

Pediatric refugees require more hospitalizations and longer in-patient stay than the local population

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Abstract

Background: The ongoing global refugee crises have raised concerns among medical communities worldwide.

Methods: We compared data from refugee and Israeli children admitted to the pediatric department (PD) at Wolfson hospital in Israel, between 2013–2017.

Results: 104,244 visits (0-18 years) to the pediatric emergency department (PED) were recorded. Admission rate to the PD for refugees was 695/2541 (27%) as compared to 11,858/101,703 (11.7%) for Israeli patients ($P < 0.001$). After matching for age groups (0-5 years), the hospital stay duration for the 0-2 years age was 3.22 (± 4.80) days for the refugees and 2.78 (± 3.17) for the local population ($P < 0.03$). For 0-2 year old children, re-admission rates within 7 days, were 1.3% for refugees and 2.6% for Israelis, ($p < 0.05$). Dermatological diseases (mainly impetigo and cellulitis) were more frequent in refugees (23.30% vs. 13.15%, $p < 0.01$), however, acute gastroenteritis and respiratory diagnoses were more common in Israeli children (11.72% vs. 18.52%, $p < 0.05$ and 6.26% vs. 14.84%, $p < 0.01$, respectively). Neurological diseases (mainly febrile convulsions) were also more frequent in Israeli patients (7.7% vs. 3%, $P < 0.05$). Very significantly, 23% of refugees had no health care coverage, while only 0.2% of the Israeli patients had no medical coverage ($P < 0.001$).

Conclusion: We found evidence for significant morbidity in refugees as compared to the local Israeli pediatric population, highlighting the need for tailoring different approaches to this fragile population.

Background

Key notes

- The subject of refugees' access to health care has been scantily studied so far even though refugees are considered to be a medically high-risk group.
- The results indicated a higher rate of hospitalization and morbidity in refugee patients.
- These findings highlight the need to tailor a specific approach to treating this population.

With the largest refugee crisis in Europe since the Second World War, and the arrival of masses of displaced persons, including many children, health care systems have been facing new and diverse challenges. As refugee status changes over time, so does their level of accessibility to health services¹.

It is estimated that 52% of the world's 25.4 million refugees are children. In the UK alone, the total number of undocumented child migrants in 2017 was estimated to be over 120,000².

Surprisingly, despite the fact that medical issues concerning this fragile population are discussed in many countries, the subject of refugee and asylum seekers' access to health care, physical and mental

outcomes has only been scantily studied, previous researches described higher physical and mental morbidity in refugee children^{3,4,5}. Fazel et al reported that the life experience of child refugees makes them more vulnerable to mental health problems than children in the host population⁶.

In accordance with global trends, Israel has experienced an influx of refugees and asylum seekers entering its borders from Eritrea and Sudan that have known ongoing conflicts. By the end of 2016, the Israeli immigration authority registered 40,274 refugees residing in Israel, including an estimated 5,500 children⁷. Although formal recognition by authorities has proven difficult, all adults and children (regardless of birth country) originating from African countries with known ongoing conflicts are eligible to participate in the Israeli social health care program in a similar fashion to Israeli citizens. The health insurance payment in Israel is income dependent. Israeli health care program offers coverage for both community and hospital medical needs, subsidizing admissions and medicines for a significantly reduced fee for asylum seekers alike Israeli citizens with low income. Furthermore, there are specialized free clinics providing medical service for refugees and asylum seekers who do not partake in the Israeli health care program.

Our study was conducted at the "E. Wolfson Medical Center", a hospital located in the city of Holon in central Israel. Most of the refugees and asylum seekers are treated in our hospital due to the geographical proximity to the southern part of the city of Tel-Aviv, where the majority of African refugees in Israel reside.

The objective of our study was to compare different characteristics of the refugee and local populations including: admission rate from the PED, duration of hospital stay, re-admission rates, medical diagnosis, and health care coverage.

Methods

Data concerning PD admissions from the PED at the E. Wolfson Medical Centre in Holon, Israel, between January 1st 2014 and December 31st 2017 were collected retrospectively using chart review. All refugee pediatric patients were assigned with a temporary identification number for non-citizens on PED admission.

Approval by the hospital's Helsinki committee was obtained prior to initiation (Approval number 0098-17-WOMC). Being a retrospective study, there was no need for signed consent and all data gathered remained anonymous.

The two groups compared were defined and divided in the following manner:

- A study group composed of pediatric patients (< 18 years of age) who are children of refugees and asylum seekers from African countries. All refugee pediatric patients were assigned with a temporary identification number for non-citizens on PED admission.
- A control group comprising pediatric patients (< 18 years of age) who are Israeli citizens.

Matches for age:

1. As only very few refugees (n = 8) in the age range 5-18 years were admitted to the PD, we excluded these children from the statistical analysis. In parallel, we excluded all Israeli children in the same age group (n = 4,278).
2. There were 10.5 times more control children than refugee children in the 0-2 year-old group, while in the 2-5 year old group there was a much higher (22 fold) number of control children than refugee children. Thus, the mean and median ages between the refugees and locals were significantly different. However the age distribution between the refugees and locals in our separately 0-2 and 2-5 years old groups were comparable (P=0.66, P=0.68 respectively). Considering all the above mentioned facts, comparing both age groups together would have incorrectly interpreted the outcome results.

For the purpose of this study, we considered all pediatric patients originating from Eritrea and Sudan as refugees.

We collected information regarding age, gender, demographics, and medical information relevant to hospitalization: admissions rates from the pediatric emergency department (PED), primary (main) diagnosis (ICD9), re-admissions, prolonged hospital stay, and health care provider.

Exclusion criteria included: hospitalization periods exceeding 90 consecutive days, admissions via referrals from specialist clinics, children with known chronic conditions requiring recurrent admissions, and admissions to other pediatric units (Pediatric Intensive Care, Pediatric Surgery, and Pediatric Cardiology).

Outcome measures

The primary outcome of the study was the difference in admission rate of refugees and that of local Israeli children; secondary outcomes were differences in the duration of hospital stay, re-admission rates, medical diagnosis, and health care coverage between the two groups.

Statistical analysis

Data was analyzed with the SPSS 11.0 statistical analysis software (SPSS, Inc., Chicago, IL, USA). Distributions of continuous variables were assessed for normality using the Kolmogorov–Smirnov test (cut off at P = 0.01). Continuous variables with approximately normal distribution were reported as mean \pm standard deviation. Continuous variables were compared by using two-tailed independent sample *t*-tests. When variables were highly skewed, comparisons were made using the Mann–Whitney non-parametric U-test. Categorical variables were compared by using the Chi-square test or by Fisher exact test when appropriate.

Results

During the study period, a total of 104,244 visits (0-18 years) to the pediatric emergency department (PED) were recorded, including 2541 (2.4%) by refugees and 101,703 (97.6%) by Israeli patients, resulting in a total of 12,512 admissions to hospital. Admission rate to the PD among the refugee patients was 695/2541 (27%) as compared to 11,858/101,703 (11.7%) of the Israeli patients ($P < 0.001$). In the 0-5 age group, we identified 687 refugees and 7,580 Israeli children, who were admitted to the PD and were eligible for further evaluation. Admission rates to the PD for ages 0-5 years were 27% in the refugee group as compared to 7.4% in the control group. ($P < 0.001$).

The average length of a single hospital stay in the 0-2 years age group was 3.22 (± 4.80) days in the study group versus 2.78 (± 3.17) days in the control group ($P < 0.003$). In contrast, in the 2-5 years age group, statistical analysis showed a trend without significance 2.55 (± 2.91) and 2.17 (± 2.07) for the refugee and control groups respectively ($P = 0.08$).

Re-admission rates within 7 days from discharge for the 0-2 year old age group, were 1.3% for the refugees as compared to 2.6% for the Israelis ($p < 0.05$). No significant difference was found when considering the 2-5 year old group.

Dermatological diseases (mainly impetigo and cellulitis) were more frequently diagnosed in refugees as compared to native Israeli children (23.30% vs. 13.15%, $p < 0.01$), however acute gastroenteritis and respiratory diagnoses (mainly pneumonia and wheezing) were more common in Israeli children than the refugees (18.52% vs 11.72%, $p < 0.05$ and 14.84% vs 6.26%, $p < 0.01$, respectively). Neurological diseases (mainly febrile convulsions) were also more frequently diagnosed in Israeli patients than in refugees (7.7% vs. 3%, $P < 0.05$).

Very significantly, 23% of refugees in the study group had no health care coverage, while only 0.2% of the Israeli patients had no medical coverage ($P < 0.001$)

Discussion

Our retrospective study identified many significant differences between the pediatric refugee and the local Israeli populations (admission rates, length of stay, readmissions and health care coverage), highlight the need to tailor a specific approach to this unique and fragile population.

Israel is a committed member of the international treaty for the status of refugees, based on the "convention relating to the status of refugees" of 1951, which states that people who are subject to persecution based on race, religion, citizenship, political views etc. in their home countries are able to seek refuge in other countries^{7,8}.

The United Nations high commissioner for refugees guarantees that in addition to providing shelter, hosting countries must also guarantee basic human rights, including the ability to access basic health services. This guarantee is not dependent on an official recognition of refugee status by the state, in order to promise basic rights while refugee status is processed.

Refugees are generally considered to be a medically high-risk group. In many cases, they were deprived of basic health conditions before their arrival at the host countries, possibly as a consequence of torture, substandard sanitarian conditions, limited access to regular health services, low socio-economic status, and other problems⁸.

Refugees and asylum seekers differ from other immigrant populations in their vulnerability and special needs. This is particularly relevant for refugees who may be suffering from HIV/AIDS, tuberculosis, hepatitis, and mental health issues (such as post-traumatic stress disorder and depression)^{8,9}. While the majority of refugees flee from areas with limited health services, reaching a host country, does not necessarily immediately improve their access to health services. Factors contributing to this problem include language barriers, cultural gaps, lack of information, and fear of arrest or deportation^{9,10}. According to Crepeau et al., health care personnel report that refugees often seek medical attention for their children later than would be expected, occasionally arriving in dire conditions that could have been avoidable with early intervention¹¹.

The higher rates of hospitalization found in our refugee group support this claim although an alternative explanation could be a lower threshold to admit refugees due to lack of known medical history, and language and communication difficulties.

In addition, poor living conditions and low economic status can have a direct impact on personal health. These factors result in higher rates of malnutrition, and an inability to purchase medicine¹². Families may live in sub sanitary living conditions with overly crowded homes and parents who are often forced to work for the majority of the day, leaving their children in different facilities for extended periods of time. Overcrowded and poor sanitation living conditions might also explain the high percentage of children of refugees admitted with integumentary pathologies seen in our study⁸.

The higher morbidity of the refugees demonstrated in our study can therefore be attributed to a range of variables including language barriers, which cause a delay in discharge due to the reluctance of medical staff to discharge children to parents who do not fully understand further instructions^{9,13}. Another reason for delay may be that medical personal underestimate the capabilities of the parents to manage the care of their children in a community that lacks the finances for good ambulatory medical services.

Regarding readmissions, it is tempting to postulate that the observed difference is a result of the more common use and easier access to medical services by the local population than are enjoyed by the refugee group.

In a study conducted in the United States, immigrants from the far east were found to be less likely to use health care services. The study reported that one of the reasons for this phenomenon resulted from cultural differences with respect to the perception of pain and suffering¹⁴. It is possible that this factor also plays a role in our refugee population. Nevertheless, we believe that in our populations, the concerning low rate of health-care coverage (77%) in the study group, especially compared to the

excellent coverage among the local population (almost 100% coverage) plays a dominant role. This lack of health-care coverage is disadvantageous to the refugee group, adding to the general financial difficulties of a refugee state, and giving the economic burden of hospitalization further impact on the decision not to seek medical help, due to economic rather than medical considerations.

The Israeli national health insurance law of 1994 mandates that every Israeli citizen has to join one of the four national health insurance organizations and register in order to receive health coverage.

Although the Israeli government has made an agreement with one of the four health insurance organizations to provide refugees and their children with insurance for a reduced monthly payment, only 77% of the children in the study group had medical coverage, therefore there was no need to compare different healthcare providers. This may be due to legal issues preventing participation in this program (fear of arrest or deportation due to registration) or lack of financial capabilities. Choosing not to partake in a health insurance program may also be attributed to the existence of alternative solutions that do not necessitate medical coverage. Such options include free clinics for refugees which are supported by the Israeli Medical Association, Ministry of Health, and other various volunteer medical organizations¹⁰. Absence of insurance coverage can potentially delay the seeking of medical attention, thus resulting in a more severe medical presentation that entails a longer duration of hospital stay¹⁰.

Our limitations in this study include being a single center study, limited follow up regarding readmission in other facilities. However being the closest and referral hospital for most of these refugees at central Israel, we believe that our data is still valid in comparison to the local population.

Conclusion

The results of this study reveal disturbing evidence for a significantly higher admission rates and longer overall hospital stay in children of refugees compared to the local Israeli pediatric population, as demonstrated by higher admission rates and longer overall hospital stays. There were also significant differences in the type of diagnoses between the two populations. Furthermore, as a last point, we noted a disturbing low rate of insurance coverage among refugees.

With the ever-growing global refugee crisis, generating more and more displaced children, these findings should prompt serious and urgent concern. We believe this study is of great importance to all medical communities worldwide. By urging for specific analysis for different refugee population and hosting countries to tailor specific interventions that can be rapidly implemented by all branches of the health care system, both in the community and in the hospital setting, in order to assist this vulnerable population.

List Of Abbreviations

Pediatric Emergency Department (PED), Pediatric Department (PD)

Declarations

Ethics approval and consent to participate: The study was approved by the Wolfson Medical Center Helsinki committee and was obtained prior to initiation of research (Approval ID number 0098-17-WOMC). Being a retrospective study, there was no need for signed consent and all data gathered remained anonymous.

Consent for publication: Not applicable.

Availability of data and materials: All data generated and analysed during the current study, such as emergency room and admission ward's data, gathered from Wolfson Medical Center's archives and contain patients private details, therefore are not publicly available. However, there are available from the corresponding author upon reasonable request.

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Authors' contributions: Dr. AO and Dr. MS *collected data, carried out the initial analyses, drafted the initial manuscript, and reviewed and revised the manuscript.*

Dr. AO, Dr. SA, Dr. GM, and Dr. DT *designed the data collection instruments, collected data, carried out the initial analyses, and reviewed and revised the manuscript.*

Ms IB and Mrs. OBO *collected data, carried out the initial analyses.*

Dr AM carried out the initial analysis, was involved in the statistical analysis, and critically reviewed and revised the manuscript.

Prof. ID *conceptualized and designed the study, coordinated and supervised data collection, and critically reviewed the manuscript for important intellectual content.*

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Tables

Table 1. Baseline characteristics between refugee children and local population (0-5 years).

Category	Refugees N = 687	Israeli Citizens N = 7,580	P-value
Age:			
0-2 years old	582	5,557	P < 0.001
2-5 years old	105	2,023	P < 0.001
Sex:			
0-2 years old:			
Male	334	3,039	P = 0.4
Female	248	2,518	
2-5 years old:			
Male	51	1,088	P = 0.8
Female	54	935	

Table 2. Comparison of data between refugee children and local population (0-5 years).

Category	Refugees N = 687	Israeli Citizens N = 7,580	P-value
Length of hospital stay (in days)			
0-2 years old	3.22 (+4.8)	2.78 (+3.17)	P < 0.03
2-5 years old	2.55 (+2.91)	2.17 (+2.07)	P = 0.08
Re-admissions within 7 days			
0-2 years old	1.3%	2.6%	P < 0.05
2-5 years old	1.9%	2%	P N.S
Common Diagnosis:			
Dermatology	23.30%	%3.15	P < 0.01
Acute Gastroenteritis	11.72%	18.52%	P < 0.05
Respiratory	6.26%	14.84%	P < 0.01
Neurology	3.04%	7.71%	P < 0.05
Health care coverage:			
	77%	99.8%	P < 0.001