

Dentist visits of Syrian refugees and the cost of their dental healthcare

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Abstract

Aim: To investigate dental problems of Syrian refugees in southeast Turkey and assess the burden of their dental healthcare costs to government.

Material and Methods: A retrospective study included dental records of Syrian refugees who applied to Adiyaman Dental Hospital (ADH), were compared with Adiyaman public by years.

Results: In 2012, the most common treatments were tooth extraction and complicated tooth extraction, the total dental care cost of such refugee patients was \$3,082.14 and the median cost per refugee was \$4.43. The most common treatment provided to both the Adiyaman public and Syrian refugees in 2017 was dental filling. In the same year, total dental care cost of refugees was \$603,303.69, the median cost per refugee was \$22.20. The total dental care cost of the Adiyaman public was \$3,869,524.96, the median dental care cost in Adiyaman public was \$17.95 for one person in 2017.

Conclusions: Dental problems of Syrian refugees and the financial burden of their dental healthcare to the government significantly increased.

Keywords: Refugee; dental care cost; Syrian; immigrant; treatment; budget

INTRODUCTION

Wars and terrorism are important events that affect people both socially and in terms of health. Historically, as a result of wars, many people have lost their lives and some have had to migrate to other countries (1). In Middle Eastern countries, conflicts starting with The Arab Spring initiated the Syrian civil war in March 2011, causing a humanitarian crisis (2). Since then, more than 10 million people have been forced to leave their homes, and due to the social and medical problems associated with the civil war, millions of refugees have migrated to neighboring and European countries (3). Many Syrian refugees are living in camps in countries such as Jordan, Lebanon, Turkey, Iraq, and Egypt (4). According to UN records, as of September 28, 2017, there are currently 5,233,712 registered Syrian refugees, of whom only 461,327 are sheltered in camps (4). According to the records of the Turkish Government Disaster and Emergency Management Agency, up to

September 2017, the total number of recorded refugees reached 3,181,537 in Turkey (5), and as of September 14, 2017, there were only 230,695 Syrian refugees living in 21 refugee camps in Syrian border cities (5). Also as of this date, the Republic of Turkey Directorate General of Migration Management reported that there were 27,205 Syrian refugees registered in Adiyaman province, with 9,207 of them housed in camps (6). Due to migration, poor living conditions, and the deterioration of the quality of daily life, asylum seekers have developed an insufficient oral hygiene. In addition, malnutrition may cause an increase in the incidence of dental and medical problems along with infections and illnesses. In asylum seekers' camps in Turkey, oral examinations of Syrian refugees are being carried out by Oral Care Teams commissioned by the Ministry of Health. After oral diagnosis, patients are referred for treatment to dental hospitals located near the camps.

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In this study, we examined the dental problems of Syrian refugees in Adiyaman and the financial burden of these patients' treatment costs to the Turkish Social Security System during their visits to Adiyaman Dental Hospital (ADH).

MATERIAL and METHODS

The study protocol was approved by the Board of Management of Adiyaman Dental Hospital (Approval Number: 46695179/185). The scope of this retrospective study includes oral and dental care services provided to Syrian refugees in the year between September 1, 2016, and September 1, 2017. Comparisons were made with 2012, the first year oral and dental care services were offered to Syrian refugees. Furthermore, in 2017, oral and dental care services provided to Syrian refugees were compared to those provided to the Adiyaman public.

No distinction was made between refugees living inside or outside of camps. Interpreters were utilized to obtain anamnesis of the Syrian refugees. All medical expenses of Syrian refugees were covered by the Social Health Insurance of the Turkish government, and no extra fees were charged to the patients. The study was conducted in accordance with the Helsinki criteria. The data were obtained from hospital records and the hospital accounting service. Complaints, referral times, diagnoses, treatments, and treatment costs of the patients were noted in the data collection form. Patients who had applied to the hospital for dental examination and whose examination was approved were included. Patients with missing data were excluded from the study. The duration of treatment was not considered because all procedures were performed under local anesthesia and on an outpatient basis. The cost calculation was made by a blinded expert. The treatment fees for Syrian refugees and the amount of payment to the institution are the same as for Turkish citizens. Cost calculations were based on an exchange rate of 1 USD (\$) to 3.50 Turkish Lira (TL).

Statistical analysis

Statistical analyses were performed using Number Cruncher Statistical System 2007 (Ver.07.1.12) software (Kaysville, Utah, USA). The data of two different population group were compared using the two-proportion z test, and the results are expressed as counts and percentages. All statistical tests were two sided. A p value < 0.05 was considered statistically significant.

RESULTS

A total of 27,872 Syrian refugees who visited ADH were evaluated.

Total dental hospital visits

In all, 696 Syrian refugees visited ADH in 2012. This number was 27,176 in 2017, an increase of about 40 times (Figure 1). Also, 215,611 patients from Adiyaman public visited ADH in 2017.

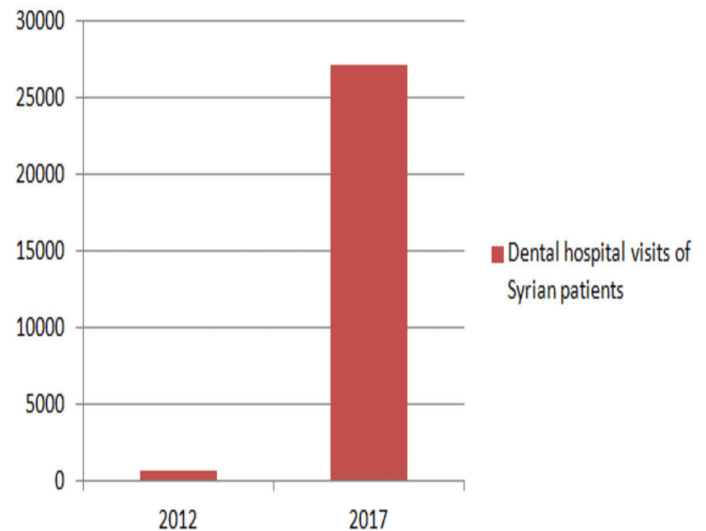


Figure 1. Dental hospital visits of Syrian patients by years

Cost analysis

In 2012, the total dental care cost of Syrian refugee patients who visited the hospital was \$3,082.14 (10,787.50 TL), while the median cost per refugee was \$4.43 (15.5 TL). In 2017, the total cost was \$603,303.69 (2,111,562.90 TL) with a per-patient median of \$22.20 USD (71 TL), an increase of 5.013 times. The 2017 cost of the Adiyaman public was \$3,869,524.96 (13,543,337.36 TL) with a per-patient median of \$17.95 (62.82 TL). Hence, the per capita cost was 1.237 times higher for refugees than for the Adiyaman public (Figure 2).

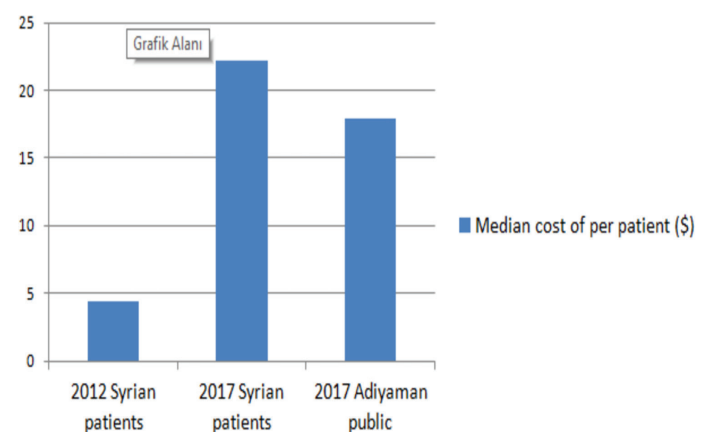


Figure 2. Mean per capita treatment cost of patients by years

Table 1 shows data on the distribution and quantity of dental treatments provided to refugee patients in 2012 and 2017. There were no significant differences between 2012 and 2017 in the number of tooth extractions ($p > 0.05$). There were significantly more ($p < 0.05$) dental treatments other than tooth extractions in 2017 than in 2012.

Table 2 shows the numbers and distribution of dental treatments provided to refugees and the Adiyaman public in 2017. Significantly more fillings, scaling procedures,

and panoramic X-rays were provided to the Adiyaman public than to the refugees, but the provision of all other treatments was significantly higher in refugees.

Table 1. Distribution and numbers of dental treatments applied to Syrian patients by years

Operations	Years		p value
	2012 N:696	2017 N:27176	
Tooth extraction	(n=192) 0.276	(n=6.778) 0.249	0.1118
Complicated tooth extraction	(n=192) 0.0	(n=163) 0.006	0.040
Ceramic crown	(n=0) 0.0	(n=9.359) 0.344	0.0000
Removable prosthesis	(n=2) 0.003	(n=582) 0.021	0.0007
Fissure sealant	(n=0) 0.00	(n=2711) 0.099	0.0000
Flourine application	(n=0) 0.00	(n=2711) 0.099	0.0000
Filling	(n=61) 0.088	(n=14.155) 0.521	0.0000
Root canal treatment	(n=0) 0.0	(n=5.355) 0.197	0.0000
Scaling	(n=40) 0.057	(n=192) 0.093	0.0013
Panoramic X-ray	(n=3) 0.004	(n=4.794) 0.176	0.0000

Table 2. Distribution and numbers of dental treatments applied to Syrian patients and Adiyaman public in 2017

Operations	Years		p value
	Syrian Refugees N:27176	Adiyaman Public N:215611	
Tooth extraction	(n=6.778) 0.249	(n=36.003) 0.167	0.0000
Complicated tooth extraction	(n=163) 0.006	(n=665) 0.003	0.0000
Ceramic crown	(n=9.359) 0.344	(n=32.585) 0.151	0.0000
Removable prosthesis	(n=582) 0.021	(n=3.691) 0.017	0.0000
Fissure sealant	(n=2711) 0.099	(n=45.643) 0.212	0.0000
Flourine application	(n=2711) 0.099	(n=45.643) 0.212	0.0000
Filling	(n=14.155) 0.521	(n=118.609) 0.550	0.0000
Root canal treatment	(n=5.355) 0.197	(n=41.215) 0.191	0.0198
Scaling	(n=192) 0.093	(n=32.775) 0.152	0.0000
Panoramic X-ray	(n=4.794) 0.176	(n=57.996) 0.269	0.0000

DISCUSSION

In literature, there was no clinical study published to describe the dental problems of Syrian refugees and to assess their dental care costs. People who have to migrate from their homeland due to wars and terrorism experience mental and physical health problems because of worsening living conditions and socioeconomic problems. They also face difficulties in meeting their daily needs and accessing health care services. These poor

conditions can result in inadequate oral care, which leads to an increase in dental problems. Refugees who live outside camps have more difficulty accessing health care services than those who live in camps, further increasing their risk for infection and disease.

As the Syrian civil war continues to intensify, the number of asylum seekers residing in Turkey has increased (4). According to our results, the number of Syrian refugees registered in Adiyaman province significantly increased

from 2012 until September 2017, as did the number of patients who visited ADH. The number of dental problems in refugees increased with the increasing number of patients. In 2017, the number of dental treatments other than tooth extraction provided to refugees increased significantly compared to 2012. This might be related to the extraordinary increase in the number of refugee patients. The increase in the services provided is reflected in the cost. According to our cost analyses, the per capita mean dental treatment cost of Syrian refugees in 2017 was higher than that of the Adiyaman public. In addition, in Adiyaman province, the mean financial burden of a Syrian refugee patient's dental care cost to the Turkish Social Security Institution increased by more than four times in 2017 compared to 2012. Considering the total amount of money spent for dental care yearly in Adiyaman province, Syrian refugees account for 13% of this health budget. Although this percentage may seem low, if we consider that the registered Syrian refugee population in Adiyaman province is only 0.08% of the total Syrian refugee population in Turkey, it can be concluded that the country-based total burden of dental care costs of Syrian refugees is not low at all.

Syrian refugees experience medical problems as well as dental problems, and they can be injured during war and migration. Some studies have examined other medical problems of asylum seekers and their treatment costs. Gulacti et al. (7) examined emergency department visits of Syrian refugees in Adiyaman, the medical treatments they received, and their burden on the Turkish Social Security Institution; 9,842 Syrian refugees visited Adiyaman University Emergency Department, and their treatment costs were \$773,374.63. This result is greater than the total cost that emerged in our study.

After Syrian refugees leave their country, some of them first try to stay in neighboring countries, and some seek to migrate to European countries by legal and illegal means. Refugees become a social, cultural, and economic burden in the countries where they migrate. A study on patients in a Syrian refugee camp in Brussels reported that dental problems were the second most common health complaint, affecting 9.5% of patients (8). Of this percentage, 8% consisted of dental caries and 1% was dental abscesses. This condition is associated with poor oral hygiene. That study reported several important factors leading to the occurrence of dental problems in refugees, such as difficult life conditions while trying to arrive in Brussels, and a nomadic life, making it difficult to access dental care and health services. In our study, all dental problems and their treatment costs were evaluated in a broader framework.

Pfortmueller et al. (9) investigated hospital records of 880 asylum seekers who applied to the emergency department of a university hospital in Switzerland between 2011 and 2014 for a 3.5-year period, and found that 25% of those patients were Syrian refugees. The most common reasons for visiting the hospital were surgical,

medical, and psychiatric complaints. In addition, most of the patients who applied for surgery were traumatized and most patients who applied for medical reasons were diagnosed with acute infections. Of all immigrant groups included in the study, Syrian immigrants had the highest rate of post-traumatic stress disorder; there were no significant differences between the nations in terms of the prevalence of surgical and medical complaints.

Karakuş et al. (10) addressed the complaints and treatment costs of Syrian war victims who applied to the university hospital in Hatay province near the Syrian border. During the 14-month period between 2011 and 2012, 482 different types of injury complaints were reported by Syrian refugees who applied to the hospital and 6% of these patients were admitted for maxillofacial injury. In addition, the mean per capita cost of Syrian refugees who applied to the emergency department was \$1,063, and the average length of stay in the hospital was 9.9 days.

Duramaz et al. (11) studied the types and treatment costs of orthopedic injuries suffered by asylum seekers injured in the Syrian civil war in a period of 34 months between 2012 and 2014. Their study included 158 patients, and the most common types of injuries were mainly blunt injuries, injuries due to falls from high places, penetrating injuries, and gunshot wounds. The highest treatment cost per patient was \$1,417 for falls from high places, and the average cost per Syrian patient was \$1,098 with an average duration of hospitalization of 5.66 days. In our study, bed fees were not included in the average cost per patient because all treatments were provided on an outpatient basis. The per capita dental care cost of Syrian refugees was \$4.43 in 2012 and \$22.20 in 2017. Equivalent unit charges of dental procedures are low because the Turkish Social Security Institution causes such differences between the costs of dental treatments and costs of interventional medical procedures, requested tests, and bed fees of patients who apply to hospitals in Turkey.

CONCLUSION

Dental care services provided to Syrian refugees in Adiyaman province and their effects on the budget of Turkey were evaluated. In the period between 2012 and 2017, the number of Syrian refugees residing in Turkey increased. In Adiyaman province, there was a significant increase in dental problems as well as the number of patients in this 5-year period. Therefore, an extraordinary increase was observed in the numbers of patients treated. The health systems of Turkey, Lebanon, Jordan, and other regional countries are working above capacity due to the growing numbers of Syrian refugees. In Turkey, all treatment costs of Syrian refugees who receive dental treatment in dental hospitals are paid for by the Republic of Turkey Social Security Institution. Thus, this situation emerges as an additional burden on countries' budgets and leads to more budget allocations for health.

Competing interests: All of the authors of this manuscript declared that there is no conflict of interest.

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Ethical approval: This present study was reviewed in accordance to the Declaration of Helsinki on medical protocol and ethics. The necessary approval was obtained from the Board of Management of Adiyaman Dental Hospital (Approval Number: 46695179/185).

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REFERENCES

1. Zhang DD, Brecke P, Lee HF, et al. Global climate change, war, and population decline in recent human history. *Proc Natl Acad Sci* 2007;104:19214-9.
2. Reese Masterson A, Usta J, Gupta J, et al. Assessment of reproductive health and violence against women among displaced Syrians in Lebanon. *BMC Womens Health* 2014;14:25.
3. Devi S. Syria's health crisis: 5 years on. *Lancet*. 2016;387:1042-3.
4. United Nations High Commissioner for Refugees (UNHCR). Report of Report of registered syrian refugees 28 Sep 2017. Available from: <http://data.unhcr.org/syrianrefugees/regional.php#>
5. AFAD: Suriye GBM Bilgi Notu 2+1. <https://www.afad.gov.tr/upload/Node/2374/files> access date 18.09.2017
6. Republic of Turkey Ministry of Interior Directorate General for Migration Management's report. http://www.goc.gov.tr/icerik6/gecici-koruma_363_378_4713_icerik access date 14.09.2017
7. Gulacti U, Lok U, Polat H. Emergency department visits of Syrian refugees and the cost of their healthcare. *Pathog Glob Health* 2017;111:219-24.
8. Van Berlaer G, Bohle Carbonell F, Manantsoa S, et al. A refugee camp in the centre of Europe: clinical characteristics of asylum seekers arriving in Brussels. *BMJ Open* 2016;6:e013963.
9. Pfortmueller CA, Schwetlick M, Mueller T, et al. Adult Asylum Seekers from the Middle East Including Syrian Central Europe: What Are Their Health Care Problems? *PLoS One* 2016;11:e0148196.
10. Karakuş A, Yengil E, Akkücük S, et al. The reflection of the Syrian civil war on the emergency department and assessment of hospital costs. *Ulus Travma Acil Cerrahi Derg* 2013;19:429-33.
11. Duramaz A, Bilgili MG, Bayram B, et al. Orthopedic trauma surgery and hospital cost analysis in refugees; the effect of the Syrian civil War. *Int Orthop* 2017;41:877-84.