleft lip and palate	11 (4.7)
1.4.Other	135 (57.1)
2. Ophthalmic Surgery	
2.1.(H26) Cataract, other	12 (18.8)
2.2.(H18) Other disorders of the cornea	10 (15.6)
2.3.(H50) Strabismus, other	9 (14.1)
2.4. Other	33 (51.5)
3. Orthopedics and Traumatology	
3.1.(M84) Disorder of continuity of bone	244 (47.2)
3.2.(M17) Gonarthrosis	58 (11.2)
3.3.(Z47) Monitoring related to removal of broken plate and other internal fixator	55 (10.6)
3.4. Other	160 (31.0)
4. General Surgery	
4.1.(K35) Acute appendicitis	130 (32.7)
4.2.(K40) Inguinal hernia	72 (18.1)
4.3.(K80) Cholelithiasis	62 (15.6)
4.4. Other	134 (33.6)
5. Neurosurgery	
5.1.(M53) Other and unspecified dorsopathies, not elsewhere classified	31 (25.0)
5.2.(M51) Intervertebral disc disorders, other	26 (21.0)
5.3.(Q03) Congenital hydrocephalus	15 (12.1)
5.4. Other	52 (41.9)
6. Urology	
6.1.(N21) Calculus of lower urinary tract	68 (43.3)
6.2.(N20) Calculus of kidney and ureter	31 (19.7)
6.3.(N40) Benign prostate hypertrophy	9 (5.7)
6.4.Other	49 (31.3)
7. Paediatric Surgery	
7.1.(K40) Inguinal hernia	65 (30.4)
7.2.(Q53) Undescended testicle	25 (11.7)
7.3.(K35) Acute appendicitis	23 (10.7)
7.4.Other	101 (47.2)
8. Thoracic Surgery	
8.1.(J29) Other disorders of the lung	16 (25.4)
8.2.(C34) Malignant neoplasm of bronchus and lung	7 (11.1)
8.3.Other	40 (63.5)
9. Ear-Nose-Throat	
9.1.(J34) Other and unspecified disorders of nose and nasal sinuses	63 (32.3)
9.2.(J35) Chronic diseases of tonsils and adenoids	77 (39.5)
9.3. Other	55 (28.2)
10. Obstetrics and Gynaecology	
10.1.(O66) Non-progressive labour, other (C section)	571 (86.9)
10.2.(O06) Abortion, undefined	36 (5.5)
10.3.(N93) Other abnormal uterine and vaginal bleeding, other	8 (1.2)
10.4. Other	42 (6.4)
11. Cardiovascular Surgery	
11.1.(I73) Other peripheral vascular diseases, other	20 (27.8)
11.2.(I25) Chronic ischemic heart disease	15 (20.8)
11.3. Other	37 (51.4)

The most common surgical diagnoses in refugee patients were specified by ICD codes; other diagnoses were included in the 'other' option.

Distribution of other surgical procedure groups is presented in **Table 4**. Sixty seven (2.5%) patients had a procedure due to cancer.

Surgery Group	n (%)
A	419 (15.5)
B	796 (29.4)
C	1139 (42.1)
D	241 (8.9)
E	108 (4.0)
Total	2703 (100)

A: Specific surgical procedures and interventions; B: special surgical procedures and interventions; C: large surgical procedures and interventions; D: moderate surgical procedures and interventions; E: minor surgical procedures and interventions.

General anesthesia was the most common type of anesthesia 1273 (47.1%) for surgical procedures performed in patients (**Figure 3**).

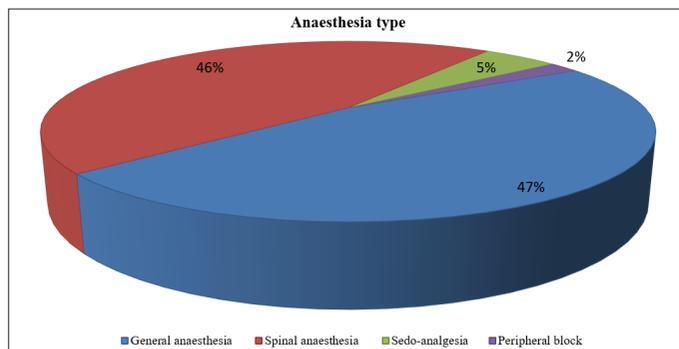


Figure 3. Distribution of the patients according to anaesthesia type

The number of patients who needed blood and blood products during the intraoperative and postoperative period was 234 (8.65%). ES used in 110 (47%) patients; FFP used in 66 (28%) patients, and both ES and FFP used in 58 (24%) patients. The ratio of the patients who admitted intensive care in the postoperative period was 6.8% (n=184). Postoperative mortality developed in 0.8% of 2,703 patients who had undergone a surgical procedure. The surgical procedures performed and ICD-10 diagnoses is shown in detail in **Table 5**.

Surgical Clinic	ICD Diagnoses	n (%)
CVS	(I25) Chronic ischemic heart disease	3 (14.1)
	(I34) Mitral valve disorders	1 (4.8)
	(I35) Aortic valve disorders	1 (4.8)
	(I73) Other peripheral vascular diseases	2 (9.5)
GS	(K63) Other disorders of the colon	2 (9.5)
	(C18) Malignant neoplasm of colon	2 (9.5)
NRS	(C71) Malignant neoplasm of brain	2 (9.5)
	(S06) Intracranial injury	2 (9.5)
	(I61) Intracerebral haemorrhage	1 (4.8)
ORTHO	(I26) Pulmonary embolism	1 (4.8)
OB/GYN	(O96) Obstetric death, due to undefined reason	1 (4.8)
PC	(K44) Diaphragmatic hernia	1 (4.8)
ENT	(J35) Chronic diseases of tonsils and adenoids	1 (4.8)
TS	(C34) Malignant neoplasm of bronchus and lung	1 (4.8)
Total number		21 (100)

CVS: Cardiovascular Surgery; GS: General Surgery; NRS: Neurosurgery; ORTHO: Orthopaedics and Traumatology; OB/GYN: Obstetrics and Gynaecology; PC: Paediatric Surgery; ENT: Ear-Nose-Throat; TS: Thoracic Surgery.

DISCUSSION

Turkey stands as a country with the largest refugee population after the migration of more than 3 million Syrians. Political issues are being discussed widely, less is known about the refugees discussed much, less known about its effects on the Turkish health care system.^[6-10] There is no data present in the literature, regarding basic surgical procedures performed on refugees. According to the results of this study, it was found that 17% of the refugee patients who were hospitalized in KTRH had undergone a surgical procedure. It has been determined that the surgical clinics that perform the highest number of procedures were obstetrics and gynecology, orthopedics and traumatology, general surgery and plastic, reconstructive and aesthetic surgery departments were respectively. Additionally the most common procedures were C-section, appendectomy, disorders of bone integrity and wrist injuries.

Migration due to war is a serious problem that causes different issues and affects the life of a human. The most aggrieved group is women and children. Refugees have a high fertility rate due to religious beliefs, traditions, political reasons, increasing the population, especially wanting a boy, finding help for household chores.^[11] A report on surgical procedures performed on the refugees and asylum-seekers revealed that obstetric and paediatric procedures consisted of a significant part of all operations.^[3] In our study, it determined that the highest number of operations in all years was in the obstetrics clinic, and 86.7% of this number was consist of C-section cases. Furthermore, in the present study, the fact that C-section cases constitute approximately 21% of the total number of operated patients can be explained as the reason for group C operations to be higher than other surgery groups.

War is an environment that can affect maternal physiology and children for generations due to the devastating effects of trauma, infectious disease, chemical weapons, and poor nutrition on the biological system.^[12,13]

It was reported that perinatal mortality and morbidity doubled and congenital malformations increased from 0.4% to 3% during Sarajevo war.^[14] In a study conducted in Yemen, it is revealed that the incidence of congenital anomalies doubled after the war.^[15] In a recent study, it was reported that 85 of 479 refugee patients who referred to plastic, reconstructive and aesthetic surgery clinic, had congenital anomalies, and most common congenital abnormalities was cleft palate, cleft lip and hypospadias.^[8] In the present study, 11 patients operated because of the cleft palate-cleft lip, and 23 patients underwent surgery due to hypospadias. These results show that the rate of congenital anomaly increases in post-war births.

During the war, exposure to chemical weapons, contamination, and viral infections are several factors blamed for the development of cancers in people.^[16] In our study, the rate of cancer cases who underwent surgery in 3 years found to be 2.5%. However, the chance of curative treatment is low, and the incidence of morbidity and mortality is high due to the advanced diagnosis in cancer cases and accompanying additional chronic

problems. In our study, it determined that one-fifth of the cases with mortality were cancer.

Psychosocial risk factors such as low socioeconomic status, lack of social support, life stress, depression, anxiety, and hostility caused by war and migrations have shown to increase the risk of developing coronary heart disease and worsen the clinical process and prognosis.^[17,18] The studies comparing refugee patients and non-refugee patients showed that the incidence of coronary heart disease increased in refugee patients.^[19,20] Hedlund et al. reported an increase in the incidence of acute myocardial infarction in refugees during the first years of migration, regardless of socioeconomic status.^[21] In this study, 72 (2.7%) patients underwent surgery in the cardiovascular surgery clinic for coronary artery bypass graft, heart valve replacement, or peripheral vascular disease, and these cases followed up in the postoperative intensive care unit. Seven of these patients died in the postoperative period. All of these suggest that there is a close relationship between the stress of the migration process and coronary heart disease.

Millions of refugees who forced to leave their countries because of civil war contend with surviving in the host countries. It would be occupational accidents due to reasons such as refugees working in heavy jobs in the countries they are in, job inexperience, lack of experience, and not giving importance to work and worker safety. Since the refugees also work in heavy-duties that require intense labor power, there may be an increase in bone fractures and orthopedic as well as plastic surgery procedures related to work accidents. Although the refugees are physically, socially, and psychologically affected by the war, they had to adopt current social life. A good indicator for this issue is that we showed refugee patients also underwent elective surgical procedures such as; septoplasty/rhinoplasty by 2.7%, mammoplasty in 0.2%, strabismus surgery by 0.3%, cataract surgery by 0.5%.

The location and type of surgical procedure are among the most critical factors in the selection of the anesthesia method to be applied for a surgical procedure. Other factors are the general health status of the patient, the preference of the anesthesiologist's and the patient's, the advantages of this method. Staikou et al. reported that anesthetists in Greece prefer general anesthesia for the refugees and asylum-seekers living in rural areas, and did not prefer regional anesthesia due to language and religious barriers.^[22] However, Yazar et al. performed a questionnaire study on Turkish anesthesiologists, which investigate the preference for perioperative anesthesia methods on refugee and asylum-seeker patients, and they reported that 31% of the anesthesiologists prefer general anesthesia rather than regional anesthesia.^[23] When the anesthesia methods applied in this study considered, the rates of use of general anesthesia and spinal anesthesia were similar. It was thought that the presence of interpreters and overcoming the language barrier might contribute to this result in our institution.

Intense population increase following the war and migration has caused an increase of demand in health care services. In a recent study reviewing the patient profiles operated in the period covering the years 2009-2014 in Kilis, which is a border province to Syria, reported an increase in the number of A and E group surgeries over the years. The increase in the number of operations in group A and E, especially after 2011, is consistent with the history of the civil war in Syria.^[24] In our study, the number of C group surgeries was higher than other groups due to C-Section procedures. War-related trauma cases primarily treating in health units located in the provinces closest to the border. However, our hospital is in a city far from the border, and this difference may have been effective in the small number of group A operations.

Limitation of this study include a retrospective design and since this study was conducted in a single center, it cannot be generalized to the whole country.

There was a limited number of data in the literature regarding the results related to surgery due to trauma or war injury in refugee patients in our country.^[8,24] However, elective surgical procedures are also required in these patients, possibly related to the length of the refugee period. We found that one-fifth of the refugee patients admitted to our hospital needed a surgical procedure. The most common surgeries performed in obstetrics and gynaecology, orthopaedics and traumatology, general surgery and plastic, reconstructive and aesthetic surgery fields. The most common surgical procedures were C-section, appendectomy, disorders of bone integrity, and wrist injuries. In addition, it is possible to that a much more intense and complex picture may arise from the situation reflected in our study center due to the relatively intense migration to the health institutions in our country close to the Syrian border. It is apparent that due to the ongoing war in the Middle East, migration to Turkey will continue increasingly and as a consequence demand for health services will keep rising. Therefore, this study, which describes the current situation from a surgical point of view, is to be considered to contribute to the planning of future project areas and priorities.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was carried out with the permission of Medical Speciality Committee of Konya Training and Research Hospital (Date: 1.11.2018, Decision No: 48929119/774).

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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