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ORIGINAL PAPER

Emergency Department and Primary Care Use by Refugees Compared to Non-refugee Controls

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Abstract

The U.S. grants asylum to 60,000–70,000 refugees yearly. However, little is known about their healthcare utilization practices. We examined data from emergency department (ED) and primary care (PC) visits of 694 refugees and 738 non-refugee controls over a 3 years period at a large academic medical center, comparing visit frequencies, Emergency Severity Index (ESI) scores, diagnoses, and dispositions. Refugees used emergency care services less frequently than the non-refugee controls (1.19 vs. 2.31, $p < 0.0001$) while there was no difference in their use of primary care services (8.45 vs. 9.07, $p = 0.18$). Non-English-speaking refugees were more likely to use the ED than English-speaking refugees (mean ED use in study period 1.50 visits vs. 0.73, $p < 0.0001$). Refugee patients utilized emergency services less often compared to controls. These results differ from previously studied refugee populations. Refugee-specific primary care services in this study population may reduce unnecessary ED use.

Keywords Refugee · Emergency department · Healthcare utilization · Primary care

Introduction

A refugee is defined as a person who is unable or unwilling to return to their home country because of a well-founded fear of persecution due to race, membership in a particular social group, political opinion, religion, or national origin [1]. In 2016, the UN reports that there were approximately 65.6 million people forcibly displaced by conflict worldwide. This is the largest number of refugees since the end of World War II, an increase of 50% compared to 5 years prior [1]. The majority of refugees flee to neighboring nations. Turkey was the largest host of refugees in 2016 with 2.9 million people. Some refugees go on to be resettled in higher-income nations. In 2016, approximately 189,300 refugees were resettled around the world through official means. The U.S. received 85,000 (45%) in FY 2016 [2].

While the physical, psychological, and logistical challenges facing refugees are studied, how refugees respond to these challenges is less understood. Little data exists on how refugees in the U.S. access primary and emergency care, how frequently they contact the healthcare system, why they access medical services, and if their use of healthcare resources differs from the rest of the population. To address these questions, we examined data from refugees and matched non-refugee controls in an academic family medicine clinic to examine health resource utilization practices, specifically emergency and primary care services. Understanding refugees' use of these services, which are often the gatekeepers for further access to medical resources, can provide valuable insights to guide future research, policy, and public health interventions.

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Methods

A retrospective chart review was conducted for refugees and matched non-refugee controls at a large academic family medicine practice. Data was extracted on emergency department (ED) and primary care (PC) visits, from July 2011 to July 2014.

Participants

We examined data from 694 refugees (children and adults) along with 738 age-and gender-matched non-refugee controls from the same family medicine clinic serving the same geographic area. Refugee patients for the study were identified from a database kept by the International Family Medicine Clinic (IFMC), a family medicine clinic within the University of Virginia Health System. The IFMC provides care for all refugees being resettled to Charlottesville, VA. The clinic has served more than 3000 patients over the last 15 years. Using clinical encounter reports generated by our EMR, we matched refugee patients with other family medicine clinic patients based on timing of last primary care (PC) visit during the study period by quarter, gender and age. We overmatched controls in anticipation of possible duplicates, and later removed all duplicate matches.

Patients were included in the study if they had at least one clinical encounter in their electronic medical record during the study period. Fifty-eight percent of refugees had arrived in Charlottesville prior to July 2011 while 42% had arrived during the study period (with the mean number of days since arrival of 758 days). Control patients lived in a similar geographic distribution for the entire study period.

This study was approved by the Institutional Review Board of the University of Virginia.

Data Collection

We collected demographic information including age, gender, country of origin, primary language spoken, and English fluency. Data from the ED and PC visits were extracted from the electronic medical record. All variables and outcome measures were selected prior to study initiation and analysis. Data collection was completed by the study investigators (MG, AN, SN) who were familiar with the study protocol and trained in the process of chart review and data collection. All data was entered into Excel spreadsheets (Microsoft; Seattle, WA).

Measures

Our main outcomes of interest were number of ED and PC visits during the study. For each ED visit, we collected data on mode of arrival, Emergency Severity Index (ESI) score (1 most urgent to 5 least urgent), disposition, if discharge instructions were followed (based on further appointments with primary care or specialty services within 30 days of ED visit), and encounter diagnoses (ICD9 codes). To facilitate meaningful statistical analysis, countries of origin were organized into geographical

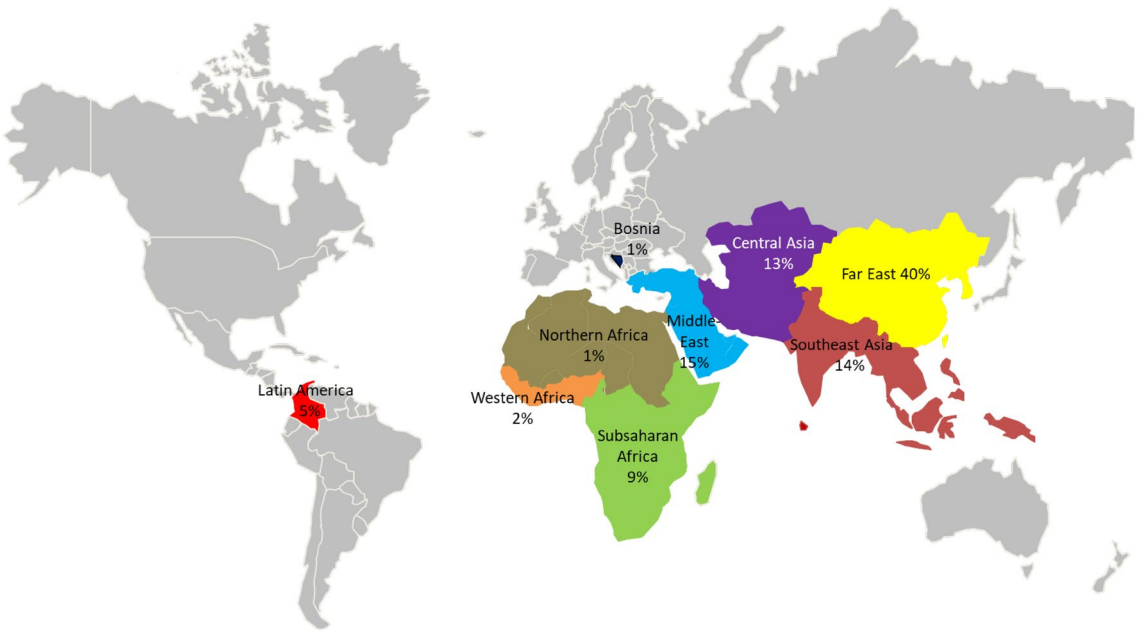

Fig. 1 Percentage of refugees seen during the study period by region

regions (Fig. 1) and ICD9 codes were organized into 16 broad categories of clinical diagnoses. We also created a variable accounting for the length of time a refugee was present during the study period, since refugees arrived at different times during the 3 years study period.

Analysis

We used SAS version 9.4 (SAS Institute; Cary, NC) to examine associations between predictor variables and outcomes. To compare population means, two-tailed *t* tests and linear regressions were performed. Chi square and ANOVA tests were used to compare frequency of observations between the two groups. Associations were taken as significant with p-values < 0.05.

Results

The mean age for refugees was 28.4 versus 29.9 years for controls. Refugees were 53% female versus 52% in the control population. Refugees came from 38 different countries and spoke 39 languages (Table 1; Fig. 1). There were significant differences in frequency of ED visits between refugees from different regions of the world (p = 0.028) (Supplementary Table 1). The race/ethnicities reported by our controls were as follows: 46% African American, 45% Caucasian, 6% other, 3% Asian and 3.7% Hispanic.

Compared to controls, refugees were significantly less likely to visit the ED during the study period (mean 1.19 vs. 2.31 visits, p < 0.0001) and were slightly less likely to visit their primary care provider (PCP), but this difference was not significant (mean 8.45 vs. 9.07 visits, p = 0.18) (Table 2). Refugees had a significantly smaller proportion of ED to PC visits (0.18 vs. 0.32, p < 0.0001) (Table 2). We used this ratio as a surrogate measure of appropriateness of ED usage, reasoning that the frequency of PC visits should rise proportionately to the number of ED visits for people with ready access to primary care services. Adult

Table 1 Patient demographics

	Refugees	Controls
Overall N	694	738
% Female	53	52
Mean age (years)	28.4	29.9
% Speaks English	18.7	99.9
	Percent of 694 refugees	
Countries of origin—top 5		
Bhutan/Nepal	39.2	
Iraq	13.0	
Myanmar/Burma	10.1	
Afghanistan	8.7	
Congo	4.5	
Language spoken		
Nepali	38.2	
Arabic	14.6	
Karen	6.3	
Burmese	5.8	
Dari	4.6	

Table 2 Emergency department and primary care visits, by refugee status[#]

	Refugees	Controls	p-value of regression
Mean emergency department visits in study period	1.19	2.31	*< 0.0001*
Mean primary care visits in study period	8.45	9.07	0.18
Proportion ED visits to PC visits in study period	0.18	0.32	*< 0.0001*

Italic values indicate statistical significance at p < 0.05

[#]Adjusted means from linear regression models controlling for time in the study

refugees had more PC visits than child refugees, and a smaller proportion of ED to PC visits (Table 3). There was no difference in the mean Emergency Severity Index (ESI) score, mode of arrival to the ED, or types of disposition from the ED (Table 4). Refugees were more likely to follow instructions when discharged from the ED (72.0 vs. 60.9%, OR 1.66, 95%CI 1.31–2.09, $p < 0.0001$). Controls were more likely to be seen in the ED for psychiatric, cardiac, non-traumatic musculoskeletal, and endocrine complaints compared to refugees (see Table 4).

Non-English-speaking refugees were more likely to use the ED than refugees who spoke English at the time of their arrival [mean ED use in study period 1.50 visits (95%CI 1.30–1.70) vs. 0.73 (95%CI 0.52–0.95), $p < 0.0001$]. They also had more PC visits during the study period [9.95 (95%CI 9.08–10.82) vs. 6.99 (95%CI 6.03–7.94), $p < 0.0001$], and were more likely to use the ED preferentially over primary care services [ED/PC visit mean 0.19 (95%CI 0.17–0.22) vs. 0.11 (95%CI 0.08–0.15), $p = 0.0003$].

After arrival in the U.S., timing to first use of the Emergency Department varied. For those refugees who arrived to the U.S. during the first year of our study period ($N = 173$), 56 patients had an ED visit in their first year (32%), 22 had their first ED visit in the second year after arrival (13%) and 3 patients had their first ED visit in their third year after arrival (2%) and the remainder ($N = 92$, 53%) did not have an ER visit during the study period. The mean time to first ED visit for this group was 9 months.

Discussion

Overall Health Resource Utilization

From previous research it is known that refugees will face multiple healthcare challenges once resettled in the U.S. In the midst of flight from conflict or political violence, refugees often experience profound physical and psychological trauma. Refugees are at higher risk for depression, anxiety and post-traumatic stress disorder compared to other immigrants [3–7]. Refugees also have a higher prevalence of infectious diseases such as tuberculosis, viral hepatitis, HIV, schistosomiasis and strongyloides [8–11]. Many of these diseases are uncommonly encountered in the U.S., and healthcare providers may lack experience in them. Refugees are also thrust into a complex foreign healthcare system and may face barriers such as language, cost, lack of services, mistrust of healthcare professionals, and lower priority of healthcare due to the need to fulfill more basic hierarchical needs [6, 12–14]. Health systems have made great strides in reducing cultural barriers through the provision of interpretation services and training in cultural competency. However given the wide array of languages and ethnic backgrounds, many refugees will continue to face challenges.

As far as we are aware, this study is the first of its kind in the U.S. to examine refugees' use of emergency and primary care resources compared to non-refugee patients. Previous studies from Canada, Australia, and the United Kingdom have examined refugee health resource utilization and described a trend toward higher overall utilization and higher ED visit frequency compared to the general population [15–18]. Kiss et al. examined the health services

Table 3 Emergency department and primary care visits, by refugee status, reported by gender and age group

	Female refugee	Male refugee	p-value female vs. male refugee	Female control	Male control	p-value female vs. male control
Emergency department visits in study period	1.30	0.94	*0.005*	2.54	2.17	0.24
Primary care visits in study period	9.02	6.74	*< 0.0001*	10.37	8.60	*0.004*
Proportion ED visits to PC visits in study period	0.19	0.16	0.29	0.33	0.31	0.75
	Child refugee (< 18 years)	Adult refugee	p-value child vs. adult refugee	Child control (< 18 years)	Adult control	p-value child vs. adult control
Emergency department visits in study period	1.24	1.06	0.17	1.94	2.54	0.08
Primary care visits in study period	6.48	8.84	*< 0.0001*	8.78	9.84	0.12
Proportion ED visits to PC visits in study period	0.23	0.14	*0.0004*	0.27	0.34	0.19

Italic values indicate statistical significance at $p < 0.05$

Adjusted means from linear regression models controlling for time in the study

Table 4 Characteristics of ED visits

Arrival type	Of all refugee ER visits (%)	Of all control ER visits (%)	p-value from chi-square
Walk in	84	83	0.9
EMS	15	16	
Police	1	1	
Aerotransport	0.1	0.2	
Arrival type	Of all refugee ER visits	Of all control ER visits	p-value from *t* test
ESI Severity Score			
Mean severity score for all ED visits (1 most urgent, 5 least urgent)	3.39	3.46	0.7
Arrival type	Of all refugee ER visits (%)	Of all control ER visits (%)	p-value from chi-square
Disposition			
Admit to floor	8	10	0.7
Admit to ICU	1	1	
Admit to OR	1	0.2	
Discharge home	31	43	
Follow up w/PCP	47	34	
Follow up w/subspecialty	12	12	
	Refugee	Control	p-value from *t* test
ICD9 diagnosis category[#]			
Psych	0.06	0.10	*0.03*
Neuro	0.12	0.14	0.49
EENT	0.05	0.04	0.46
URI	0.17	0.19	0.47
Dental	0.04	0.04	0.85
Chest/pulmonary	0.12	0.15	0.24
Cardiac	0.06	0.13	*0.005*
GI	0.15	0.15	0.71
Skin	0.07	0.06	0.35
Non-traumatic MSK	0.08	0.14	*0.009*
Traumatic MSK	0.14	0.18	0.15
OB/GYN	0.06	0.07	0.58
Toxicologic	0.02	0.007	0.19
Endocrine	0.05	0.09	*0.02*
Renal/genitourinary	0.08	0.07	0.55
Heme/Onc	0.03	0.02	0.22

Italic values indicate statistical significance at $p < 0.05$

[#]Mean ICD9 Diagnoses per ED visit

utilization of 2280 refugees in Canada over a 2 years time period and found that refugees were more likely to utilize general practitioner, ED, and hospital services compared with their matched non-refugee controls [15]. In a study from Australia, Correa-Velez et al. examined health resource utilization of patients from refugee *source* countries compared to the general population and found that ED and hospital admissions were higher in the refugee source country population [16]. A systematic review from Australia by Hadgkiss et al. also showed overall higher health resource utilization among asylum-seekers compared to the general population [17]. One prior U.S. study looked at the use of ED and PC services by refugee children but results were not compared to the general population [19].

In light of these studies we expected to find that our refugee patients were higher utilizers of healthcare resources, especially emergency services. Instead we found that while refugees tended to go to the ED with similar complaints, similar levels of acuity, and similar visit outcomes compared to controls, our refugee population was significantly

less likely overall to utilize healthcare resources. Moreover, we found that the refugee population preferentially used primary care resources compared to controls (lower ED to PC visit ratio).

One possible explanation for these differences in utilization is the different health system structures in these previously studied countries compared to the U.S. Specifically, each of the previously studied countries has a robust nationalized healthcare system while the healthcare system in the U.S. is more fractured, difficult to navigate, and rationed by ability to pay. In the U.S., refugees are eligible to receive state and federally sponsored healthcare. If refugees do not meet requirements for state Medicaid programs, they become eligible for the Refugee Medical Assistance Program (RMA) which is a federally supported program. RMA insurance covers healthcare costs for the first 8 months after arrival in the U.S. or after the approval of an asylum application. More recently the Affordable Care Act (ACA) has allowed refugees to participate in healthcare exchange marketplaces and to receive federal subsidies to purchase health insurance [20, 21], although it is not known how recent changes to the ACA will affect this. There are no definitive figures concerning health insurance coverage for resettled refugees in the U.S. at this time. One study by Yun et al. found that 49% of refugees were uninsured after the first year [8].

Lack of health insurance has been associated with reduced healthcare resource utilization, less routine and preventative care, presentation to health service providers with more advanced stages of disease, higher rates of avoidable hospitalizations, poorer health outcomes and higher propensity to seek care from an ED [22–29]. Differences in health system structure and need for insurance fundamentally change the accessibility of healthcare resources. Therefore, it is reasonable to believe that these differences change healthcare utilization behaviors of refugees and limit the generalizability of prior international studies to the U.S.

Another possible explanation for refugees' comparatively low health resource utilization may be underutilization. Previous studies have found that while refugees' healthcare needs tend to be high, many refugees do not receive this needed care [29, 30]. As noted before, refugee patients face multiple barriers to accessing care that may contribute to this disparity. Therefore, when compared to control populations our study findings may actually reflect this underutilization of important services by refugees as opposed to more "appropriate" care.

Primary Care Dedicated to Refugee Health

In contrast, refugees in our study have an established medical home at the International Family Medicine Clinic and may have better access to primary care, preventative resources, and social services than other populations of refugees around the world and the U.S [31]. All refugees resettled to Charlottesville, VA, are referred to the IFMC for their care, working closely with the local health department and refugee resettlement agency to coordinate care. The IFMC uses a model of a culturally competent healthcare with a large, interprofessional team [31]. These comprehensive services may reduce the need for ED resources for non-emergent medical complaints and could have affected the outcome of our study. Previous Canadian research showed that the presence of a Refugee and Migrant clinic at a particular medical center reduced use of the ED by refugee children compared to medical centers where no such refugee clinic existed [18]. Primary care provided in a setting familiar with the needs of those coming as refugees, including case management, care coordination, and cultural competency supports, may allow patients easier access to responsive care. The authors hypothesized that access to primary care specific to refugees may reduce ED utilization [18]. We tried to reduce the impact of this by choosing a control population that had similar access to primary care and social services as our study population but more intensive case management of the refugee patients likely influenced the results of our study.

ICD9 Diagnoses

Compared to refugees, we found that controls were more likely to visit the ED for cardiac, endocrine and non-traumatic musculoskeletal problems. Refugees may have a lower incidence of diagnosed chronic health problems than the general population, sometimes referred to as the "healthy migrant effect" [9]. Despite the reported higher incidence of psychiatric illness among refugees compared to the general U.S. population [5–8], our study found a lower frequency of mean psychiatric ED visits compared to controls. This may be due to a lower incidence of psychiatric illness amongst our refugee population, increased psychiatric resources available to refugees through the IFMC, or underutilization [30].

Follow-Up

Refugees in our study were more likely to follow ED disposition recommendations compared to controls. When told to follow up with their PCP or with a specialist, refugees were more likely to have completed appointments in the EMR for these services within 30 days of the original ED visit. Interestingly our rate of completed follow-up was similar to a previous study by Alarcon et al. in which 69% of refugees arriving to the U.S. who received PCP referrals completed these appointments [32]. It is unclear why refugees would be more likely to follow-up as directed within a reasonable time frame. One possible argument would be that refugees who become officially resettled in the U.S. are particularly well

suited or "used to" following through with official directions. A more likely explanation is that the IFMC has a dedicated nurse care coordinator who follows up with refugees after their ED visits, as well as other clinic staff who call refugee patients to remind them of their upcoming visits.

Language

There were limited differences between refugees from different regions with respect to the overall use of health resources, but there was a difference between those who spoke English at the time of their arrival in the U.S. and those who did not. English speaking refugees were lower utilizers of all healthcare resources compared to the non-English speaking refugees. Language differences are often cited as one of the main barriers to healthcare access. Several previous studies have implicated language barriers with increased use of the ED, longer length of stay, and increased ED cost [33–36], and many factors may contribute to these findings. Non-English speaking refugees are likely less acculturated to the U.S. and its healthcare system, making it more difficult to understand different healthcare resources. They likely also face challenges in scheduling outpatient visits, finding culturally specific information to address their healthcare needs, navigating health insurance coverage, and many other factors.

Timing of Resettlement

Refugee patients were more likely to have their first ED visit within the first year after arriving in the U.S. This again is likely due to the many challenges newly resettled refugees face when arriving to the US and navigating the healthcare system. These results suggest the need to educate patients on the appropriate use of the ED during their initial primary care visit, and to also make sure they know how to schedule follow-up PC visits (e.g., explaining with an interpreter how to call and request an interpreter in a few simple words, when they are making appointments).

Limitations

There are several limitations to our study. First, we only studied the healthcare utilization practices of a single refugee sample population at a single medical center. Though the demographics of our study participants mirror data on the demographics of admitted refugees since 1975 based on region of origin [37], the study population had a large proportion of refugees from one cultural group: Bhutanese of Nepali ethnicity. Therefore, the makeup of the studied refugee population differs from the makeup of the refugee population as a whole in the U.S. Populations seen in refugee clinics are constantly changing. As such, results may not be generalizable to different refugee populations at other medical centers. Additionally, while refugees were matched to controls based on age and gender, we did not control for other possibly confounding factors such as comorbidities, insurance status, health literacy or socioeconomic status which may have altered the outcomes. However, the controls were chosen from the same Family Medicine clinic at our institution, a traditionally low socioeconomic status, high Medicaid utilization population living in the same geographic area as the refugee population.

Only ED records from our institution were analyzed in this study and it is possible that visits to surrounding EDs or Urgent Care Centers during the study period were missed. However, the area surrounding the academic medical center is relatively rural and medically underserved. Only one other fully equipped emergency department exists within 30 miles of our medical center (community hospital, non-trauma center) and there are 5 urgent care offices in the surrounding area. We made the assumption that patients (both control and refugee) would be less likely to visit these other locations for emergency care as their primary care, interpreter and financial and social service connections are through the academic center.

New Contribution to the Literature

Our study results indicate that refugees (especially when provided with equal access to primary care and preventative resources) tend to be lower health resource utilizers compared to their control counterparts. Their reduced utilization may be due to more "appropriate" use of healthcare resources, or may represent underutilization produced by a multitude of barriers to access. While these results give insight into the utilization habits of this group of individuals, more work is needed to better define and address their specific healthcare needs. In this academic medical setting, all refugees resettled in this area are seen for primary healthcare in a centralized, coordinating International Family Medicine Clinic. This model may increase access to primary healthcare and reduce reliance on emergency services for healthcare. The findings from this study can provide valuable insight into the health seeking behaviors of refugees. This information can also guide hospitals, medical systems, and other institutions of public health in the development of resources and interventions to best serve this population.

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