

Evaluation of Emergency Department Visits by Refugee Children in Rhode Island

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ABSTRACT

Children constitute 40% of the world's refugees and often have complex medical needs. This retrospective chart review examined Emergency Department (ED) utilization by pediatric refugees (aged 0–18) within a state-level healthcare system to understand the healthcare needs of this population. Pediatric refugee patients were defined as under the age of 18 years with the presence of the ICD-10 code “refugee health exam” in their electronic medical record (EMR). Between 2015–2023, 483 encounters were identified. Descriptive analysis was conducted on characteristics of these encounters. Arabic, Swahili, and Pushto were the most common primary languages of the 22 total languages identified. Most patients resided near the pediatric and adult tertiary care ED, but notably there was one ZIP code outside of the city that represented only 3.3% of all encounters but contributed to 10.6% of traumatic incidents. Medium-low acuity triage levels predominated (79.5%) with 87.8% of patients discharged. The highest percentage of medical (36%) and trauma (28%) visits were by Arabic speakers. Swahili and Spanish speakers had the highest percentage of mental health visits (50%, 36%). Although Arabic speakers had most patient encounters, they had no mental health visits. This study underscores the importance of exploring cultural, spatial, and social influences on ED visits, especially for trauma and mental health-seeking behavior in the pediatric refugee population.

KEYWORDS: refugee health; pediatric refugees; pediatric emergency medicine

BACKGROUND

By the end of 2022, the number of refugees was estimated to be 34.6 million worldwide.¹ Each year the number of refugees welcomed into the United States (U.S.) fluctuates. There were 22,491, 30,000, and 11,411 refugees resettled into the U.S. in 2018, 2019, and 2021 respectively.² Additionally, since mid-2021 the U.S. has welcomed 90,000 Afghan evacuees as part of Operations Allies Welcome.³ Nearly 40% of the world's refugees are children. These children have experienced a long road to resettlement and often have faced violence, housing, and food insecurity.¹

Newly arrived refugee and migrant children have a high burden of unintentional injuries, nutritional deficiencies, hematologic disorders, infections, and psychological trauma.^{4–13} Additionally, there are systemic barriers within the healthcare community that impact the healthcare needs of this population.^{12,14,15} Emergency Department (ED) visits provide important data on health care access, types of illness, mental health, and trauma.¹⁶ Although there have been studies in Europe, Canada, and Australia involving ED visits of refugee children, there are limited recent studies looking at ED utilization for pediatric refugee patients in the U.S. Furthermore, there have been even fewer studies taking place after the arrival of the most recent refugees within the past five years. Due to the high volume of refugee children in the U.S. and the influx of Afghan evacuees in 2021, it is important to identify the characteristics of ED presentations of this population.

Rhode Island receives between 100 to 345 refugees per year, and all newly resettled refugee children have an initial health screening through Hasbro Children's Hospital (HCH) Pediatric Refugee Health Program.¹⁷ The initial intake provider becomes the child's primary care provider (PCP). Consequently, most pediatric refugees have the same PCP and are in one medical home leading to a close-knit medical community. Understanding the characteristics of ED visits within this community is essential for identifying gaps and guiding meaningful interventions and improvements. Only one study assessed ED-related visits for pediatric refugees in Rhode Island, and this was done more than a decade ago.¹⁸ Our study aims to evaluate more recent ED utilization and detailed visit characteristics. This deeper insight into the healthcare requirements of this population will provide information for the ED, the medical home and the Department of Health to make meaningful interventions.

METHODS

This was a retrospective, observational study of ED utilization by pediatric refugee patients in a single health system between April 1st, 2015, and July 31st, 2023. Four EDs, including a level 1 trauma center, were included in the study. Pediatric refugee patients were defined as under the age of 18 years with the presence of the ICD-10 code “refugee health exam” in their electronic medical record (EMR). This

ICD code was assigned during their initial health screening at HCH Pediatric Refugee Health Program upon arrival in Rhode Island.

The primary objective of this study was to explore ED visits by pediatric refugee patients seeking emergency care in Rhode Island. Data extraction was performed via EMR by cross-referencing ED visits and the ICD 10 code “refugee health exam”. Patient identifiers were then removed and an analysis file for subsequent descriptive and comparative analyses was created.

Patient and visit-related variables were collected including primary language, age, gender, ZIP code of residence, chief complaints, Emergency Severity Index (ESI), disposition, and discharge diagnosis.

The initial data analysis employed descriptive techniques. Furthermore, the number of ED visits by pediatric refugee patients for injury, illness, or mental health reasons was calculated. Patient encounters were divided into these three categories based on their final ICD code and disposition diagnosis. Comparative analyses were conducted to discern differences in these ED visit reasons by patient language spoken, providing an understanding of the emergency health-care experiences of pediatric refugee patients in Rhode Island during the specified timeframe. Statistical inferences were not drawn from the comparative analysis due to small counts across several groups. This study was approved by the local Institutional Review Board.

RESULTS

Between April 2015 to July 2023, we were able to identify a total of 483 ED visits by pediatric refugee patients. The annual number of ED visits began with nine in 2015, reaching a peak of 85 visits in 2017, with notable fluctuations observed in subsequent years. Notably, the second lowest visits were in 2020 with a total of 35 annual visits that year. Although the exact pediatric refugee population in Rhode Island during these years is unknown, 1,271 refugees (adults and children) arrived in the state between 2015 to 2023. The average was about 141 arrivals per year, but this number dropped to as low as 47 in 2021 and as high as 337 in 2016. We were unable to find how many of these refugees were adults vs children; however, on average, children make up about 40% of the world’s refugees.¹ **Figure 1** details the number of pediatric emergency department visits from 2016–2022 compared with the overall refugee arrivals from 2016–2022. The years 2015 and 2023 were not included because we only had partial data from each of these years.

Of the ED encounters, 37.1% were by children aged 10–18 years and 33.5% by those aged 5–10 years [Table 1]. Younger children aged two to five years accounted for 21.9% of visits, while infants younger than two years comprised 7.4%. Infants under one month had no reported ED visits. There was a balanced gender distribution among pediatric refugees

Figure 1. Emergency department encounters of pediatric refugees from 2016–2023 compared with overall refugee arrivals in Rhode Island from 2016–2023

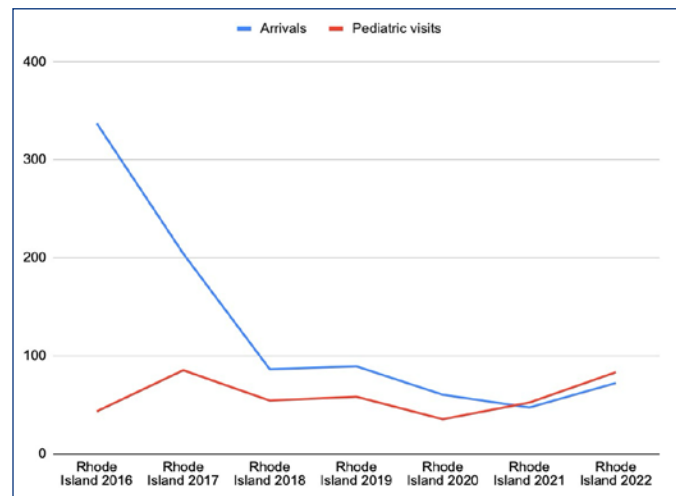
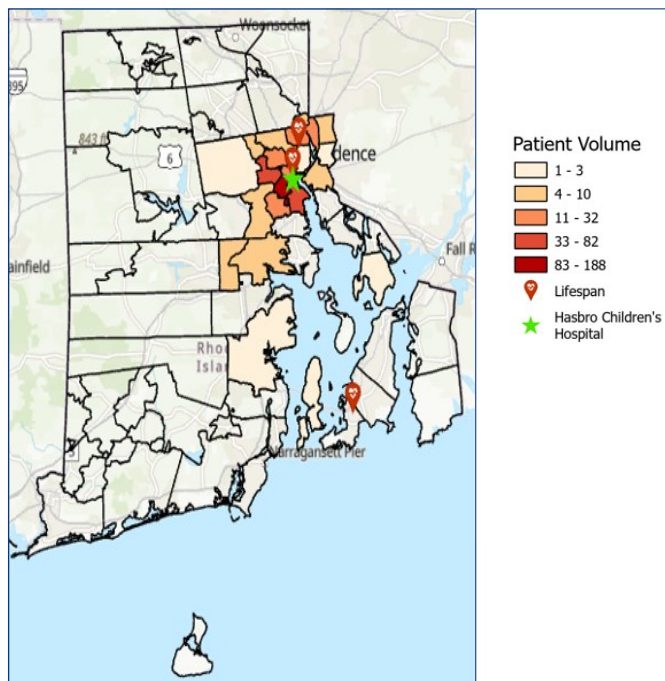


Table 1. The age, gender, and language distribution of pediatric refugee ED visits

Demographics	The total number from the year 2015–2023 n (%)
Age	
Under 1 month	0 (0%)
1 month–1 year	4 (0.8%)
1 year–2 years	32 (6.6%)
2 years–5 years	106 (21.9%)
5 years–10 years	162 (33.5%)
10 years–18 years	179 (37.1%)
Gender	
Male	238 (49.3%)
Female	245 (50.7%)
Preferred Language	
Arabic	168 (34.8%)
Swahili	87 (18.0%)
Pushto	47 (9.7%)
English	34 (7.0%)
Spanish	29 (6.0%)
Other	118 (24.5%)

*Other languages included Burmese, Dari, Haitian Creole, Kinarwanda, Kirundi, Kpelle, Kunama, Lingala, Nepali, Person, Rundi, Russian, Somali, Tigrinya, Ukrainian, Urdu

utilizing ED services, with females representing 50.7% of the patients. This cohort exhibited a diverse primary language preference. Among the 22 preferred languages, Arabic speakers accounted for 34.8% of the cohort [Table 1]. Most patients resided in Providence, the capital city of Rhode Island, representing 88.4% of all ED visits [Figure 2]. Only 15.9% of patients arrived by ambulance, and most patients

Figure 2. Distribution of pediatric refugee ED patient volume by zip code

were discharged (87.8%), with only two percent experiencing a bounce back within 72 hours [Table 2].

Only one encounter was categorized as level 1 on the Emergency Severity Index (ESI), 19% as ESI 2, with the majority (79.5%) triaged as medium-to-low acuity (ESI 3-5). Medical reasons accounted for the majority (64.8%) of ED visits,

Table 2. Bounce back visits within 72 hours of discharge

	NO	YES	Total
All Visits	473	10	483
Age			
Under 1 month	0	0	0
1 month–1 year	3	1	4
1 year–2 years	32	0	32
2 years–5 years	102	4	106
5 years–10 years	157	5	162
10 years–18 years	179	0	179
Gender			
Male	229	9	238
Female	244	1	245

Table 3. The ED utilization by diagnosis

	Trauma	Non-Trauma	Mental Health/Behavioral Health	Other	Total
All Visits	85 (17.6%)	313 (64.8%)	14 (2.9%)	71 (14.7%)	483
Age					
Under 1 month	0	0	0	0	0
1 month–1 year	0	4	0	0	4
1 year–2 years	3	24	0	5	32
2 years–5 years	20	63	0	23	106
5 years–10 years	22	118	2	20	162
10 years–8 years	40	104	12	23	179
Preferred Language					
Arabic	24	113	0	31	168
Burmese	1	8	0	0	9
Dari	4	12	0	0	17
English	7	19	1	7	34
Kinyarwanda	8	8	0	4	20
Kunama	0	3	0	3	6
Lingala	0	4	0	1	5
Other*	5	12	0	3	20
Persian	4	7	0	0	11
Pushto	6	38	1	2	47
Somali	2	10	0	9	21
Spanish	2	17	5	5	29
Swahili	19	56	7	5	87
Tigrinya	3	6	0	0	9

*Other languages include: Haitian Creole (4), Kirundi (1), Kpelle (1), Nepali (3), Rundi (3), Russian (3), Ukrainian (3), Urdu (1), Unknown (1)

followed by trauma (17.6%) [Table 3]. Mental health-related visits constituted approximately three percent, while 14.7% were attributed to other reasons, such as patients with unclear diagnosis, those who left without being seen, and individuals with unclear pain.

Arabic speakers had the highest percentage of medical (36.1%) and trauma (28.2%) visits, while Swahili speakers exhibited the highest percentage of mental health visits (50%), followed by Spanish-speaking patients (35.7%). While Arabic-speaking patients account for the highest number of all ED visits, they had no visits for mental health concerns. Spanish speakers, who made up only six percent of all ED visits, made up 35.7% of mental health visits.

DISCUSSION

In this study, we analyzed 483 ED visits by 216 refugees aged 18 years or younger across the state of Rhode Island. Our findings demonstrated a notable difference in healthcare utilization among patients with different primary languages. Arabic was the most common language spoken by patients, followed by Swahili, Pushto, English, and Spanish. Further studies are needed to see if this directly reflects the refugee demographics of the area or if there are a disproportionate amount of ED visits by certain communities and populations. Examining language-specific patterns, Arabic speakers exhibited the highest percentage of medical (36.1%) and trauma (28.2%) visits, while Swahili speakers demonstrated the highest percentage of mental health-related visits (50%), closely followed by Spanish-speaking patients (35.7%).

Regarding mental health visits, Arabic speakers, who represent the highest number of overall ED encounters, had no recorded visits related to mental health. Conversely, Spanish speakers, constituting only six percent of all visits, accounted for 35.7% of mental health-related encounters, presenting a noteworthy disproportionality in these linguistic groups. These disparities warrant a further detailed assessment as previous studies have also shown large disparities in mental health visits by race, country of origin, and refugee status. While previous studies have shown that five percent of pediatric ED visits are related to mental health, there has been a significant increase over the years in mental health complaints and a significantly greater number in Black and Hispanic children when compared to their White peers.¹⁹⁻²¹ It is particularly important to understand these trends as refugee children have been shown to have higher rates of depression and post-traumatic stress disorder when compared to non-refugee children, yet refugee children attend less appointments for and are more likely to drop out of mental health treatment for these conditions. Where a prior study showed that trauma represented half of all presentations by pediatric refugees,¹⁸ our study showed that trauma was much less common and only constituted 17.59% of encounters. Additionally, our study shows that Arabic speakers constituted the highest number of traumatic encounters, closely followed by Swahili speakers,

aligning proportionally with the overall visitation rates of these populations. Notably, Kinyarwanda speakers emerged as the third-highest group for trauma, comprising 9.1% of all traumatic visits despite constituting only four percent of overall visits, although the overall sample size was low. Additionally, Spanish speakers accounted for six percent of all ED visits but represented only about two and a half percent of traumatic encounters, highlighting variations in trauma and trauma-related healthcare-seeking behaviors among different linguistic groups.

While most traumatic encounters (88.4%) were reported by patients residing in the city of Providence, one residential ZIP code, situated just north of the city, exhibited a distinct pattern. Although constituting only about three percent of all encounters, this ZIP code contributed to 10.6% of traumatic encounters. This prompts further exploration into potential factors influencing the prevalence of traumatic incidents in this specific residential area, offering insight for further exploration and targeted healthcare interventions, and community-based trauma prevention strategies.

According to our findings, there were fluctuations in annual visits to the ED, starting with nine visits in 2015 and peaking at 85 visits in 2017. Factors contributing to these variations could include changes in refugee arrivals to the state, healthcare accessibility and community health initiatives. Notably, other than 2015, 2020 witnessed the fewest ED visits (35 total), potentially linked to the global pandemic and a heightened fear of hospitals during that period.

The residential distribution showed 88.4% of all ED visits were attributed to patients residing in Providence. Notably, the residential zones surrounding the major pediatric tertiary care center account for the highest concentration of patient visits. This can be seen in Figure 2. This phenomenon may be influenced by the possibility that a significant number of refugees reside in this area, or the possible impact of proximity to the major pediatric tertiary care hospital on healthcare utilization. Most reside around the tertiary care center, intentionally housed there by resettlement agencies to promote access to the resettlement agencies, medical care, and governmental agencies. As housing becomes more limited and unaffordable, we see a shift to areas north of the city.

LIMITATIONS

This study had several limitations. First, all the data was collected from one healthcare system; consequently, pediatric refugees who sought care at other institutions may have been missed. Second, refugee status was identified through documentation of a “refugee health exam” in their chart. Refugee children who did not have this documented in their chart would not have been captured within our data. Third, language spoken as a proxy for cultural background is an imperfect measure and may not accurately reflect a patient’s community, ethnicity, or migration history. Fourth, the overall sample size, particularly relating to mental health

encounters, was low; this limits our ability to make clear associations. Finally, there are challenges in interpreting mental health presentations in different populations. Mental health issues in children often manifest as somatic complaints and ED coding may reflect these physical symptoms rather than the psychological distress. As a result, the prevalence of mental health concerns in this population may be underrepresented in our findings.

CONCLUSION

This analysis of pediatric refugee ED visits in the state of Rhode Island shines a light on the complex dynamics involving demographic, linguistic, and geographic factors that influence ED utilization. The identified disparities among this population, particularly in mental health and trauma encounters, underscore the need for future research. This study identifies areas for further investigation to understand causal associations and contextual factors contributing to unique patterns of mental health and trauma encounters. This ongoing research will enhance our understanding of the distinctive healthcare needs of refugee children and inform the development of policies aimed at improving care delivery and fostering community-based health initiatives.

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