

Sociodemographic factors and living conditions of pediatric burn patients

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Abstract

Background Children are the age group most vulnerable to burn injuries. Socioeconomic factors and the living environment, including the poor living conditions faced by refugees, may contribute to the occurrence of burns.

Objectives To compare living conditions and socioeconomic status potentially contributing to burn injury, characteristics, access to medical treatment, and integrated preventive measures between children of Turkish families and Syrian refugees with burn injuries.

Methods In this cross-sectional study, we recorded demographic and epidemiological features, mechanism of burn injury, as well as living- and socioeconomic conditions from interviews with parents of children hospitalized in the Burn Center of the University of Health Sciences Adana City Training and Research Hospital, Adana, Turkey. We classified patients into Turkish (host country) and Syrian (refugee) children.

Results We studied 42 Turkish and 31 Syrian children with burn injuries. The most common heat source was a stove (93.2%) and the most common place of the accident was the kitchen (45.2%). Maternal education ($P=0.022$), house ownership ($P<0.001$), number of rooms in the house ($P=0.001$), number of household members ($P=0.007$), number of persons per room ($P<0.001$), and place of heat source ($P=0.009$) differed significantly between Turkish and Syrian patients. Mean number of household members was 5.38 persons (SD 1.0) and 6.81 persons (SD 0.9) in Turkish and Syrian patients, respectively ($P=0.007$).

Conclusion Low socioeconomic status with overcrowded living conditions is prominent in both groups. Burns are likely to occur in the kitchen and incited by a stove. Preventive strategies are needed to educate families on the importance of simple safety measures in the house. [Paediatr Indones. 2022;62:149-55 DOI: 10.14238/pi62.3.2022.149-55].

Keywords: burns; living conditions; pediatric; refugees; sociodemographic factors

Burn trauma is a worldwide public health problem, causing more than 300,000 deaths each year.¹ Burn-related injuries are disproportionately prevalent in low- and middle-income countries, causing substantial economic and human strain in these regions.² One-third of burn victims are children under five years old.³ The high incidence of burn injuries in preschool children has been attributed to the developmental lack of motor coordination, the tendency for curious exploration, and the high level of physical activity of children in this age group.⁴ Environmental and physical factors leading to various types of burns and scalds often result in death or long-term sequelae including disability, disfigurement, discoloration, and functional impairment.³ In 2010, the Eastern Mediterranean region reported the second highest number of burn-related deaths in the world after the African Region.⁵

The political changes in Syria triggered a humanitarian crisis in early 2011. Later, civil war

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created a disaster that disrupted normal life, causing physical, social, cultural, and economic losses in society. Subsequently, the civil war led to significant changes in the population distribution due to large waves of immigration.^{6,7} Children, who are estimated to make up nearly half the current refugee population, are one of the groups most negatively affected by violence, war, and displacement-related adverse experiences.^{8,9} Turkey is amongst the neighboring countries accepting the most Syrian refugees, with approximately 3.2 million refugees currently living in Turkey.^{6,7} Health services are urgently needed by refugees. All refugees are enrolled in the Turkish General Health Insurance Program and therefore have free access to healthcare services.^{10,11}

Apart from healthcare, refugees have numerous other issues, including lack of education and employment, problems due to the need to use a foreign language, and lack of inclusion in daily economic and social life, all of which lead to poor living conditions. For these reasons, we aimed to explore the association between living conditions and socioeconomic status with the occurrence of burn injuries, knowledge of early emergency aid, and access to medical treatment. We hope that our study may inform the integration appropriate preventive measures amongst both host country and refugee children.

Methods

In this prospective cross-sectional study, a total of 73 children hospitalized in the Burn Center of the University of Health Sciences Adana City Training and Research Hospital, Adana, Turkey between March 2019 and February 2020 were evaluated. We classified patients into Group 1 (Turkish citizens) and Group 2 (Syrian refugees). The demographic and socioeconomic data, living conditions, burn etiology and mechanism, first aid practice, and access to healthcare provider were obtained from face-to-face interviews of parents. The percentage of burned total body surface area (TBSA) was evaluated and total hospital stay was recorded after discharge. War-related burn injuries were excluded from the study.

The SPSS 20.0 for Windows was used for data analysis. Data was assessed for normality distribution. Since the data was not distributed normally, we

evaluated the difference between groups using the Mann-Whitney U test for continuous variables and the Chi-square test for categorical variables. A P value of <0.05 was considered to be statistically significant. This study was approved by our institution's Clinical Research Ethics Committee and all participants' parents gave written informed consent before enrollment into the study.

Results

A total of 73 children hospitalized in our burn center between March 2019 and February 2020 were included in the study, of whom 42 were Turkish (Group 1) and 31 were Syrian (Group 2). Group 1 was predominantly male (26/42; 62%), whereas Group 2 was predominantly female (20/31; 64.5%). Subjects' mean age was 3.96 (SD 3.7) years. The overall mean percentage of burned TBSA was 9.63% (SD 6.48%) and mean length of hospital stay was 16.16 (SD 11.0) days. Scalding with hot liquids was the most common cause of burn injury (83.6%). Hospital stay was significantly longer for Syrian than for Turkish children ($P=0.011$). Demographic and clinical characteristics of patients by group based on nationality are given in **Table 1**.

In Turkish families, 15/84 (17.8%) of parents had never attended school (classified as illiterate/literate in **Table 2**), whereas this percentage was 18/61 (29.5%) in Syrian families. Most Turkish and Syrian families earned regular wages (92.85% and 90.3%, respectively). The most common occupations were construction work and agriculture for both groups. More parents in group 1 owned their own business than in group 2. Most parents were alive and broken families were rare. The sociodemographic data of patients are summarized in **Table 2**.

The mean number of household members was 5.38 (SD 2.3) in Turkish families and 6.81 (SD 2.8) in Syrians ($P=0.007$). In both groups, the most common heat source was the stove, and most burn injuries occurred in the kitchen and living room (45.2% and 27.4% overall, respectively). Only nine patients were burned outside the home and two child workers were burned at the workplace. The living conditions of the patients are summarized in **Table 3**.

At the time of the injury, patients were attended by one of the parents in 25/73 (34.2%) and by other

Table 1. Demographic and clinical characteristics of patients

Variables	Group 1 (Turkish) N=42	Group 2 (Syrian) N=31	P value
Age, years			0.432
Mean (SD)	4.29 (3.9)	3.52 (3.5)	
Median (range)	2.0 (1-15)	3.0 (1-16)	
Gender, n			0.034
Male	26	11	
Female	16	20	
TBSA, %			0.266
Mean (SD)	8.81 (6.2)	10.74 (6.8)	
Median (range)	7.0 (2-27)	12.0 (1-25)	
Hospital stay, days			0.011
Mean (SD)	14.21 (11.8)	18.81 (9.3)	
Median (range)	11.5 (1-56)	20.0 (4-38)	
Cause of burn injury, n(%)			0.300
Scalds	33 (78.6)	28	
Flames	7 (16.6)	3	
Electric	2 (4.8)	0	

Table 2. Sociodemographic data of subjects' parents

Variables	Group 1 (Turkish) (n=42)	Group 2 (Syrian) (n=31)	P value
Maternal educational status, n			0.022
Illiterate	6	5	
Literate	3	6	
Elementary	19	5	
Secondary	8	14	
High school	5	1	
University	1	0	
Paternal educational status, n			0.275
Illiterate	3	6	
Literate	3	1	
Elementary	16	6	
Secondary	10	8	
High school	8	6	
University	2	3	
Living mother, n	42	31	
Living father, n	42	30	0.425
Parents living together, n			0.481
Yes	40	29	
No	2	2	
Regular wage, n			0.509
Yes	39	28	
No	3	3	
Occupation, n			0.177
Agriculture	11	11	
Construction	4	8	
Own Business	8	1	
Textile	4	2	
None	2	2	
Other	13	7	

family members or neighbors in 36/73 (49.4%) overall; 12/73 (16.4%) of patients were alone. First aid was given by the mother in 46/73 patients (63%) and was

effective for 60% of injuries. Evaluation of first aid and access to medical care is summarized in **Table 4**.

Table 3. Living conditions of subjects

Variables	Group 1 (Turkish) (n=42)	Group 2 (Syrian) (n=31)	P value
House ownership, n			<0.001
Own	29	3	
Rent	13	28	
Number of rooms*			0.001
Mean (SD)	3.67 (1.0)	2.61 (0.9)	
Range	1-5	1-4	
Number of household members			0.007
Mean (SD)	5.38 (2.3)	6.81 (2.8)	
Range	3-13	3-15	
Number of persons per room*			<0.001
Mean (SD)	1.73 (1.9)	3.1 (2.1)	
Range	0.75-13	1-12	
Heat source, n			0.141
Wood stove	36	28	
Electric heater	1	3	
Central heating	4	0	
Air conditioning	1	0	
Place of heat source, n			0.009
Living room	21	27	
Common living room	16	3	
Bedroom	1	1	
Place of dining			0.101
Floor	20	21	
Table	22	10	

Table 4. Evaluation of first aid and access to medical care

Variables	Group 1 (Turkish) (n=42)	Group 2 (Syrian) (n=31)	P value
Accompanying person, n			0.279
Parents	16	9	
Other family members	16	18	
Neighbor	2	0	
Alone	8	4	
First aid by, n			0.684
Parents	28	24	
Other family members	9	5	
Neighbor	1	0	
None	4	2	
First treatment, n			0.811
Proper	26	18	
Improper	16	13	
Transportation to healthcare provider, n			0.014
Own vehicle	36	18	
Ambulance	6	13	
Type of healthcare provider, n			<0.001
Refugee camp doctor	0	4	
Family health center	0	5	
State hospital	27	12	
Private hospital	9	1	
Tertiary health care hospital	6	9	

Only two Syrian families (6.45%) living in a camp could not speak Turkish. However, Arabic translators assisted in hospitals, so there was no language barrier. The mean time of living in Turkey for the Syrian families was 4.6 (SD 2.3) years (range 1-7 years), so they had learned enough Turkish to express themselves. The monthly wage of families could not be estimated as most participants declined to respond.

Discussion

Investigations into the environment and conditions in which burn victims live are important in order to develop effective prevention strategies and improve living conditions. These studies are also important to raise international awareness. Our burn center is a tertiary referral center that serves patients from the southern and southeastern regions of Turkey, as well as neighboring countries, especially Syria. We report here a study on childhood burns in two different populations residing in the same country. In our study, the living conditions of the refugees were significantly worse with regards to owning a place to live in, average number of rooms, and average number of household members. The results of our study emphasize the urgency to raise awareness on the need to improve the living conditions of refugees.

Burn prevention studies have been shown to be effective in decreasing burn morbidity, mortality, and hospital stay in developed countries.^{1,12} Since burn treatments are difficult and expensive, a focus on prevention is needed. Our country, Turkey, was examined with other low- or middle-income countries in a review on descriptive epidemiology, risk factors, treatment, and prevention of burns. Many studies cited in the review showed that most burns occur in children less than 4 years of age.² Similarly, the mean age of our 73 pediatric burn patients was 3.96 (SD 3.7) years. The high number of burns in infants and preschool children has been attributed to the developmental lack of motor coordination associated with young age, curiosity about their surroundings, and their high level of physical activity.⁴ The percentage of burned TBSA and the length of hospital stay of our subjects were also consistent with the literature.^{5,13} The most common inflicting cause of the burns was scalding with hot liquids (83.5%).

Syrians who immigrate to Turkey are admitted under the status of “foreigners under temporary protection” by registering their foreign identification documents. All refugees are enrolled in the *Turkish General Health Insurance Program* and therefore have free access to healthcare services.^{10,11} Foreign doctors who have visited the border refugee camps in Turkey with an initial mission of providing medical care have claimed that healthcare services offered by the Turkish authorities at the camps are generally adequate.¹⁴ As another indicator of the utilization of health resources other than hospital facilities, we assessed the use of ambulance services and found that more refugees used Turkish Health system ambulance services than Turkish citizens (14.3% vs. 41.9%, respectively). On the other hand, first admittance to a private hospital was higher in Turkish than Syrian patients (21.4% vs. 3.2%, respectively), whereas fewer Turkish than Syrian patients were first admitted to a tertiary care hospital (14.3% vs. 29%, respectively). Such findings indicate that there is no limitation in healthcare benefits based on social status or nationality.

Households in the European Union had an average size of 2.3 persons in 2016, whereas the average household size in Turkey was 3.5 persons.¹⁵ In our study, the average household population was 5.38 for Turkish patients and 6.81 for Syrian refugees. Although there was a statistically significant difference between Turkish and Syrian patients in terms of mean number of household members per room [1.73 (SD 1.9) vs. 3.1 (SD 2.1) persons, respectively, $P < 0.001$], it was evident that patients from both groups were living in crowded conditions. While the average number of rooms in Turkish homes was higher, the habits and culture of the geographical region of both countries necessitates common life. The heat source is generally placed where the family dines, sits together, drinks tea, or sleeps together. The wood stove is convenient for the two-piece teapot, which keeps the tea hot and ready. Moreover, dining together on the floor table next to the stove is a considered a pleasure for the family. Some other factors facilitating the occurrence of burn injuries are cooking on portable gas stoves, using common areas for cooking, using large pots for traditional cooking, and sterilization of milk by boiling.^{4,16} In addition to inadequate supervision, these circumstances are leading factors in pediatric burns, not only in low- or middle-income countries, but also be among the economically

disadvantaged in developed countries.¹³

Although none of our burn victims stayed in camps, there are reports of burns caused by refugee camp fires as a result of poor planning and crowded settlements.^{17,18} Previous studies have suggested that education and prevention programs are needed to reduce pediatric burns, and we concur.^{13,19} Unfortunately, the benefits of such programs will be limited unless living conditions are improved.

In conclusion, low socioeconomic status with overcrowded living conditions were found in the majority of children with burn injuries, both in Turkish and Syrian refugee populations. Burns are likely to occur in the kitchen, where unsafe cooking takes place on the floor, and in the living room where the heat source is located and dining takes place on the floor. Education programs are required to teach the importance of simple safety measures for cooking, dining and heating in the house. In addition, international refugee aid groups should also focus on improving living conditions.

Conflict of interest

None declared.

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