

# An Analysis of Orthopedic Surgical Services Provided to Syrian Refugees in a Health Center Away from the Syria District

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## ABSTRACT

**Background:** The Arab Spring, a wave of demonstrations and protests that had taken place in the Arab world since December 18, 2010, had also affected Syria. The number of Syrian refugees who have migrated to Turkey is over 3.5 million.

**Objective:** The aim of this study was to evaluate the demography, clinical features and invoice amounts of Syrian refugee patients who were operated in an orthopedic and traumatology clinic of a healthcare institution far from the Syria district region.

**Materials and Methods:** For this purpose, 329 Syrian patients who underwent surgery in the field of orthopedics and Traumatology between June 2011 and 2018 were enrolled in the study. The records of Syrian refugees have been retrospectively examined.

**Results:** Male applicants (76.3%) were more than females (23.7%). It was observed that the highest number of applications were in the field of microsurgery (21.3%), followed by trauma (20.7%) and pediatric orthopedics (14.6%), respectively. Including the non-emergency trauma patients, 90% of the patients underwent elective surgeries while 10% underwent emergency surgeries. It was determined that the average invoice amount was 4987 TL (min: 207 TL, max: 87541 TL) and the highest cost was in the field of vertebral surgery (average 19384 TL). The rate of emergency applications has shown a significant increase in 2016 and later (2016-2017-2018) compared to 2015 and before .

**Conclusion :** The main Syrian refugees patient profile of the health centers far from the war zone is composed of elective cases and their costs.

**Key words:** Health Services Accessibility–Hospital Costs–Orthopedic Procedures–Refugees–Syria

## 1 INTRODUCTION

The Arab Spring, a wave of demonstrations and protests that had taken place in the Arab world since December 18, 2010, had also affected Syria. Following the massacres and the excessive use of force in several cities of Syria, a large number of people left their country [1]. The number of Syrian refugees who have migrated to Turkey is over 3.5

million and Istanbul is the most affected city by this migration. Since the internal conflict in Syria began, the number of immigrants of Syrian citizenship has been increasing in Turkey [2].

The 14<sup>th</sup> article of the Universal Declaration of Human Rights states that everyone under persecution has the right to seeking asylum and receiving refuge benefits in other countries [3]. Pursuant to the Social Insurance and General Health Insurance Law of Turkey (Law No. 5510, Article 60), “those who have applied for international protection or received international protection status, or those who are

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stateless persons” are considered as general health insurance holders [4].

Unrest in Syria began on March 15, 2011, Syria, and since the first day, Turkey pursued an “Open Door Policy” for the victims of the Syrian Crisis, without observing religious, lingual and racial differences. Today, as the leading country that hosts the biggest number of refugees in the world, Turkey delivers free health services and medicines to Syrian refugees fleeing from war, with the coordination of the Ministry of Inferior Disaster and Emergency Management Presidency (*Afet ve Acil Durum Yönetimi Başkanlığı*, AFAD). According to the 2017 report, within the scope of the treatments of Syrian and Iraqi refugees, 953,466 thousand surgeries were performed, and 1,143,393 inpatient and 25,919,750 million outpatient services were provided. With the humanitarian aid it delivered, Turkey was dubbed as “the world’s most generous country” [5].

In this study, our aim is to analyze the demographics, clinical features and costs of the patients who received surgical treatment in an orthopedics and traumatology clinic away from the war zone, following the civil war in Syria.

**2 MATERIAL AND METHODS**

Approval was obtained from the board of the hospital before commencing the study (IRB No: 12.11.2018 / 37). Syrian refugees who underwent emergency and elective surgical intervention in the orthopedics and traumatology clinic of a public hospital in Istanbul between 2011 and December 2018 were included in the study. The data of the patients were analyzed retrospectively. There is no need to fill in an informed consent form for retrospective studies. The operating book and invoices were evaluated using the hospital information management system. Data regarding gender, age, application status, surgery area, length of stay, billing information were examined.

As for the exclusion criteria, orthopedics and traumatology outpatient clinic patients who received outpatient treatment without a surgical treatment were excluded from the study.

Statistical Analysis; Average, standard deviation, median, minimum, maximum, frequency and percentage values were used in the descriptive statistics of the data. The distribution of the variables was evaluated with the Kolmogorov-Smirnov test. In the analysis of the quantitative independent data, the Kruskal-Wallis and the Mann-Whitney U tests were used. The chi-square test was used in the analysis of the qualitative independent data. Spearman’s correlation analysis was utilized in the correlation analysis. The SPSS 22.0 software was used in the analyses [6].

**3 RESULTS**

When the demographic information of the immigrants of Syrian citizenship who applied to the hospital and underwent surgery were evaluated; male applicants (76.3%) were

**Table 1. Syrian refugee patient data between 2011-2018 years**

		Min-Max		Me- dian	Average±s.s./n- %	
Age		0.0	- 75.0	20.0	21.6 ±	15.0
Gender	Female				78	23.7%
	Male				251	76.3%
Year	≤2014				29	8.8%
	2015				49	14.9%
	2016				63	19.1%
	2017				91	27.7%
	2018				97	29.5%
Surgical area	Micro-surgery				70	21.3%
	Trauma				68	20.7%
	Pediatric				48	14.6%
	Orthopedics					
	General Orthopedics				46	14.0%
	Deformity				22	6.7%
	Tumor				19	5.8%
	Spine				19	5.8%
	Surgery					
	Arthroplasty				13	4.0%
Operation Group	Arthroscopy				16	4.9%
	Foot				8	2.4%
	Surgery					
	A1- Group				15	4.6%
	A2- Group				28	8.5%
	A3- Group				37	11.2%
	B- Group				66	20.1%
	C- Group				74	22.5%
	D- Group				83	25.2%
	E- Group				26	7.9%
Surgery character	Emergency (including non-emergency trauma patients)				33	10.0%
	Elective				296	90.0%
Number of Transactions		1.0	- 14.0	2.0	2.5 ±	2.1
Number of Transactions	I				147	44.7%
	II				76	23.1%
	III				38	11.6%
	IV				26	7.9%
	≥ V				42	12.8%
Duration of Hospitalization (Day)		1.0	- 82.0	4.0	6.3 ±	8.2
Invoice (TL)		207	- 875412489	4987	±	7649

more than females (23.7%). It was observed that the highest number of applications were in the field of microsurgery (21.3%), followed by trauma (20.7%) and pediatric orthopedics (14.6%), respectively. Including the non-emergency trauma patients, 90% of the patients underwent elective surgeries while 10% underwent emergency surgeries. It was noted that the average billing amount was 4987 TRY (min: 207 TRY, max: 87541 TRY), and the average length of stay was six days (min: 1, max: 82 days) (Table 1).

**Table 2. Emergency and elective surgery rate by years**

Year	Urgent		Elective		P
	n	%	n	%	
≤2014	0	0%	29	100%	0.002 <sup>x2</sup>
2015	0	0%	49	100%	
2016	13	21%	50	79.4%	
2017	10	11%	81	89.0%	
2018	10	10%	87	89.7%	

<sup>x2</sup> Chi-square test

The number of immigrants of Syrian citizenship who apply to the hospital and undergo surgical procedures has increased over the years. The rate of emergency applications has shown a significant increase in 2016 and later (2016-2017-2018) compared to 2015 and before ( $p < 0.05$ ) (Table 2).

**Table 3. Invoice amount (TL), duration of stay and number of transactions by years**

	Year	Min-Max	Median	Average±s./n-%	P
<b>Invoice (TL)</b>	≤2014	231 - 9162	1666	2842 ± 2711	0.308 <sup>K</sup>
	2015	441 - 36556	2616	5372 ± 7074	
	2016	343 - 54826	2504	5341 ± 8671	
	2017	207 - 87541	2769	5857 ± 10285	
	2018	422 - 25280	2457	4387 ± 4731	
<b>Duration of Hospitalization (Day)</b>	≤2014	1 - 13	3	5.1 ± 3.7	0.790 <sup>K</sup>
	2015	0 - 31	4	6.7 ± 7.7	
	2016	1 - 82	4	6.9 ± 11.8	
	2017	1 - 57	4	7.1 ± 9.1	
	2018	0 - 28	4	5.3 ± 5.2	
<b>Number of Transactions</b>	≤2014	1 - 4	2	1.9 ± 1.0	0.107 <sup>K</sup>
	2015	1 - 14	2	3.1 ± 2.5	
	2016	1 - 9	2	2.5 ± 1.8	
	2017	1 - 12	2	2.6 ± 2.3	
	2018	1 - 13	2	2.2 ± 2.2	

<sup>K</sup> Kruskal-wallis

In evaluation of the billing amount, length of stay (days) and the number of procedures over the years, no significant difference was detected ( $p > 0.05$ ) (Table 3).

**Table 4. Correlation between treatment cost and number of procedures, length of stay, age**

	Number of Transactions	Duration of Hospitalization (Day)	Age
Invoice (TL)	r 0.318	0.428	0.224
	P 0.000	0.000	0.000

Spearman Correlation

A significant positive correlation was observed between treatment costs and the number of procedures ( $p < 0.05$ ). A significant positive correlation was observed between treatment costs and length of stay ( $p < 0.05$ ). A significant positive correlation was observed between treatment costs and age ( $p < 0.05$ ) (Table 4).

**Table 5. Invoice amounts according to the orthopedics field and surgery groups**

	Invoice (TL)			
	Min-Max	Median	Average±s.s.	
<b>Surgical area</b>	Spine Surgery	343 - 54826	19747	19384 ± 11474
	Tumor	207 - 87541	2057	9995 ± 20929
	Arthroplasty	6401 - 16593	9881	9935 ± 2973
	Deformity	882 - 12458	5081	5736 ± 3156
	Microsurgery	542 - 28215	2519	4157 ± 4568
	Arthroscopy	1685 - 5813	4334	4014 ± 1422
	Trauma	231 - 9218	2084	3020 ± 2369
	Foot Surgery	1589 - 4837	2323	2789 ± 1066
	General Orthopedics	275 - 28215	1014	2861 ± 4763
	Pediatric Orthopedics	448 - 7694	2119	2347 ± 1414
	A3- Group	448 - 54826	4585	9251 ± 11289
	A1- Group	2616 - 21635	5320	7253 ± 5523
<b>Operation Group</b>	A2- Group	231 - 28215	3414	5538 ± 5965
	B- Group	441 - 87541	2230	5554 ± 11467
	C- Group	207 - 28215	3423	5335 ± 5862
	D- Group	376 - 11491	1668	2549 ± 2501
	E- Group	275 - 11491	1218	2374 ± 2741

The cost of treatment did not differ significantly in regard to whether the operation was urgent or elective ( $p; 0.442 > 0.05$ ). It was determined that the average billing amount was the highest in the field of spine surgery, followed by surgeries in the field of tumor, arthroplasty, deformity, microsurgery, arthroscopy and trauma, respectively (Table 5).

#### 4 DISCUSSION

Wars and conflicts affect people's lives and force them to migrate to other countries, causing them to become refugees. The civil war that started in Syria in 2011 spread and continued for years [7]. The biggest problems of the refugees in the countries they settle after leaving their countries are especially economic problems and the difficulty in accessing health services. A study about the Syrian refugees' access to healthcare services in Istanbul demonstrated that

the refugees experienced no difficulties other than language problems and lack of information about the health services, although Istanbul is one of the most crowded and complex cities in the world [8]. In case of elective and urgent health problems of Syrian refugees in Turkey, they have access to free health services at state health institutions [9]. After all, the population of the refugees coming from Syria is increasing each year, and accordingly, the need for healthcare services in the regions near the Syrian border increases [10]. In our study, the increase in the number of Syrian refugees is parallel to the increase in the number of their presentations for orthopedic surgery away from the Syrian border. Studies have shown that the migrant population is mostly comprised of males (70-100%), in another study conducted with Syrian refugees in the emergency room, it was reported that 88.8% of the cases were male [11]. In our study, 76.3% of the cases were male and (this finding was) found compatible with the literature.

In a study evaluating the reflection of the conflicts in Syria to the emergency department and hospital costs, it was found that patients underwent treatment by being hospitalized mostly at the orthopedics and traumatology department (146 cases, 30.3%), the average duration of hospitalization of all cases was 9.9 days (range: 1 - 141), and that the average cost was 3723 TRY (5 - 69556 TRY) [11]. In another study of Syrian refugees who underwent orthopedic surgery, the average length of hospital stay was 5.6 days, and the average treatment cost was 3844 TRY [12]. In our study, the average length of stay was 6.3 days (1-82 days) and the average cost was 4987 TRY (207 - 87541 TRY). The average health expense of each refugee in a study performed with a majority of trauma cases (falling from height, firearm injury, axial skeletal fractures) was found to be 3844.45 TRY (range: 1170 - 27558 TRY) [12]. In our study, however, the majority of the cases were elective, and the highest cost was that of elective spine surgery with an average cost of 19384 TRY. When all fields of orthopedics and traumatology were considered, the average billing amount was calculated as 4987 TRY (min: 207 TRY, max: 87541 TRY).

In a study evaluating the surgical procedures for Syrian refugees, performed in a center near the Syrian border, it was stated that Group A and Group E surgeries were performed mostly [10]. In our study, conducted in a center away from the Syrian border, it was found that the orthopedic surgeries were Group D, C and B surgeries, respectively (A: featured surgeries, B: special surgeries, C: major surgeries, D: medium surgeries, E: minor surgeries).

## 5 CONCLUSION

In conclusion, Syrian refugees are provided with health services in health centers away from the Syrian border. Unlike the health centers close to the center of the war, whose main patient profile comprises trauma patients and associated costs, the main Syrian refugees patient profile of the health centers far from the war zone is composed of elective cases and their costs.

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