Syrian Refugee Access to Care Study;
Medical Service Need among Post-Emergency Syrian Refugees in Duhok Governorate, Kurdistan Region, Iraq

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a. Abstract

Background: As a result of the recent conflict in Syria, the surrounding nations of Iraq, Turkey, Jordan, and Lebanon have been burdened with a bourgeoning population of refugees. A network of United Nations agencies and non-government organizations (NGOs) have provided care for the sick and injured in the refugee camps along the Syrian border regions throughout this period. However, little information is available about the current medical service needs in refugee camps such as Domiz, in the northern region of Iraq, where the population is now well above the number originally intended during design of the UNHCR camp (UNHCR Sitrep, 2013). The number of refugees crossing from Syria to Iraq at the Sahela border has continued to increase throughout the latter half of 2013 (UNHCR Sitrep, 2013).

Methods: A survey of 300 Syrian refugee households in Domiz camp, 300 households of Syrian refugees living in an area within 20km of Domiz camp, and 300 households of Iraqis living in an area within 20km of Domiz camp was conducted. A stratified random sample of households in Domiz camp and a systematic random sample of the households in the non-camp surrounding area was performed by investigators from August 24th-September 1st, 2013 using a Centers for Disease Control and Prevention (CDC) working group questionnaire, which matched survey research questions to refugee health standards and benchmarks. Key informants were used during piloting of the questionnaire to further develop the survey prior to survey implementation. Teams of interviewers, consisting of one man and one woman, were recruited one week prior to study roll-out and provided three days of training, which included practice scenarios and piloting of the survey. Teams then gathered data from selected households in the areas of assignment (camp or non-camp).

Results: Region of origin, family size, and other demographic features varied between Syrian Domiz camp, Syrian non-camp, and Iraqi comparison groups. Family size among Syrians in Domiz camp was smaller than in the non-camp Syrian and Iraqi comparison groups. Refugees from areas of Syria further from the Iraqi location of study, including Damascus, Homs, and

Aleppo, were more likely to be in the camp setting than in the surrounding area. The majority of both camp and non-camp Syrian refugees cited mental health services as most-needed in their respective settings. The adult and elderly segments of the camp population reported being in better overall health than similarly-aged Syrian non-camp refugee and Iraqi comparison groups. Households in Domiz camp reported a greater number of and more recent medical care visits than those living outside of the camp. Domiz camp residents reported that these medical visits were sought at either a small clinic or provided in the home by community health workers. Medical services were reported by Domiz camp and non-camp Syrians to be of worse quality than services prior to the conflict and displacement from Syria. A larger proportion of Domiz camp Syrian refugees reported difficulties accessing medications than non-camp Syrian refugees, while a larger proportion of non-camp Syrians reported difficulty being able to afford medical services. Both groups of Syrian refugees stated medical care was too far from their location, service wait times were excessive, and quality of care was lacking, both in terms of medical provider knowledge and attitude. Among children < 5 years of age, diarrheal and respiratory illnesses were much more common in Domiz camp than in either comparison group. A larger proportion of children <5 years of age living in Domiz camp also were lacking several key vaccinations when compared to children in the non-camp Syrian and Iraqi groups, as well as vaccination standards. Among women of reproductive age (15-49 years), a larger proportion of women in Domiz camp reported current pregnancies at the time of interview than in the comparison groups. A larger proportion of women 15-49 years of age in Domiz camp alsoreported difficulty accessing reproductive health services, including skilled obstetric providers and prenatal care, than women in either comparison group.

Conclusions: The medical service access and need is great, and these needs vary among groups included in the study. Providing access to medications and the high costs associated with the provision of medical services, including mental health services, the treatment of chronic medical conditions, and specialty services will continue to be programmatic challenges for humanitarian aid providers assisting the displaced Syrian population in Iraq. These findings suggest that different intervention modalities may be needed for Syrian refugees depending on location of residence. Among non-camp Syrian refugees, additional financial support, perhaps in the form

of medical service vouchers, is needed to address current monetary barriers to accessing medical services. These findings suggest that MMR, DTP, and rotavirus vaccine campaigns targeting children in Domiz camp should be a priority. These findings also suggest that Domiz camp interventions that target and mitigate current health issues reported by Syrian camp respondents are needed. A larger proportion of Syrian refugees re the urgent need for mental health professionals to treat displaced Syrians in both the Domiz camp and in the surrounding area. Reassessment strategies for monitoring Syrian refugee access to medical services is needed at set intervals for both camp and non-camp Syrian refugees in order to determine if interventions are efficacious.

b. Background

As a result of nationwide armed conflict, refugees continue to stream across Syria's borders and into the neighboring countries at a rate far surpassing expectations. Resources in receiving nations, including Turkey, Lebanon, Jordan, and Iraq, continue to be strained, even with the assistance of large, multinational agencies and non-governmental organizations (NGOs). Healthcare services are one resource that is affected by the conflict, as healthcare providers, supply chains, and facilities become overburdened, both within Syria and in neighboring nations.

A recent assessment in northern Syria identified lack of healthcare services as the greatest risk Syrians face aside from direct conflict-related injuries (Bossoni, 2013). As of spring 2013, roughly 70% of Syrian medical professionals had fled the country and 60% of healthcare facilities in opposition-controlled areas of northern Syria had been damaged or destroyed (Bossoni, 2013). Healthcare providers in Syria have reported outbreaks of communicable diseases, such as hepatitis A, typhoid fever, measles, and leishmaniasis, since the onset of the conflict in 2011(Bossoni, 2013). Treatment of chronic medical conditions, such as diabetes mellitus, hypertension, and cancer, is now largely unavailable in much of Syria (Bossoni, 2013).

The true amount of medical need for Syrian refugees displaced outside of Syria has remained unknown.

The healthcare infrastructure of neighboring countries receiving Syrian refugees has been overburdened, unable to handle the demand, and there has been little or no targeting of services based on needs assessed at the facility level. The Kurdistan region, in the north of Iraq, has received the majority of the Syrian refugees. A systematic assessment of the medical service needs of Syrian refugees has yet to be performed in either the refugee camp or non-camp setting.

In total, there are now roughly 200,000 Syrian refugees in Iraq with at least 4,000 refugees continuing to cross the northern Sehela border daily when assessed in August, 2013 (UNHCR, 2013). UNICEF estimates that there has been more a than ten-fold increase in the number of Syrian child refugees – from 70,000 to more than 1 million – in less than one year (UNICEF, 2013). The majority of these refugees have been transported to various locations in the Duhok, Erbil, and Suleimaniyah governorates of Iraqi Kurdistan. As of summer, 2013, nine new refugee camps and transit centers had been constructed to accommodate most of the Syrians displaced in Iraqi Kurdistan(UNHCR SitRep, 2013). The new camps have very little infrastructure for providing essential medical services, as the United Nations High Commission on Refugees (UNHCR), Medicins Sans Frontiers (MSF), and other in-camp service entities are setting up operations. All sectors of refugee services are currently overwhelmed as humanitarian agencies struggle to provide water and sanitation, health, education and other services that are urgently required (UNHCR, 2013).

The oldest and largest existing Syrian refugee camp in Iraq, Domiz, was declared critically overcrowded in August 2013, when the camp population totaled 57,000 (UNHCR, 2013). Overpopulation of this camp, originally designed for 35,000 persons, has resulted in gaps in essential services, including medical services. Further, refugee medical needs have not been assessed, making it difficult, if not impossible, to provide Syrian refugees access to essential services. This lack of information presented an unmet need to assess health care at the camp and regional level.

c. Methods

In order to measure need and access to medical services, investigators carried out a cross-sectional study of Syrian refugees in Domiz camp and in two comparison groups: a group of Syrian refugees living in an area within 20km of Domiz camp and a group of Iraqi nationals living within 20km of Domiz camp. Key specific, measurable, and easily answerable research questions of interest to all humanitarian organizations were addressed in a survey administered at Domiz camp, the largest Syrian refugee camp in Iraq. Survey questions included general demographic information, household member service access, healthcare seeking behaviors among household members during the prior 30 days, current use and sources of medications, prevalence of high-risk behaviors, including tobacco and alcohol use, and prevalence of chronic medical conditions amongst all household members.

Other survey questions assessed information about services for the elderly (persons over 50 years of age), including access to care, mobility services, and mental health. Pediatric (under 5 years of age) survey questions addressed immunization coverage, incidence of diarrheal disease, and prevalence of acute respiratory infection. The diarrheal illness question used the World Health Organization (WHO) case definition of three events of watery diarrhea within a 24-hour period in the 30 days preceding the interview. Respiratory illness questions used multiple indicator cluster survey (MICS6) template. All survey questions assessed core research questions and linked data to existing refugee health indicators. Indicators that have historically not met standards in the refugee context have been chosen for assessment in this study.

All interview staff were fluent in Arabic, Kurdish, and English. Training of staff and piloting of the survey questionnaire were performed in English prior to staff deployment. Training consisted of three eight-hour training modules. Interview staff were then grouped by location of respondent site (Domiz camp, non-camp Syrian, Iraqi) and sent to the field in teams of two. The staff member with a higher degree of English language fluency served as the ‘recorder’ during on-site interviews, while the staff member with a higher degree of fluency in Arabic served as the ‘interviewer’ during on-site interviews.

A notice of confidentiality was read to all survey participants and verbal informed consent was obtained by interview staff prior to all interviews. Consent was obtained from the head of household, spouse, or a surrogate household member who stated she/he would function as head of household. Participants were made aware of privacy procedures, including assurance that no unique identifiers would be gathered and all information would be kept confidential. No incentives were provided to study participants.

A 'household' as defined as a unit that ate together in the same dwelling, had lived as a family unit for greater than four weeks, and had a separate entrance from the road/walking path or a separate apartment entrance.

The interviewers listed all current household members by age and sex. Study participants were asked about general household information, elder care, and medical service needs. High-risk behaviors were assessed, including the use of tobacco products and alcohol consumption, to the extent feasible. Study participants also were asked to report diarrhea and respiratory illness for children <5 years of age within 30 days of interview. Respondents were also asked for the child's vaccination completion status at the time of interview. Reproductive health needs for all women 15-49 years of age were assessed, including access to prenatal services, availability of obstetric providers, and amount of infant services available.

Interview teams were separated into three location-specific groups; each group surveyed 300 households. In Domiz camp, staff utilized stratified random sampling to ensure equal representation of sample households across camp areas, which were organized in a grid pattern and by date of refugee arrival. UNHCR Domiz mapping tools were used to assist study supervisors. A representative sample was acquired from all five areas of the main camp, as well as two additional locations within the camp perimeter.

For the Syrian refugee non-camp group, systematic random sampling was conducted using telephone numbers from an NGO-provided list for two-thirds of non-camp participants.

Stratified random sampling was performed in Var City, a community consisting of mainly non-camp Syrian refugees 10km from Domiz camp, for the collection of the remaining one-third of non-camp Syrian group surveys. On-site stratified random sampling of Var City was used to ensure validity of Syrian non-camp group sample.

In the Iraqi comparison group, interview teams conducted systematic sampling of every 6th dwelling in the following villages surrounding Domiz camp: Sumer, Shariya, Domiz City, and Muaska.

For all three groups, the interviewer team randomly selected a household from a designated street, alley, or path. All teams then proceeded to every 6th dwelling until ten households were surveyed. If a dwelling was vacant, it was skipped and not repeated if the interview team returned down the same street, alley, or path. Study sites were chosen to balance the need for group-specific data while taking into account safety of field staff.

Data entry was performed by Duhok Department of Health staff. 10% of questionnaire data were assessed for data accuracy by supervisors to ensure correct survey input. Data entry and analysis were performed using STATA 12, SPSS, and Microsoft Excel 2010. Binary data from differing groups were summarized using sample proportions, and confidence intervals were constructed using the Wilson score interval with continuity correction. This method of confidence interval calculation was used regardless of cell counts to ensure a conservative estimate of findings. Fisher's exact test was used to assess the significance of observed differences between groups for each variable of interest. For variables that contained multiple respondents per household, group differences were encoded as model coefficients in logistic regression models and fitted using generalized estimating equations. This allowed for proper accounting of intra-cluster correlation of respondents nested within households. For the assessment of potential risk factors that were Syrian refugee-specific, camp and non-camp Syrians were compared, excluding the Iraqi comparison group, using Fisher's exact test. All tests were two-sided and conducted at a confidence level 95%.

The quality of medical care was assessed for the periods before displacement and at the time of interview for both Domiz camp and non-camp Syrian refugees. Multiple logistic regression analysis with a binary outcome variable titled 'worse care' and primary exposure variable of interest 'camp' assessed the discrepancy in patient quality of care by location (Domiz camp or non-camp Syrian Refugee). For the 'worse care' outcome of interest, additional multivariable logistic regression models were used to examine differences in care quality between camp and non-camp Syrian refugees. Education level, used in this analysis as a proxy for socioeconomic status, was added into the model as a potential confounding variable. Interaction was assessed using cross products and was not statistically significant. After adjusting for confounding and correlation among individuals in the same household, the odds of worse care among Domiz camp refugees were 30% greater than among non-camp Syrians, although this difference was not statistically significant (OR 1.3: 95% CI: 0.8, 1.6).

IRB Approval was obtained from Faculty of Medical Sciences at the University of Duhok, Duhok Governorate, Kurdistan, Iraq. The IRB determined that no human subjects conflicts arose from cross-sectional data collection that does not collect any personal identifier information. The Syrian Access To Care Study methodology was subsequently vetted and approved by senior WHO Iraq staff prior to study implementation. All members of the study steering committee were fully aware of the roles and responsibilities of interview staff, study randomization, confidentiality, and opt-out policy for study participants.

d. Results

Altogether, 904 household surveys were completed. The households consisted of 5,120 members. In total, 1173 households visited, including 21 refusals and 248 vacant dwellings.

There were significant demographic differences between Syrians in the camp, Syrians outside the camp, and the local Iraqi population. Mean family size in Domiz camp was smaller than in both the non-camp Syrian and Iraqi comparison groups (5.2 in Domiz camp, 5.6 for non-camp Syrian, 6.4 for Iraqi) (table 1). Many refugees had come from the neighboring areas of Syria, including Qamishly and Hasakah Syria (table 1). However, refugees from regions of Syria that are further away, including Damascus, Homs, and Aleppo, were more likely to now be in the camp than in the surrounding area. The mean time of displacement in Iraqi Kurdistan for both groups of Syrians was roughly nine months (table 1). The ratio of men to women in all three groups was very similar, with slightly more men overall (52-55%) than women(45-48%)(table 1).

The majority of Domiz camp participants 5-49 years of age reported being in better health overall compared to non-camp Syrian and Iraqis. Among the population ≥50 years of age, 50.6% of Domiz camp participants reported being in good health, compared to 37.4% and 43.6%, respectively among the non-camp Syrians and the Iraqi comparison group. Respondents ≥50 years of age in the Domiz camp also were less likely to report having difficulty with mobility (e.g. walking for short distances and up inclines). Chronic mental health conditions, defined for the purposes of this study as difficulty remembering or concentrating, were reported significantly less often in the camp setting than among either comparison group (table 3).

Individuals in Domiz camp reported a greater number and higher frequency of medical care visits during the 30 days preceding the interview than those living outside of the camp. A larger proportion of refugees in the Domiz camp reported having accessed medical services at a small clinic or in the home from a community health worker than respondents in the Syrian non-camp

and Iraqi comparison groups, who reported receiving a much higher proportion of medical services at large local hospitals.

The majority of the Iraqi group respondents cited a need for oncology services (55%). In contrast, a larger proportion of Syrian refugees in the Domiz camp group (25%) and in the non-camp Syrian group (24%) reported a need for mental health services than Iraqi comparison group (table 4).

The majority of Domiz camp and non-camp Syrians reported that the quality of medical care in Iraq was worse at the time of interview than before they had migrated from their Syrian region of origin (66% of residents in camp, 61% of non-camp residents) (table 6). Among Syrian refugees who stated that their care was worse in Iraq, a higher proportion of Domiz camp than non-camp respondents cited a lack of access to medication as the primary reason why medical care was worse (52% camp versus 34% non-camp). In contrast, a greater proportion of non-camp Syrians cited the expense of medical services as the primary reason medical care was worse in Iraq than in Syria prior to forced migration (26% of non-camp versus 6% in camp). Poor provider attitude and poor quality-of-care inside and outside the camp were also mentioned as reasons why the quality of care was worse in Iraq than in Syria. Holding education constant, the odds of reporting overall worse care were 30% higher among the Domiz camp refugees than amongst non-camp refugees (OR 1.3: 95% CI: 0.8, 1.6), although this difference was not statistically significant; both camp and non-camp refugees stated that overall care was worse in Iraq than in the region of Syria from which they migrated (table 6).

The prevalence of reported chronic medical conditions was low in all three groups interviewed (table 7). Only 2% of Domiz camp and 5% of non-camp Syrians reported taking daily medication for diabetes. Similarly, 2% of Domiz camp and 11% of non-camp Syrians reported taking daily medication for hypertension. However, both groups of Syrian refugees reported difficulty in accessing the medications needed to treat their chronic conditions and that they had been taking prior to their forced migration from Syria. Fewer Syrian refugees reported smoking

of cigarettes or Shisha (pipe-tobacco) than the Iraqi comparison group (30% of adult Syrian study participants vs. 59% of local adult Iraqis)(table 7).

There was a greater need for medical services for children <5 years of age in the camp setting than among either comparison group. The reported incidence of diarrheal illness within the 30 days prior to interview among children <5 years of age in Domiz camp was twice that among non-camp Syrian refugee children, and nearly six times that in the Iraqi comparison group (table 7). There were no significant differences in the treatment provided to children <5 years of age with diarrheal illness in Domiz camp and in the non-camp settings. Acute respiratory illnesses during the 30 days prior to interview were also more common in Domiz camp, with nearly twice as many children in the camp setting having reported a respiratory illness compared with children in the comparison groups. Children under the age of five in the camp setting were also more likely to be lacking key immunizations, including measles, mumps, and rubella (MMR), diphtheria, tetanus, and pertussis (DTP), oral polio vaccine (OPV), rotavirus vaccine, and tuberculosis vaccine (BCG) (table 8).

Women in Domiz camp also were in greater need of reproductive health services than non-camp Syrian and Iraqi women. A larger proportion of women in Domiz camp were pregnant (11%) than non-camp Syrian (9%) or Iraqi (6%) women, but access to pregnancy care was lacking. Most pregnant women in the camp setting had received at least one prenatal care visit for their current pregnancy, but pregnant women in Domiz camp had fewer prenatal visits than either the non-camp Syrian or Iraqi women. Skilled healthcare providers were available to assist with the birth of a child for nearly all study participants across all groups, but there was significantly less baby food available in the camp setting than in either comparison group setting.

e. Discussion

While the demographic features of those surveyed were similar, we found significant differences in access to services and quality of care between Domiz camp Syrians, non-camp Syrians, and Iraqis living within 20km of Domiz camp. Medical procedures and high costs associated with the appropriate management of mental illness and chronic medical conditions, as well as specialty services will remain key challenges for the displaced Syrian population. A significantly greater proportion of Domiz camp and non-camp Syrians requested mental health services than the in the Iraqi comparison group respondents. It is likely that this increased need for mental health services is directly related to the effects of violence and forced migration. These findings demonstrate the urgent need for mental health professionals to treat displaced Syrians in both the Domiz camp and in the surrounding area.

In the households of Domiz camp and non-camp Syrians, the majority of participants perceived medical care currently available to be worse than they had available in Syria to displacement. While those in the camp were more concerned about access to medications, a larger proportion of Syrians living outside of the camp cited the expense of medical services as a barrier to seeking care. Both groups stated that the available medical care was too far from where they lived, that their medical service wait times were excessive, and that the quality of care was poor, as measured by medical provider knowledge and attitudes.

The findings reported here do not suggest a large burden of chronic medical conditions among either the Syrian refugees or the local Iraqi population, most likely reflecting the relatively young mean age of the study participants (21.3). It is possible that elderly Syrians were more likely to have stayed in Syria because of the difficulties of travel, but if a substantial number in this age group have migrated to Iraqi Kurdistan, a separate survey targeting the elderly may be warranted.

Rates of reported illness among children were much higher in the camp setting than in either comparison group. Children <5 years of age in the camp had a higher incidence of reported

diarrheal illness than those in either comparison group. Children <5 years of age in Domiz camp also were substantially less likely to have received routine infant immunizations than children in either comparison group. With the onset of winter approaching, the disparity in vaccine coverage, combined with cramped conditions in the camp is a cause for concern. These findings suggest that MMR, DTP, and rotavirus vaccine campaigns targeting children in Domiz camp should be a priority. A substantial disparity also exists in the availability of reproductive health service: significantly fewer women in the camp reported having access to obstetrical services than women in both the non-camp Syrian and Iraqi comparison groups. It should be noted that we found a significantly higher proportion of women in Domiz camp were pregnant at the time of interview, emphasizing the need for obstetric, prenatal, and neonatal services, medications, and skilled healthcare providers. We also found little-to-no access to family planning services in Domiz camp. Combined with a significantly lower availability of skilled reproductive health providers in the camp, this lack of services may result in increased maternal and infant mortality.

Our findings suggest that there is a substantial need for healthcare providers in Domiz camp, including healthcare providers who specialize in mental health, pediatrics, and reproductive health. Among non-camp Syrians, cash grants or expansion of subsidized care, or universal access to a standardized package of health services that includes appropriate levels of care, would be particularly beneficial to those of low socioeconomic-status. Our findings also suggest that there are gaps in the monitoring and evaluation the health of Syrian refugees, both in Domiz camp and the surrounding area. These findings suggest that in Domiz camp, health information system integration, as well as consistent application of referral procedures, would facilitate healthcare provider coordination and provide much needed information for health service planning. Effective targeting of resources by host governments and the international community is essential if the health of the Syrian refugee population is to be maintained over an extended period of displacement in Iraq.

Study Limitations

Non-response is the main limitation of our findings, as a survey was used as the primary means of data collection. However, the overall response rate was very high among the Syrian refugees in Domiz Camp, the Syrian refugees in communities surrounding Domiz Camp, and among Iraqis in the communities surrounding Domiz Camp.

Medical history accuracy was also a concern for the investigators, as medical records were not available, making confirmation of self-reported conditions impossible. Completion of vaccination histories was also difficult to confirm, as vaccination cards were often left in Syria.

Culturally sensitive subjects, including alcohol consumption, tobacco use, and need for certain reproductive health services may not be have been reported accurately.

f. References

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g. Tables and Graphs

Table 1: General Participant Information (n=4815)

Mean Time Displaced	**Mean**	**95% CI**	**Range**				
Mean time displaced in Iraq from Syria	8.84 Months	(8.31, 9.38)	0-24 months				
Age							
	Syrian in camp(n=1526)		**Syrian Non Camp(n=1401)**		**Iraqi (n=1388)**		
	Age (years)	95% CI	Age (years)	95% CI	Age (years)	95% CI	p-value
Mean Age in Years	21.7	(20.8, 22.5)	22.2	(21.4, 23.1)	24.5	(23.7, 25.3)	
0-4	12.5%	(10.8, 14.4)	14.4%	(12.7, 16.3)	10.2%	(8.8, 11.6)	<0.01
5-18	35.1%	(32.6, 37.8)	31.7%	(29.4, 34.2)	33.4%	(31.3, 35.6)	0.16
19-49	45.2%	(42.6, 48.0)	46.1%	(43.6, 48.7)	46.1%	(43.6, 48.7)	0.86
≥50	7.0%	(5.8, 8.5)	7.7%	(6.4, 9.2)	10.2%	(8.9, 11.7)	<.01
Sex							
Male(%)	54.9	(52.1, 57.5)	51.6	(48.9, 54.2)	53.8	(51.5, 56.1)	0.21
Female(%)	45.1	(42.5, 47.8)	48.4	(45.8, 51.0)	46.1	(43.9, 48.4)	0.21
Average Household Size							
	Size	95% CI	Size	95% CI	Size	95% CI	
Mean household size	5.2	(4.9, 5.4)	5.6	(5.2, 5.7)	6.4	(6.1, 6.7)	
Syrian Refugee Region of Origin							
	Syrian in camp		**Syrian Non Camp**				
	Percent(%)	95% CI	Percent(%)	95% CI	Percent(%)	95% CI	p-value
Dera'a	1.3	(0.5, 3.4)	2.3	(1.1, 4.7)	-	-	.54
Damascus	25.8	(21.2, 31.1)	17.1	(13.3, 21.7)	-	-	.01
Homs	0.7	(0.2, 2.4)	0.7	(0.2, 2.4)	-	-	1.00
Aleppo	2.0	(0.9, 4.3)	9.5	(6.7, 13.4)	-	-	<.01
Idlib	0.3	(0.1, 1.9)	0.3	(0.1, 1.8)	-	-	1.00
Effrin	2.0	(0.9, 4.3)	5.3	(3.3, 8.4)	-	-	.05
Hassake	26.5	(21.8, 31.8)	30.3	(25.4, 35.6)	-	-	.32
Qamishly	40.6	(35.2, 46.3)	33.2	(28.2, 38.7)	-	-	.06

Table 2: Participant Highest Level of Education Achieved (n=4815)

Highest Level of Education Achieved							
	Percent(%)	95% CI	Percent(%)	95% CI	Percent(%)	95% CI	p-value
Primary	64.2	(58.6,69.4)	52.6	(47.0, 58.1)	57.0	(51.4, 62.5)	.01
Secondary	26.4	(21.7, 31.7)	33.5	(28.5, 39.0)	25.5	(20.8, 30.7)	.059
Vocational/Technical	5.0	(3.1, 8.1)	4.6	(2.8, 7.6)	9.1	(6.3, 12.9)	.052
University	4.3	(2.5, 7.3)	9.2	(6.4, 13.0)	8.4	(5.7, 12.1)	.04

Table 3: Participant General Medical Condition of adults over age 50 (n=494)

	Syrian in camp (n=77)		Syrian Non Camp (n=253)		Iraqi (n=164)		
	Percent(%)	95% CI	Percent(%)	95% CI	Percent(%)	95% CI	p-value
Health Status							
Good physical health	50.6	(39.7, 61.5)	37.4	(29.4, 46.2)	43.6	(36.3, 51.3)	.18
Moderately physically impaired	33.8	(24.2, 44.9)	48.0	(39.3, 56.7)	40.0	(32.8, 47.6)	.13
Severely physically impaired	13.0	(7.2, 22.3)	11.4	(6.9, 18.2)	14.5	(10.0, 20.7)	.75
Totally physically impaired	2.6	(0.7, 9.0)	3.3	(1.3, 8.1)	1.8	(0.6, 5.2)	.68
Mobility: difficulty climbing stairs or hills	21.5	(13.4, 31.5)	39.3	(31.1, 48.2)	34.1	(27.1, 41.7)	.02
Mental Health: difficulty remembering or concentrating	10.5	(5.4, 19.4)	22.8	(16.3, 30.9)	23.0	(17.3, 30.0)	.05

Table 4: Participant-Reported Medical Service Deficiencies by Service Type (n=4815)

	Syrian in camp(n=1526)		Syrian Non Camp(n=1401)		Iraqi (n=1388)		
	Percent(%)	95% CI	Percent(%)	95% CI	Percent(%)	95% CI	p-value
Type of Medical Services Needed	38.8	(33.4, 44.4)	44.7	(39.1, 50.4)	48.2	(42.3, 54.1)	.07
Mental Health Care	25.0	(18.7, 34.5)	23.7	(17.2, 31.6)	10.4	(6.3, 16.6)	<.01
Reproductive Health Services	23.3	(16.5, 31.7)	21.4	(15.2, 29.1)	7.4	(4.0, 13.1)	<.01
Surgical Care	12.9	(8.0, 20.2)	23.7	(17.2, 31.6)	19.2	(13.5, 26.7)	.09
Oncology Services	6.9	(3.5, 13.0)	15.3	(10.1, 22.4)	54.8	(46.4, 63.0)	<.01
Chronic Health Condition Services	23.3	(16.5, 31.7)	21.4	(17.2, 31.6)	10.4	(6.3, 16.7)	.02
Mobility Services	4.3	(1.8, 9.7)	3.8	(1.6, 8.6)	0.0		.03

Table 5: Medical Services: Length of time since last visit and location of visit (n=4815)

	Syrian in camp(n=1526)		Syrian Non Camp(n=1401)		Iraqi (n=1388)	
	Percent	95% CI	Percent(%)	95% CI	Percent(%)	95% CI
Medical care ≤30 days	22.9	(20.2, 25.6)	19.2	(16.5, 21.8)	23.1	(20.4, 25.7)
If >30 days, months since last visit						
1-3 months	69.3	(65.3, 73.4)	70.9	(65.9, 75.9)	70.8	(67.3, 74.2)
4-6 months	19.9	(16.5, 23.3)	21.0	(16.4, 25.7)	22.3	(19.2, 25.5)
7-12 months	9.5	(6.8, 12.1)	8.1	(5.8, 10.4)	6.6	(4.8, 8.5)
>1 year	1.3	(0.5, 2.1)	0.0		0.3	(0.0, 0.6)
Reason for recent healthcare visit						
New Illness	68.3	(63.2, 73.4)	58.0	(51.0, 64.9)	57.1	(51.4, 62.8)
Follow-up	30.5	(25.5, 35.6)	37.0	(30.3, 43.7)	37.9	(32.2, 43.6)
Medication Refill	0.9	(0.0, 1.8)	1.9	(0.3, 3.6)	4.7	(2.1, 7.4)
Other	0.3	(0.0, 0.9)	3.1	(1.0, 5.2)	0.2	(0.0, 7.0)
Recent healthcare visit location						
Hospital	41.7	(34.8, 48.6)	72.4	(65.5, 79.3)	89.2	(84.4, 94.0)
Community Health Worker/ Home visi	14.3	(9.0, 19.6)	4.0	(1.3, 6.7)	2.8	(1.1, 4.5)
Small Clinic	43.1	(35.9, 50.4)	23.2	(16.5, 29.9)	8.0	(3.3, 12.6)
Did not seek care	0.9	(0.0, 2.1)	0.4	(0.0, 1.2)	0.0	

Table 6: Medical Services: Quality of Care of Recent Visit (n=4815)

Quality of Care at recent visit							
	Syrian in camp (n=1526)		**Syrian Non Camp (n=1401)**		**Iraqi (n=1388)**		
	Percent(%)	95% CI	Percent(%)	95% CI	Percent(%)	95% CI	p-value
Worse than Syrian region of origin	65.4	(59.1, 71.7)	61.8	(54.5, 69.3)	-	-	.47
Same as Syrian region of origin	21.6	(16.2, 27.1)	22.0	(15.9, 28.1)	-	-	.93
Better than Syrian region of origin	13.0	(8.5, 17.4)	16.1	(10.4, 21.9)	-	-	.38
Reason care is better					-	-	
Good care	54.5	(40.3, 68.7)	90.5	(83.1, 97.9)	-	-	<.01
Solved problem	30.4	(17.7, 43.1)	35.1	(19.8, 50.3)	-	-	0.64
Reason care is worse					-	-	
Long wait	16.0	(10.6, 21.4)	12.6	(7.3, 18.0)	-	-	0.40
Too expensive	6.1	(2.9, 9.4)	26.3	(19.2, 33.4)	-	-	<.01
Lack of medication	52.3	(44.9, 59.7)	34.3	(26.6, 41.9)	-	-	<.01
Poor medical knowledge	58.9	(51.4, 66.3_	42.2	(34.3, 50.1)	-	-	<.01
Too far away	10.0	(5.1, 14.8)	8.1	(4.1, 12.1)	-	-	.56
Poor attitude	31.5	(24.4,38.7)	32.7	(24.8, 40.6)	-	-	.83

Table 7: Use of Medications for Chronic Medical Conditions and High-Risk Behaviors (n=4815)

	Syrian in camp(n=1526)		Syrian Non Camp(n=1401)		Iraqi (n=1388)		
	Percent (%)	95% CI	Percent (%)	95% CI	Percent (%)	95% CI	p-value
Chronic illness Medication							
Diabetes	2.0	(0.4, 3.6)	5.0	(2.1, 7.9)	1.6	(0.8, 2.3)	<.01
Hypertension	1.9	(1.0, 2.7)	11.1	(6.9, 15.2)	2.3	(1.6, 3.0)	<.01
Kidney disease	1.0	(0.5, 1.6)	6.2	(3.3, 9.1)	2.8	(1.9, 3.6)	<.01
Cancer	0.2	(0.0, 0.4)	1.2	(0.0, 2.3)	1.1	(0.2, 2.0)	.04
Hepatitis	0.6	(0.0, 1.5)	2.1	(0.6, 3.6)	0.2	(0.0, 0.5)	<.01
Respiratory illness	0.4	(0.0, 0.8)	3.5	(1.4, 5.5)	0.6	(0.2, 0.9)	<.01
Seizures	0.3	(0.0, 0.6)	0.6	(0.0, 1.4)	0.9	(0.5, 1.4)	.15
Still taking same or similar chronic illness medication prescribed in Syria	3.7	(1.7, 5.8)	16.9	(9.1, 24.7)	-	-	<.01
Reason not taking Medication					-	-	
Not available	60.3	(47.0, 73.7)	36.1	(23.3, 48.9)	-	-	.01
Too expensive	34.5	(21.2, 47.7)	56.9	(43.8, 70.1)	-	-	.02
Do not need	1.7	(0.0, 5.1)	4.2	(0.0, 10.2)	-	-	.48
Special equipment	1.0	(0.1, 1.8)	4.2	(1.9, 6.5)	-	-	.01
Smoking habits							
Daily	27.3	(22.0, 32.7)	18.9	(15.7, 22.1)	23.6	(10.1, 37.1)	.02
Less than daily	2.1	(0.9, 3.4)	3.1	(1.4, 4.8)	36.1	(18.2, 54.0)	<.01
Not at all	70.5	(65.2, 75.9)	78.0	(74.7, 81.4)	40.3	(21.5, 59.1)	<.01
Alcohol Consumption							
No alcohol	49.6	(44.6, 54.7)	38.3	(32.7, 44.0)	10.5	(8.2, 12.9)	<.01
1-4 drinks per week	1.7	(1.0, 2.4)	1.4	(0.8, 2.1)	0.6	(0.2, 0.9)	.02
5-9 drinks per week	48.7	(43.7, 53.6)	60.3	(54.7, 65.8)	88.9	(86.5, 91.3)	<.01

Table 8: Health Conditions of children <5 years of age (n=634)

	Syrian in camp (n=217)		Syrian Non Camp (n=230)		Iraqi (n=187)		
	Percent(%)	95% CI	Percent(%)	95% CI	Percent(%)	95% CI	p-value
Diarrheal illness within 30 days of interview	60.3	(53.6, 66.6)	29.1	(23.6, 35.3)	11.3	(6.75, 16.6)	<.01
Diarrhea Treatment Provided by Skilled HealthWorker	76.6	(68.9, 82.9)	73.9	(62.5, 82.8)	66.7	(47.8, 81.3)	.55
Type of Treatment Provided							
Pill	6.5	(3.2, 12.8)	2.0	(0.4, 10.5)	0.0		.45
Injection	8.3	(4.4, 15.1)	16.0	(8.3, 28.5)	11.8	(3.3, 34.5)	.33
Oral Medication (includin ORT)	80.6	(72.1, 87.0)	82.0	(69.2, 90.2)	88.2	(65.7, 96.7)	.87
Other	4.6	(2.0, 10.4)	0.0		0.0		.28
Respiratory Illness within 30 days of interview	40.2	(33.8, 47.0)	20.0	(15.3, 25.7)	21.7	(16.3, 28.2)	<.01
Lower Respiratory Tract Infection (LRTI) (MICS6 Case Definition)	36.5	(27.0, 47.1)	42.0	(29.4, 55.8)	35.1	(21.9, 51.2)	.78
Upper Respiratory Tract Infection (URTI) (MICS6 Case Definition)	24.7	(16.8, 34.9)	24.0	(14.3, 37.4)	48.6	(33.4, 64.1)	.02
LRTI & URTI	38.8	(29.2, 49.4)	28.0	(17.5, 41.7)	16.2	(7.7, 31.1)	.04
Other	0.0		6.0	(2.1, 16.2)	0.0		.03
Sought treatment for Respiratory Infection	66.7	(56.1, 75.8)	85.4	(72.8, 92.7)	83.8	(68.9, 92.3)	.03
Received treatment for Respiratory Infection	69.0	(58.5, 77.9)	91.7	(80.0, 96.7)	85.7	(70.6, 93.7)	<.01
Antibiotic Pill/Syrup	80.7	(68.6, 88.9)	66.7	(51.5, 79.0)	77.4	(60.2, 88.6)	.28
Antibiotic Injection	10.5	(4.9, 21.1)	9.7	(3.8, 22.5)	4.0	(0.7, 19.5)	.62
Antimalarial	5.3	(1.8, 14.4)	0.0	-	0.0	-	03
Paracetamol/Panadol	12.3	(6.1, 23.2)	21.9	(12.0, 36.7)	4.0	(0.7, 19.5)	.14
Aspirin	1.7	(0.31, 9.3)	0.0	-	0.0	-	1.0
Ibuprofen	0.0		7.3	(2.5, 19.4)	4.0	(0.7, 19.5)	.10
Other	16.1	(8.7, 27.8)	9.7	(3.8, 22.5)	4.3	(0.8, 21.0)	.36
Don't know	8.9	(3.9, 19.2)	19.5	(10.2, 24.0)	4.3	(0.8, 21.0)	.16

Table 9: Childhood Immunizations (children <5 years of age) (n=634)

	Syrian in camp (n=393)		**Syrian Non camp (n=432)**		**Iraqi (n=518)**		
	Percent(%)	95% CI	Percent(%)	95% CI	Percent(%)	95% CI	p-value
Received any Vaccinations (unspecified)	96.5	(93.0, 98.3)	96.9	(93.7, 98.5)	97.9	(94.0, 99.3)	.78
Measles, Mumps, Rubella (MMR)	64.4	(57.6, 70.6)	88.1	(81.1, 92.8)	88.1	(82.4, 92.1)	<.01
Diptheria, Tetanus, Pertussis (DTP)	57.5	(50.4, 64.3)	85.0	(76.1, 91.0)	92.1	(87.2, 95.2)	<.01
Rotavirus	56.9	(49.9, 63.7)	85.3	(75.6, 91.6)	83.4	(77.2, 88.2)	<.01
Hepatitis B	86.1	(80.6, 90.3)	88.2	(79.7, 93.5)	96.6	(92.9, 98.4)	<.01
Oral Polio	92.8	(88.5, 95.6)	97.4	(93.5, 99.0)	98.9	(96.0, 99.7)	<.01
BCG (Tuberculosis)	95.2	(91.4, 97.4)	99.3	(96.3, 99.9)	99.4	(96.9, 99.9)	<.01

Table 10: Prenatal Health Services (n=1229)

	Syrian in camp (n=393)		Syrian Non camp (n=432)		Iraqi (n=518)		
	Percent (%)	95% CI	Percent (%)	95% CI	Percent (%)	95% CI	p-value
Currently Pregnant	11.3	(8.4, 15.1)	9.4	(6.8, 12.7)	6.5	(4.6, 9.0)	.04
Location of Services Related to Current Pregnancy							
Hospital	32.4	(19.6, 48.5)	60.5	(44.7, 74.4)	80.0	(62.7, 90.5)	<.01
CHW / Home care	16.2	(7.7, 31.1)	0.0		3.3	(0.6, 16.7)	<.01
Small clinic	48.6	(33.4, 64.1)	18.4	(6.3, 33.4)	6.7	(1.8, 21.3)	<.01
No Services	2.7	(0.5, 13.8)	21.1	(11.1, 36.3)	10.0	(3.5, 25.6)	.04
Number of Prenatal Visits							
0 Visits	0.0		12.1	(4.8, 27.3)	3.8	(0.7, 18.9)	.05
1 Visit	27.8	(15.8, 44.0)	30.3	(17.4, 47.3)	11.5	(4.0, 29.0)	.21
2 Visits	30.6	(18.0, 46.9)	18.2	(8.6, 34.4)	15.4	(6.2, 33.5)	.35
3 Visits	25.0	(13.8, 41.1)	12.1	(4.8, 27.3)	15.4	(6.2, 33.5)	.37
≥4 Visits	16.7	(7.9, 31.9)	27.3	(15.1, 44.2)	53.8	(35.5, 71.2)	.01
Childbirth(living or stillborn) within 12 months of interview	10.7	(7.8, 14.4)	12.3	(9.3, 16.1)	8.7	(6.5, 11.5)	.22
Skilled attendant present during delivery	82.1	(67.3, 91.0)	97.8	(88.7, 99.6)	97.8	(88.2, 99.6)	.01

Table 11: Infant Health (<1 year of age) (n=1229)

	Syrian in camp (n=393)		Syrian Non camp (n=432)		Iraqi (n=518)		
	Percent(%)	95% CI	Percent(%)	95% CI	Percent(%)	95% CI	p-value
Infant (<1yr) breastfed	91.9	(78.7, 97.2)	95.6	(85.2, 98.8)	93.5	(82.5, 97.8)	.90
Age weaned							
Still breastfeeding	66.7	(50.3, 79.8)	66.7	(52.1, 78.6)	56.1	(41.0, 70.1)	.53
<1 month	13.9	(6.1, 28.7)	11.1	(4.8, 23.5)	4.9	(1.3, 16.1)	.38
1-3 months	8.3	(2.9, 21.8)	4.4	(1.2, 14.8)	17.1	(8.5, 31.3)	.14
4-6 months	8.3	(2.9, 21.8)	4.4	(1.2, 14.8)	7.3	(2.5, 19.4)	.73
7-9 months	0.0		11.1	(4.8, 23.5)	7.3	(2.5, 19.4)	.12
10-12 months	2.8	(0.5, 14.2)	2.2	(0.4, 11.6)	7.3	(2.5, 19.4)	.52
Child's First Food Other Than Milk							
Water	25.9	(13.2, 44.7)	25.7	(14.2, 42.1)	36.7	(21.9, 54.5)	.58
Sugar water	48.1	(30.7, 66.0)	31.4	(18.6, 48.0)	20.0	(9.5, 37.3)	.08
Baby food	3.7	(0.7, 18.3)	20.0	(10.0, 35.9)	33.3	(19.2, 51.2)	.01
Juice	11.1	(3.9, 28.1)	11.4	(4.5, 26.0)	10.0	(3.5, 25.6)	1.00
Cow milk	11.1	(3.9, 28.1)	2.9	(0.5, 14.5)	0.0	-	.10
Other	0.0	-	8.6	(3.0, 22.4)	0.0	-	.11

Figure 1: Percentage of Syrian Refugees by Location of Origin

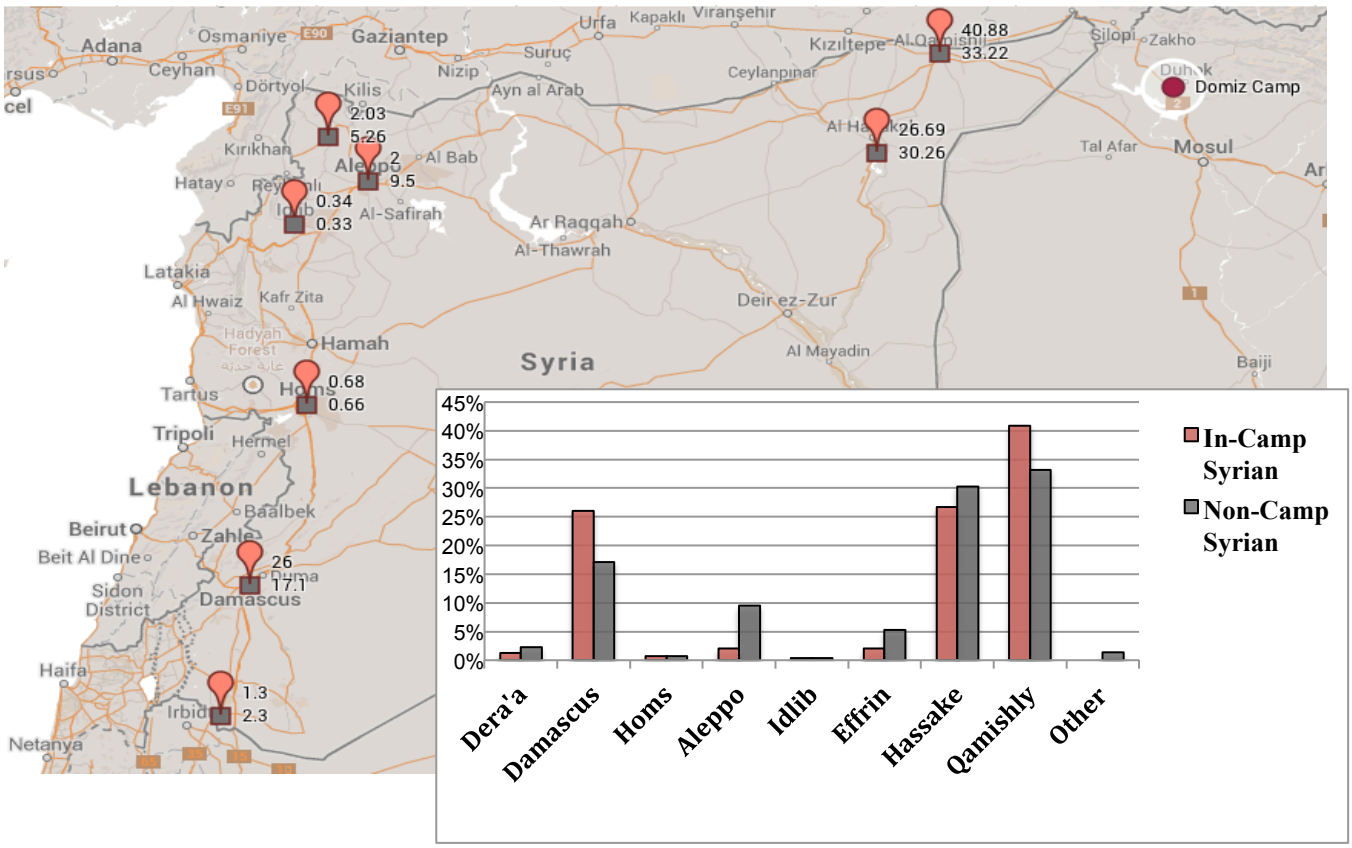

Figure 2: Median Age by Location