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Health service utilization and access to medicines among Syrian refugee and host community children in Lebanon

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Abstract

Background: With over 500,000 Syrian refugee children in Lebanon, we undertook this study to assess unmet child health needs and health service utilization among Syrian refugees and affected host communities in Lebanon with the aim of informing humanitarian programming.

Methods: A cross-sectional survey of Syrian refugees and host communities in Lebanon was conducted using a two-stage cluster survey design with probability proportional to size sampling. The questionnaire focused on access to health services, including a module on care seeking for children.

Results: The care seeking rate was 74.2 % among refugee and 89.0 % among host community households with a child less than 18 years seeking medical care the last time it was needed. Refugee households most often sought care in primary health care centers (52.7 %), followed by pharmacies (22.2 %) and private clinics (17.8 %), whereas host community households most often sought care in private clinics (47.6 %) and primary health care centers (23.2 %). Among child care seekers, 95.2 % of refugee and 94.6 % of host community children were prescribed medication during the most recent visit, of which 92.7 and 97.3 %, respectively, obtained the medication. Overall, 66.0 % of refugee and 75.9 % of host community households reported out-of-pocket expenditures for either the consultation or prescribed medications at the most recent visit (refugee mean US$30.4; host community mean US$56.0).

Conclusions: Care seeking was significantly lower among refugees than the host community. Out-of-pocket payments were considerable for both groups, the majority of which were for medication, and cost was the primary barrier to both care seeking and attaining medications.

Keywords: Syria, Lebanon, Refugee, Host community, Humanitarian assistance, Children, Health services

Introduction

The influx of refugees fleeing war in Syria since early 2011 is illustrative of a growing trend in forced displacement towards settlement in urban areas and middle-income countries (Spiegel et al. 2010; Gutierres and Spiegel 2012). Humanitarian assistance efforts have adapted to meet this shift, replacing traditional camp-based assistance strategies to integrated care that is better suited to meet the unique needs of non-camp refugees. With Lebanon now hosting the highest number of refugees per capita in the world, the increased burden of providing care to more than 1.2 million Syrian refugees through the Lebanese health system carries immense costs for service delivery and strengthening health system capacity and infrastructure to meet the growing need (UNHCR 2015b). In contrast to other hosting countries in the region, Lebanon has not established formal refugee camps for Syrians (UNHCR 2015c). Assistance provided to Syrian refugees in Lebanon is based on a primary health care strategy wherein primary health care services are subsidized in existing health centers across the country and referrals for secondary and tertiary services are managed by a third-party private administrator (World Bank 2013; OCHA 2014; UNHCR 2013, 2015a).

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Among global displaced populations, the greatest mortality rates are found in children under 1 year and under 5 years of age (Toole and Waldman 1990, 1997; Guha-Sapir and Panhuis 2004). In the Syrian refugee context, children under the age of five account for 17.7 % of the refugee population and those under age 17 account for approximately half (51.5 %) of the population (UNHCR 2015c). This distribution poses even greater challenges to host countries given that mortality causes and disease burdens of displaced populations are often similar to populations with high child mortality rates. Prevalence of communicable diseases among displaced populations may be comparatively higher than rates observed both among the host country population and prior to the conflict (Moss et al. 2006; WHO 2015). In light of the ongoing crisis in Syria and ever-growing challenges in meeting the unique health needs of refugees in host countries, we undertook this study to assess the access to and utilization of health services among Syrian refugee children in non-camp settings in Lebanon.

Methods

A survey of Syrian refugees and Lebanese host communities was conducted in March and April 2014 to characterize health-seeking behaviors and health service access. A cluster design with probability proportional to size sampling was used to attain a nationally representative sample of Syrian refugees living outside of camps. Sample size was determined for key objectives based on the most conservative prevalence estimate of 50 %; calculations assumed 80 % power and a design effect of 2.0. The planned sample was increased from the minimum identified size of 900 refugee households to 1400 refugee households and 700 Lebanese host community households to provide increased precision of point estimates and additional power.

Given the concentration of Syrian refugees and the low cost of visiting many locations due to the country's small size, a 100 cluster × 21 household (14 Syrian refugee households and seven host community households) design was used. Probability proportional to size sampling using UNHCR registration data was used to assign clusters to cadastrals, assuming that non-registered refugees had similar residence patterns. Permission to survey in certain security-sensitive areas as planned could not be attained which necessitated a re-draw of 28 clusters assigned to 22 inaccessible cadastrals. Clusters were re-assigned to accessible areas using probability proportional to size sampling. The final cluster assignment included 35 clusters (35 %) in the North governorate, 34 clusters (34 %) in Bekaa governorate, 25 clusters (25 %) in Mount Lebanon governorate, four clusters (4 %) in Beirut governorate, and two clusters (2 %) in the South governorate (Fig. 1). Only two cadastrals in the South were accessible to the survey team; presenting data from only these locations was not sufficiently representative of the governorate and would violate cluster sampling assumptions, thus the two South governorate clusters were excluded from the analysis.

ARC GIS software was used to randomly allocate cluster start points within cadastrals. Coordinates in populated areas were used, and the nearest intersection to the start point, usually within a half kilometer, was used as the starting survey location. Teams were provided with coordinates, and satellite imagery maps, and were instructed to navigate to start points using mapping software such as Google Maps. At the start location, interviewer pairs were sent in different directions to locate households; they approached the nearest business likely to be used by refugees and asked to be referred to nearby Syrian households. Other key informants, notably community residents, were used when there were no nearby shops. When interviewers reached a household that consented to participate, the first interview in the cluster was conducted; upon completion, respondents were asked for a referral or introduction to the nearest Syrian household. This referral process was used until 14 Syrian refugee interviews were completed. Following each two completed interviews with Syrian refugee households, interviewers proceeded to the nearest Lebanese household and completed an interview. To improve representativeness and geographic coverage of the sample, no more than three households within the same apartment building were included.

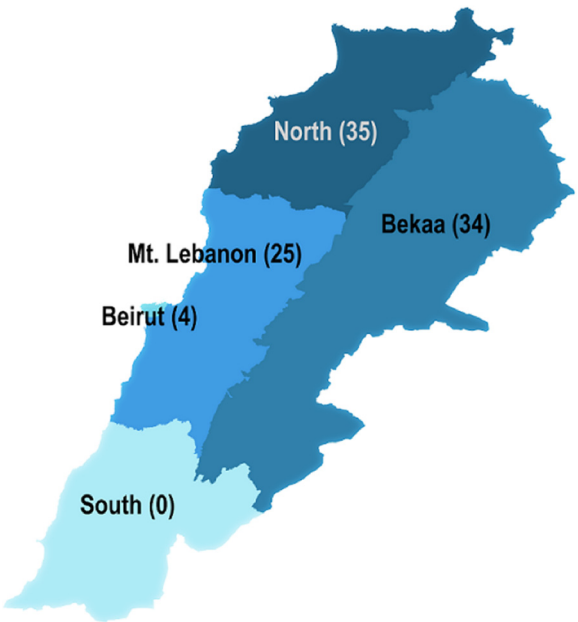

Fig. 1 Cluster allocation by governorate

To sample informal tented settlements (ITSs), the team estimated the size and area by walking transects and/or the perimeter. When necessary, the ITS was divided into sub-areas of similar size that were assigned to different interviewers. Interviewers located the middle of the settlement/area, spun a pen to randomly select a direction, and then walked in the indicated direction counting the number of shelters passed before reaching the edge of the settlement/area. A randomly selected number between one and the total number of shelters passed was used to identify the starting household. This process was repeated until the necessary number of interviews was complete; referrals were not requested in ITSs to reduce the potential for bias.

Only Syrian households arriving in Lebanon in 2011 or later were eligible to participate, as the aim was to capture the experiences of those displaced by the conflict; however, only one household arrived in Lebanon before 2011. Families with both Lebanese and Syrian members were considered Syrian refugees if they arrived in Lebanon in 2011 or later and lived in Syria prior to this time; families who had never lived in Syria were considered as Lebanese host community households for the survey.

The questionnaire was initially developed for use in Jordan and was adapted to the Lebanese context by consensus between partner organizations. The questionnaire focused on health service utilization, access and barriers to care, children's health, and chronic medical conditions. The Arabic translation of the Jordan questionnaire was adapted for Lebanon and a formal pilot test conducted. Interviewers received 2 days of classroom training that focused on the questionnaire, e-data collection, interview techniques, basic principles of human subjects' protections, and sampling after which two additional days of practical field training were held. To protect the anonymity of respondents, no unique identifiers were recorded and verbal consent was obtained. Interviews lasted between 30 and 60 min depending on the household size, number of children, and individuals with chronic medical conditions. Data was collected on tablets using the Magpi mobile data platform by DataDyne LLC (Washington, DC). Data was analyzed using Stata 13 (College Station, TX) and Tableau Desktop (Seattle, WA) using descriptive statistics and standard methods for comparison of means and proportions. Differences in household characteristics by care seeking in Lebanon were examined using chi-square and t test methods. Characteristics with statistical significance $p < 0.10$ were included in the adjusted logistic regression model. The Stata *'svy'* command was used to account for the cluster survey design so that standard errors of the point estimates and model coefficients were adjusted for survey design effects.

The study was approved by the Institutional Review Board at American University of Beirut. The Johns Hopkins Bloomberg School of Public Health Institutional Review Board also reviewed the protocol and determined that members of the JHSPH team were not involved in human subjects research because they did not have direct contact with participants or access to personal identifiers.

Results

A total of 2165 households were approached to participate. Of these, 1.9 % ($n = 40$) were not at home, 0.2 % ($n = 4$) were previously interviewed, 0.05 % ($n = 1$) was ineligible, and 2.7 % ($n = 58$) refused. The final sample included 2062 households (1376 Syrian refugee and 686 host Lebanese households), which equates to a response rate of 93.6 %. Overall, 66.6 % of refugee households and 28.1 % of host community households had at least one child 0–5 years of age; 69.0 % of refugee households and 48.5 % of host community households had at least one child 6–17 years of age. Children age 0–5 years and 6–17 years accounted for 31.0 and 32.0 %, respectively, of the refugee survey population and 9.5 and 22.1 % of the host community survey population, respectively.

Care seeking and health service utilization

Respondents were asked to report on the most recent time a child in their household, age 17 years or younger, needed medical care (Table 1). A sizeable proportion of both host community (62.4 %) and Syrian refugee households (70.0 %) reported a child needing medical care within the month preceding the survey. Care seeking was higher in the host community where 87.3 % of households reported medical attention was sought the last time a child needed care as compared to 79.4 % of Syrian refugee households ($p < 0.001$); there were no significant differences in the care seeking rate by region in either population ($p = 0.616$ and $p = 0.412$, respectively). Among the 25.7 % of Syrian refugee and 11 % of host community households that did not receive care for a child the last time it was needed, the primary reason was cost: 92 % of refugee households and 69.2 % of host community households reported they could not afford to seek medical services for the child. The most frequently reported other reason for not seeking care among both refugee and host community households was that the family deciding care was not needed (2.4 and 17.9 %, respectively).

Conditions for which care was sought were similar in both groups and are as follows: respiratory illness (60.8 % of refugees and 66.4 % of the host community), fever (8.4 % of refugees and 4.6 % of the host community), diarrhea (3.6 % of refugees and 9.2 % of the host community), skin problems (6.0 % of refugees and 3.1 %

Table 1 Health care seeking in Lebanon among Syrian refugees and Lebanese host community children

	Syrian refugees		Host community		Population comparison *p* value
	%	[95 CI]	%	[95 CI]	
Last time care was needed[a]	*n* = 1144		*n* = 378		
Less than 2 weeks ago	45.5	[41.9,49.1]	35.2	[29.9,40.8]	<0.001
2 weeks to <1 month ago	29.5	[26.4,32.7]	32.8	[28.5,37.5]	
1 month to <3 months ago	17.3	[14.9,20.0]	19.6	[15.4,24.5]	
3 months to <6 months ago	4.4	[3.3,5.8]	4.5	[2.8,7.1]	
6 months to <1 year ago	1.6	[1.0,2.4]	1.6	[0.6,4.0]	
More than 1 year ago	1.8	[1.1,3.0]	6.3	[4.1,9.7]	
Reason for most recent care needed[a]	*n* = 1123		*n* = 354		
Respiratory problem	61.1	[58.1,64.0]	60.5	[55.9,64.9]	0.371
Fever	8.1	[6.6,10.0]	7.6	[5.2,11.1]	
Diarrhea	5.0	[3.8,6.6]	8.5	[6.2,11.6]	
Skin problem	3.9	[2.9,5.2]	2.3	[1.1,4.4]	
Injury	3.7	[2.7,4.9]	4.0	[2.2,7.0]	
Ear problem	3.2	[2.3,4.4]	3.7	[2.2,6.2]	
Asthma	3.3	[2.4,4.6]	1.1	[0.4,3.0]	
Dental care	2.6	[1.8,3.7]	4.2	[2.6,6.9]	
Eye problem	1.5	[0.9,2.4]	2.0	[1.0,4.0]	
Behavioral/emotional problem	0.8	[0.4,1.6]	0.3	[0.0,2.0]	
Worms	0.3	[0.1,0.8]	0		
Other	6.6	[5.2,8.3]	5.9	[3.9,8.9]	
Received attention last time care was needed[a]	*n* = 1123		*n* = 354		
Yes, sought and received care	74.2	[70.2,77.8]	89.0	[84.9,92.0]	<0.001
Did not seek care	18.6	[15.8,21.8]	8.5	[5.9,11.9]	
Sought, but did not receive care	7.1	[5.4,9.4]	2.5	[1.2,5.4]	
Location of most recent care in Lebanon[b]					
Primary health care center	52.7	[48.1,57.2]	23.2	[18.1,29.1]	<0.001
Private clinic (cabinet)	17.8	[15.0,21.0]	47.6	[41.8,53.5]	
Hospital	5.6	[4.1,7.6]	12.7	[9.3,17.1]	
Pharmacy	22.2	[18.7,26.2]	14.9	[11.3,19.5]	
Other	1.7	[0.8,3.6]	1.6	[0.6,4.5]	
Facility type of most recent care[b]					
Primary/secondary/private provider	70.8	[66.7,74.7]	71.1	[65.7,76.0]	<0.001
Hospital	5.6	[4.1,7.6]	12.7	[9.3,17.1]	
Pharmacy or shop	23.5	[19.8,27.7]	16.2	[12.3,21.0]	
Reason for not receiving needed care[c]	*n* = 289		*n* = 39		
Could not afford provider costs	92.0	[87.1,95.2]	69.2	[54.5,80.9]	<0.001
Family decided care should not be sought	2.4	[1.1,5.5]	17.9	[9.0,32.6]	
No transportation/difficult to access	1.0	[0.1,7.2]	2.6	[0.4,16.0]	
Could not afford transportation costs	1.0	[0.3,3.2]	0		
Disliked long wait time on previous visit(s)	1.0	[0.3,3.3]	0		
Did not know where to go	0.7	[0.2,2.7]	0		
Appointment scheduled/still waiting	0.3	[0.0,2.5]	2.6	[0.4,16.0]	

Table 1 Health care seeking in Lebanon among Syrian refugees and Lebanese host community children *(Continued)*

Provider's equipment or drugs are inadequate	0.3	[0.0,2.5]	0	
Could not take time off work/other commitments	0		2.6	[0.3,16.7]
Security	0.3	[0.0,2.5]	0	
Other				

[a]As percent of all household index cases that needed care in Lebanon
[b]As percent of all household index cases that received care in Lebanon
[c]As percent of all household index cases that did not receive needed care in Lebanon

of the host community), and injury (3.9 % of refugees and 3.1 % of the host community) ($p = 0.371$). The conditions for which care was sought were similar across the regions (refugee $p = 0.792$; host community $p = 0.475$) but differed significantly by facility type ($p < 0.001$ for both groups) (Fig. 2).

Location of most recent care in Lebanon differed significantly between refugee and host community households. Among refugee households that sought care for a sick child, approximately half (53.0 %) went to a primary health care center (Table 1), 22.6 % sought care at pharmacies, 16.0 % at private clinics, and 5.4 % at hospitals. A significantly higher proportion of host community care seekers received care at private clinics (45.0 %), followed by primary health care centers (27.5 %), pharmacies (17.6 %), and hospitals (8.4 %). No statistically significant differences in care seeking location were observed by region in either population (refugee $p = 0.086$; host community $p = 0.452$).

Among child care seekers, a similar proportion of refugee and host community care seekers (95.2 and 94.6 %, respectively) were prescribed medication during the most recent visit (Table 2); no significant differences were observed by region in either group ($p = 0.962$ and $p = 0.974$, respectively). The proportion of host community children receiving a prescription did not vary significantly by sector type ($p = 0.222$); however, significant differences were observed among refugee children as follows: primary health care centers, 96.4 %; private clinics, 93.2 %; and hospitals, 83.0 % ($p < 0.001$). Of those prescribed medications, a significantly greater proportion of host community households (97.3 %) were able to obtain all prescribed medicines as compared to 92.7 % of refugee households ($p = 0.007$).

Spending on child health

Of the 1144 refugee and 378 host community families with sick children needing care identified in the survey, 833 (74.2 %) refugee households and 315 (89 %) host community households sought care or treatment for their child. Among these families, some incurred out-of-pocket costs and some did not. The average total cost per episode of illness among all 833 refugee families who sought care was $US30.4 (US$12 for consultations, US$18.4 for medications). The median cost per illness episode among refugee child care seekers, however, was US$19.9. No statistically significant differences in costs to refugees were observed by region ($p = 0.199$); however, total cost per illness episode varied significantly by type of facility where care was sought (US$77.2 for hospitals compared to US$48.1 for private clinics, and US$25.5 at primary health care centers; $p < 0.001$). Among the 315 host community child health care seekers, the average total cost per care episode was US$56 (US$25.5 for consultations and US$30.5 for medications) and the median total cost was US$41.1. As was observed in refugee care seekers, no statistically significant differences in costs to host communities were observed by region ($p = 0.075$); however, differences across facility types were statistically significant (US$126.2 for hospitals, US$57.5 for private clinics, and US$37.7 for primary health care centers; $p < 0.001$). Details about the total and component costs of treatment (consultations and medications) are provided in Tables 3 and 4 and Fig. 3.

Among the 833 refugee families who sought care or treatment for their sick child, 92.4 % ($n = 770$) reported any out-of-pocket payment (paying for either consultation, medication, or both, Table 3). Among only these refugee families who paid for consultations and/or medications, the average total payment was $US32.9 (US$ 13.0 for consultations, US$19.9 for medications). The median values of these payments were as follows: total cost, US$23.2; consultation cost, US$3.3; and medication cost, US$15.9. There were no statistically significant differences in costs across the three regions among these 770 refugee families ($p = 0.176$), but mean payment amount varied across facility types as follows: hospitals, US$86.4; private clinics, US$48.4; and primary health care centers, US$27.9 ($p < 0.001$). Among only the 303 host community families reporting any payment for consultations and/or medications, the average total payment was US$58.2 (US$26.5 for consultations and US$31.7 for medications) and the median total costs was US$43.1. There were no statistically significant differences in costs by region among these 303 families ($p = 0.057$), but costs varied across facility types as follows: hospitals, US$129.4; private clinics, US$58.7; and primary health care centers, US$39.9 ($p < 0.001$).

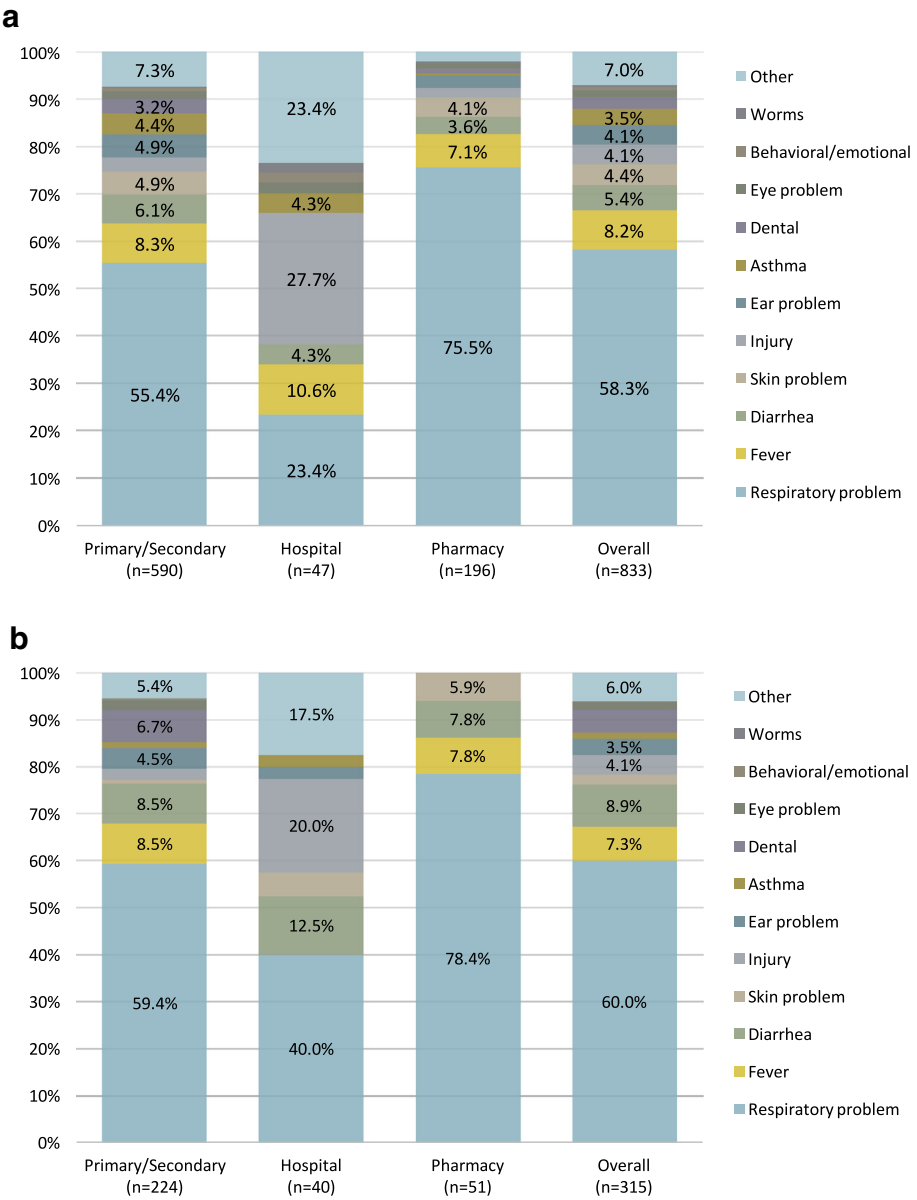

Fig 2 **a** Reasons for child care seeking by sector among Syrian refugees in Lebanon. **b** Reasons for child care seeking by sector among host communities

Among the 1144 refugee families who sought care or treatment for their sick child, 550 reported paying for consultation, regardless of whether or not they paid for medications (Table 3). Among these refugee families who paid for consultations, the average and median cost per consultation was US$18.1 and US$6.6, respectively. There were statistically significant differences across regions ($p = 0.049$) and types of facilities ($p < 0.001$) in the average consultation costs paid by these 550 refugee families. The average consultation cost was US$21.6 for refugees settled in Bekaa, US$19.9 for refugees settled in Beirut/Mount Lebanon, and US$14 for refugees settled in the North. The average consultation cost to refugees was US$70.3 at hospitals, US$25.7 at private clinics, and US$9.9 at primary health care centers.

Among the 378 host community families who sought care or treatment for their sick child, 239 reported paying for consultation, regardless of whether or not they paid for medications (Table 4). Among these host community families who paid for consultations, the average and median cost per consultation was US$33.6 and US$26.5, respectively. There were statistically significant differences across regions ($p = 0.032$) and types of facilities ($p < 0.001$) in the average consultation costs paid by these 239 host community families. The average consultation cost was

Table 2 Medication access among Syrian refugees and host community children in Lebanon

	Survey total		By region						
			Beirut/Mt. Lebanon		Bekaa		North		Regional comparison *p* value
	%	[95 CI]	%	[95 CI]	%	[95 CI]	%	[95 CI]	
Prescribed medication during most recent health facility visit									
Syrian refugees	*n* = 833		*n* = 234		*n* = 267		*n* = 332		
	95.2	[93.5,96.5]	94.9	[91.7,96.9]	95.5	[91.4,97.7]	95.2	[92.3,97.0]	0.974
Host community	*n* = 315		*n* = 86		*n* = 98		*n* = 131		
	94.6	[91.6,96.6]	94.2	[87.8,97.3]	94.9	[87.0,98.1]	94.7	[89.7,97.3]	0.962
Population comparison *p* value	0.691		0.772		0.845		0.825		
By facility type[a]									
Primary health care center									
Syrian refugees	96.4	[94.1,97.8]	96.3	[91.1,98.5]	96.8	[91.3,98.8]	96.0	[92.3,98.0]	0.932
Host community	97.3	[89.7,99.3]	93.3	[66.7,99.0]	100		97.2	[82.6,99.6]	0.465
Population comparison *p* value	0.685		0.510		0.443		0.738		
Private clinic									
Syrian refugees	93.2	[87.7,96.4]	93.6	[83.0,97.8]	100		86.8	[75.3,93.4]	0.025
Host community	92.7	[87.6,95.8]	93.6	[82.7,97.8]	90.9	[79.1,96.3]	93.2	[84.1,97.3]	0.849
Population comparison *p* value	0.848		1.000		0.029		0.252		
Hospital									
Syrian refugees	83	[70.3,90.9]	66.7	[38.3,86.6]	82.4	[59.3,93.7]	94.4	[72.8,99.1]	0.113
Host community	97.5	[84.4,99.6]	100		94.1	[69.4,99.1]	100		0.529
Population comparison *p* value	0.031		0.037		0.307		0.358		
Able to obtain all medications prescribed at most recent visit[b]									
Syrian refugees	*n* = 784		*n* = 220		*n* = 252		*n* = 312		
	92.7	[90.4,94.5]	92.3	[86.9,95.5]	92.9	[88.3,95.7]	92.9	[89.2,95.5]	0.962
Host community	*n* = 297		*n* = 81		*n* = 252		*n* = 124		
	97.3	[94.8,98.6]	100		95.7	[89.2,98.3]	96.8	[92.2,98.7]	0.183
Population comparison *p* value	0.007		0.043		0.378		0.140		
Reason for not obtaining medications[c]									
Syrian refugees	*n* = 57		*n* = 17		*n* = 18		*n* = 22		
Could not afford the medication	86.0	[73.1,93.3]	94.1	[69.2,99.1]	77.8	[57.1,90.2]	86.4	[56.2,96.9]	0.589
Medication out of stock at facility	12.3	[5.5,25.3]	5.9	[0.9,30.8]	16.7	[5.9,38.9]	13.6	[3.1,43.8]	
Symptoms improved	1.8	[0.2,11.5]	0		5.6	[0.8,29.5]	0		
Other	0		0		0		0		
Host community	*n* = 8		*n* = 0		*n* = 4		*n* = 4		
Could not afford the medication	87.5	[45.3,98.3]	Insufficient sample size for regional and population comparison						
Medication out of stock at facility	0								
Symptoms improved	0								
Other	12.5	[1.7,54.7]							

[a]As percent of household index cases that received care at this facility type
[b]As percent of household index cases prescribed medication
[c]As percent of household index cases that did not obtain prescribed medication

US$40.8 for those settled in Bekaa, US$36.3 for those settled in Beirut/Mount Lebanon, and US$26.1 for those settled in the North. The average consultation cost to host community child care seekers was US$86.5 at hospitals, US$29.3 at private clinics, and US$11.7 at primary health care centers.

Among the 1144 refugee families who sought care or treatment for their sick child, 667 reported paying for

Table 3 Out-of-pocket payments for consultation fees, medications, and health care visit in Lebanon among Syrian refugees (all costs presented in USD)

		Survey total		By region							By facility type							
				Beirut/Mt. Lebanon		Bekaa		North		*p* value	PHCC		Private clinic		Hospital		*p* value
		Point	95 CI	Point	95 CI	Point	95 CI	Point	95 CI		Point	95 CI	Point	95 CI	Point	95 CI	
Among all care seekers		*n* = 833		*n* = 234		*n* = 267		*n* = 332			*n* = 439		*n* = 148		*n* = 47		
Total costs	Median	19.9		22.6		21.9		18			18.6		43.1		66.3		
	Mean	30.4	[27.5,33.3]	30.4	[25.4,35.3]	34.9	[29.1,40.6]	26.9	[22.9,30.8]	0.199	25.5	[22.6,28.5]	48.1	[42.6,53.5]	77.2	[57.7,96.7]	<0.001
Consultation costs	Median	3.3		3.6		3.3		3			3.3		19.9		43.1		
	Mean	12	[10.0,14.0]	12.9	[9.0,16.7]	14.7	[10.8,18.7]	9.2	[6.6,11.7]	0.079	8.3	[6.5,10.1]	24.3	[20.8,27.8]	56.8	[40.6,73.0]	<0.001
Medication costs	Median	13.3		13.3		15.3		13.3			13.3		19.9		17.9		
	Mean	18.4	[17.0,19.9]	17.5	[15.0,20.0]	20.1	[17.4,22.8]	17.7	[15.4,20.0]	0.967	17.2	[15.3,19.1]	23.8	[20.1,27.5]	20.4	[13.6,27.2]	0.016
Among care seekers with any payment		*n* = 770		*n* = 221		*n* = 236		*n* = 313			*n* = 402		*n* = 147		*n* = 42		
Total costs	Median	23.2		23.2		25.2		20			19.9		43.1		76.3		
	Mean	32.9	[29.8,36.0]	32.2	[27.0,37.3]	39.4	[33.1,45.8]	28.5	[24.5,32.5]	0.176	27.9	[24.6,31.1]	48.4	[42.9,53.9]	86.4	[66.0,106.9]	<0.001
Consultation costs	Median	3.3		5.3		4.6		3.3			3.3		19.9		61.4		
	Mean	13	[10.8,15.2]	13.6	[9.6,17.6]	16.7	[12.3,21.1]	9.7	[7.0,12.4]	0.074	9.1	[7.1,11.0]	24.5	[20.9,28.0]	63.6	[47.0,80.2]	<0.001
Medication costs	Median	15.9		15.9		16.6		13.3			13.3		19.9		19.9		
	Mean	19.9	[18.4,21.5]	18.5	[16.0,21.1]	22.8	[19.8,25.7]	18.8	[16.5,21.1]	0.918	18.8	[16.7,20.9]	23.9	[20.2,27.6]	22.8	[15.0,30.7]	0.031
Among households paying for consultation		*n* = 550		*n* = 151		*n* = 182		*n* = 217			*n* = 370		*n* = 140		*n* = 38		
Consultation costs	Median	6.6		10		7.3		6.6			4.6		19.9		66.3		
	Mean	18.1	[15.3,21.0]	19.9	[14.8,25.1]	21.6	[16.3,27.0]	14	[10.1,17.9]	0.049	9.9	[7.8,11.9]	25.7	[22.0,29.4]	70.3	[53.5,87.1]	<0.001
Among households paying for medications		*n* = 667		*n* = 194		*n* = 205		*n* = 268			*n* = 331		*n* = 125		*n* = 30		
Medication costs	Median	16.6		16.6		19.9		16.6			16.6		23.2		28.2		
	Mean	23.0	[21.2,24.8]	21.1	[18.2,24.1]	26.2	[22.8,29.6]	22.0	[19.2,24.7]	0.861	22.8	[20.3,25.3]	28.2	[24.5,31.8]	32.0	[22.8,41.2]	0.006

Table 4 Out-of-pocket payments for consultation fees, medications, and health care visit in Lebanon among host Lebanese (all costs presented in USD)

		Survey total		By region						p value	By facility type						p value
				Beirut/Mt. Lebanon		Bekaa		North			PHCC		Private clinic		Hospital		
		Point	95 CI	Point	95 CI	Point	95 CI	Point	95 CI		Point	95 CI	Point	95 CI	Point	95 CI	
Among all care seekers		*n* = 315		*n* = 86		*n* = 98		*n* = 131			*n* = 73		*n* = 150		*n* = 40		
Total costs	Median	41.1		47.1		44.8		33			26.5		49.8		99.5		
	Mean	56.0	[49.5,62.6]	60.7	[45.6,75.8]	63.6	[50.7,76.4]	47.3	[40.6,54.1]	0.075	37.7	[27.9,47.4]	57.5	[51.7,63.3]	126.2	[97.4,155.0]	<0.001
Consultation costs	Median	16.6		21.6		19.9		10			6.6		26.5		58		
	Mean	25.5	[21.3,29.7]	28.7	[20.7,36.7]	31.2	[22.1,40.4]	19.1	[14.7,23.5]	0.022	10.0	[8.0,12.0]	27.0	[23.6,30.4]	80.0	[60.0,100.1]	<0.001
Medication costs	Median	21.2		23.2		22.2		19.9			16.6		23.2		33.2		
	Mean	30.5	[26.4,34.6]	32.0	[22.9,41.1]	32.3	[25.3,39.3]	28.2	[22.5,34.0]	0.449	27.7	[18.4,37.0]	30.5	[25.5,35.6]	46.2	[29.4,62.9]	0.078
Among care seekers with any payment		*n* = 303		*n* = 82		*n* = 95		*n* = 126			*n* = 69		*n* = 147		*n* = 39		
Total costs	Median	43.1		49.8		46.4		37			26.5		49.8		99.5		
	Mean	58.2	[51.5,64.9]	63.6	[48.7,78.6]	65.6	[52.2,78.9]	49.2	[42.1,56.3]	0.057	39.9	[29.7,50.0]	58.7	[52.9,64.4]	129.4	[100.7,158.2]	<0.001
Consultation costs	Median	19.9		26.5		19.9		11.6			6.6		26.5		66.3		
	Mean	26.5	[22.1,30.9]	30.1	[22.1,38.0]	32.2	[22.7,41.8]	19.9	[15.0,24.8]	0.019	10.6	[8.4,12.7]	27.5	[24.1,31.0]	82.1	[62.0,102.2]	<0.001
Medication costs	Median	23.2		23.2		23.2		20.6			16.6		23.2		33.2		
	Mean	31.7	[27.7,35.8]	33.6	[24.4,42.7]	33.3	[26.3,40.4]	29.4	[23.7,35.1]	0.404	29.3	[19.7,38.9]	31.2	[26.1,36.3]	47.4	[30.4,64.3]	0.097
Among households paying for consultation		*n* = 239		*n* = 68		*n* = 75		*n* = 96			*n* = 62		*n* = 138		*n* = 37		
Consultation costs	Median	26.5		33.2		33.2		19.9			8.3		26.5		66.3		
	Mean	33.6	[28.5,38.7]	36.3	[28.2,44.4]	40.8	[29.5,52.1]	26.1	[19.9,32.2]	0.032	11.7	[9.6,13.9]	29.3	[25.9,32.8]	86.5	[66.4,106.6]	<0.001
Among households paying for medications		*n* = 282		*n* = 80		*n* = 85		*n* = 117			*n* = 80		*n* = 85		*n* = 37		
Medication costs	Median	25.9		23.2		26.5		23.2			19.9		26.5		33.2		
	Mean	34.1	[29.6,38.6]	34.4	[25.0,43.8]	37.2	[28.8,45.7]	31.6	[25.5,37.7]	0.559	31.6	[21.4,41.8]	34.4	[29.0,39.9]	49.9	[32.6,67.2]	0.093

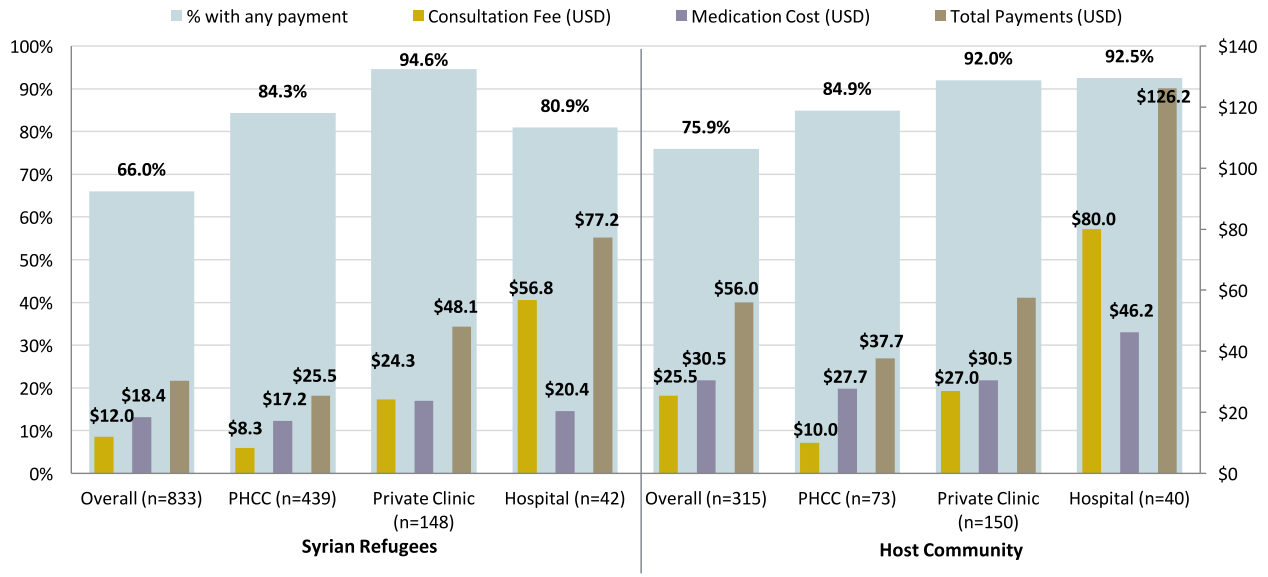

Fig 3 Out-of-pocket payments for children's health care among Syrian refugees and host communities in Lebanon

medications, regardless of whether or not they paid for a consultation (Table 3). Among these refugee families who paid for medications, the average cost per medication was $23.0 (median = $16.6). The differences in the average cost per medication (among refugee families who reported paying for medications) were not statistically significant across regions ($p = 0.861$) but did vary significantly across the three types of health facilities ($p = 0.006$) as follows: US$32.0 at hospitals, US$28.2 at private clinics, and US$22.8 at primary health care centers. Among the 378 host community families who sought care or treatment for their sick child, 282 reported paying for medications, regardless of whether or not they paid for a consultation (Table 4). Among host community refugee families who paid for medications, the average cost per medication was $34.1 (median = $25.9). The differences in the average cost per medication (among host community families who reported paying for medications) were not statistically significant across regions ($p = 0.559$) or across the three types of health facilities ($p = 0.093$).

Discussion

The average number of 4.16 health care visits per refugee child per year, estimated based on reported care seeking among the refugee survey sample, is slightly higher than the SPHERE standard recommendation of 2 to 4 visits and indicates good access to care for sick children among Syrian refugees in Lebanon. Extrapolating from survey findings, we estimate that the increased burden on the Lebanese health system from sick child visits among Syrian refugees alone is more than 1,800,000 health visits per year including over 900,000 in the primary health care centers and over 350,000 in private clinics (Fig. 4). Given limited recent data on the Lebanese population and the fact that our sample of Lebanese households is representative of affected host communities and not the entire Lebanese population, extrapolation of the burden of Lebanese care visits would not provide reliable figures.

The most frequently reported cause of childhood illness among both Syrian refugees and host communities in Lebanon was respiratory problems, followed by fever, diarrhea, and skin problems. In light of this, it is possible that a number of care visits are not for severe illness. Additional community outreach and education that focuses on appropriate homecare options and decision making on when to seek care for minor illnesses could alleviate some of the caseload presenting at primary care facilities.

Injury was also a common reason for seeking care accounting for 4.1 % of consultations in both refugee and host community populations. Among those presenting to hospitals for care, 27.7 % of refugee and 20.0 % of host community consultations were for injuries. Previous studies have found both burns and falls to be common among conflict-affected populations and refugees (O'Carrol 2015; Lafta et al. 2015). Given the poor living conditions of most refugees in Lebanon, particularly those in informal tented settlements, a similar pattern of unintentional injuries occurring in and around the home is likely. More information should be sought to better understand the causes of childhood injuries in this population in order to design appropriate interventions.

Both refugee and host community households reported relatively good access to needed child health care in Lebanon; however, health care was less accessible for

4.16	**Average # of visits per child**	**By Careseeking Reason**	
2,305,365	**Total annual visits**	1,344,028	Respiratory Problem
By Age Group		189,040	Fever
1,150,377	0-4 years	124,490	Diarrhea
689,304	5-9 years	101,436	Skin Problems
465,684	6-17 years	94,520	Injury
By Location of Care		451,852	Others
1,214,928	Primary Health Care Center	**By Facility Type**	
410,355	Private Clinic (Cabinet)	1,632,199	Primary/Secondary
64,421	Hospital	129,100	Hospital
255,384	Pharmacy	541,761	Pharmacy/Shop
360,278	Other	2,305	Others

*Likely a underestimate because figures are exclusive of referrals

NOTE: Non-careseking is not accounted for in projections

Fig 4 Annual health service utilization projections for Syrian refugee children in Lebanon*

Syrian refugees than for the Lebanese host community. Overall, approximately one quarter of refugee children did not receive needed care or medicines, rates which were significantly higher than those observed for the Lebanese host community (11 %). Of these children not receiving needed care, a small proportion sought but did not receive care, accounting for 18.6 % of refugee and 8.5 % of host community children reporting needing care in Lebanon.

As with those that did not seek care the last time it was needed, the majority of households that sought but did not receive child health services cited cost as the barrier. More than half (66.0 %) of refugee families and nearly 80 % of host community families with sick children report paying either consultation or medication costs at an average cost of about US$30.4 and US$56.0 per illness episode, respectively. Out-of-pocket payments averaged US$33 and US$59, respectively, among refugee and host community families who reported incurring any payment. Given current funding shortfalls, it is essential to address the question of whether or not the observed level of health care access will remain for refugees and the Lebanese host community. Health promotion programs aimed at improving health-seeking behavior and knowledge of home treatment for non-severe conditions such as upper respiratory infections may aid in decreasing the burden faced by families in caring for sick children.

A sizeable proportion (22.2 %) of refugee care seekers received care directly at pharmacies rather than first seeking consultation with primary or secondary health provider. This may be an indication that refugees are attempting to bypass facility care in order to lower out-of-pocket expenses by avoiding payment of consultation fees. Significant differences in reason for needing care by facility type ($p = 0.009$) indicate different patterns in facility utilization by health concern among refugees. The most notable difference in reason for care was observed among those receiving care directly at pharmacies where 75.5 % sought care for respiratory problems and 7.1 % sought care for fever. This differed from primary/secondary providers and hospitals where only 55.4 and 23.4 % of care was received for respiratory problems, respectively. Presumably, many of the respiratory problem and fever cases that presented at pharmacies were not perceived as severe and could be managed at home, a distinction which is important for both refugees in terms of reduced out-of-pocket payments and the health system because of the lower consultation burden when minor illnesses are managed at home.

Compared to other facility types, hospital utilization among refugees was primarily for injuries (27.7 %) with smaller proportions of care received for respiratory problems (23.4 %) and a host of other health problems including renal problems (6.5 %) and blood problems such as anemia (6.5 %). Such trends indicate a relatively high level of rational care seeking, indicating greater proportions of patients seeking care for conditions requiring complex treatments at more advanced facility types such as hospitals while less severe illnesses are predominantly treated using primary level care centers or pharmacies. Out-of-pocket costs to care seekers in private clinics and hospitals are significantly greater than primary health care centers and pharmacies, owing to the lack of consultation costs at pharmacies and subsidized care provided for refugees at primary health care centers. As such, more rational care seeking at primary health care centers or pharmacies could reduce out-of-pocket spending and, in turn, financial strain on refugee and affect host community households.

Limitations

With respect to sampling, reliance on UNHCR registration data may have resulted in sampling bias if the geographic distribution of registered and unregistered

households differed. Reallocation of clusters in areas controlled by militarily and political factions where permission to conduct the survey was not secured, specifically in the South, Southern suburbs of Beirut, and northern areas of Bekaa, resulted in large area of the country being excluded. The survey coverage area included only 53 % of registered Syrian refugees and thus is not representative of the entire Syrian refugee population in Lebanon. The within-cluster referral process presents the potential for bias, as respondents may not have always referred to the nearest household; referral procedures and small clusters size may have attenuated within-cluster similarities and the associated design effect. Replacement sampling, which was done for logistical purposes, could have contributed to bias if there were systematic differences between households with no one home compared with those interviewed. Additionally, the Lebanese host community sample was selected using a neighborhood approach and is reflective of those communities hosting the greatest number of refugees. As such, findings on the Lebanese host community population should not be generalized to the Lebanese population. Finally, interviews were conducted by Lebanese, which could have resulted in a higher refusal rate or influenced refugee responses to certain questions such as income.

Conclusions

Care seeking for Syrian refugee children was significantly lower than for Lebanese children in affected Lebanese host communities. Out-of-pocket payments were considerable for both groups, with medication costs averaging more than consultation fees, and cost was the primary reason for not seeking care and not attaining prescribed medications. While average out-of-pocket payments were lower for refugees than the host community, they are a sizeable expense given the limited income and humanitarian assistance received by most refugee households. The concern with high out-of-pocket payments is expected to persist given current shortfalls in humanitarian assistance funding and gradual declines in financial resources of refugee households that occur over extended periods of displacement. Training for providers on rational prescribing behavior and use of generic medicines could be an effective and low cost approach to reducing out-of-pocket expenditures while maintaining quality of care.

Given the size of the refugee population in Lebanon, this level of health service utilization has resulted in an immense burden on the health system, particularly in primary health care centers which are where refugees most often seek care for children (El-Jardali et al 2014; Refaat and Mohanna 2013). Public health education activities emphasizing home management of illness and self-care could help to better rationalize care seeking, reduce out-of-pocket expenditures, and reduce unnecessary visits to health facilities. Ongoing and expanded support to the primary health care system is required to reduce user fees, the cost of essential medications, and ensure adequate accessibility to and quality of care for both refugees and the Lebanese host community.

Abbreviations

ITS, informal tented settlement; UNHCR, United Nations High Commissioner for Refugees

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

SD designed the study with support from the study team; EL and BH led the survey implementation and data collection with support from MW and the study team; EL led the data analysis and preparation of the manuscript with support from SD; MW contributed to interpretation of study findings and participated with selected members of the study team, in critical review of the manuscript. All authors read and approved the final manuscript.

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