

FOCUS: GLOBAL HEALTH AND DEVELOPMENT

Cesarean Sections Among Syrian Refugees in Lebanon from December 2012/January 2013 to June 2013: Probable Causes and Recommendations

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Introduction: There are nearly 3 million Syrian refugees, with more than 1 million in Lebanon. We combined quantitative and qualitative methods to determine cesarean section (CS) rates among Syrian refugees accessing care through United Nations High Commissioner for Refugees (UNHCR)-contracted hospitals in Lebanon and possible driving factors.

Methods: We analyzed hospital admission data from UNHCR's main partners from December 2012/January 1, 2013, to June 30, 2013. We collected qualitative data in a subset of hospitals through semi-structured informant interviews.

Results: Deliveries accounted for almost 50 percent of hospitalizations. The average CS rate was 35 percent of 6,366 deliveries. Women expressed strong preference for female providers. Clinicians observed that refugees had high incidence of birth and health complications diagnosed at delivery time that often required emergent CS.

Discussion: CS rates are high among Syrian refugee women in Lebanon. Limited access and utilization of antenatal care, privatized health care, and male obstetrical providers may be important drivers that need to be addressed.

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†Abbreviations: ANC, antenatal care; CLMS, Caritas Labor Migrant Center; CS, cesarean section; IMC, International Medical Corps; MF, Makhzoumi Foundation; NICU, neonatal intensive care unit; NVD, normal vaginal delivery; UNHCR, United Nations High Commissioner for Refugees; UNFPA, United Nations Population Fund; WHO, World Health Organization.

INTRODUCTION

The cesarean section (CS†) is one of the most commonly performed surgeries. Since 1985, the World Health Organization (WHO) has recommended maintaining a CS rate between 5 and 15 percent [1], although the optimal rate remains controversial. While many women and health care providers believe the surgery does not have serious risks, research suggests otherwise [2]; *unnecessary* CS do not bring health gains such as faster recovery or better care [3], but rather adverse outcomes such as antibiotic treatment, neonatal intensive care unit (NICU) admission, blood transfusion, hysterectomy, and even death [4,5]. Unfortunately, there is a growing trend worldwide of CS being performed without medical indication. The Arab region is no exception, with a stark under-utilization of CS in resource-poor countries and high rates in more developed ones [6]. Across Arab countries, Egypt has the highest CS rate of 26.2 percent, with Mauritania the lowest at 5.3 percent [7].

Currently, the CS rate is approximately 21.1 percent for the most developed areas globally, 14.3 percent for the lesser developed areas, and 2 percent for the least developed regions [8]. According to the 2010 World Health Report [9], there were approximately 18.5 million CS performed annually worldwide; 73 percent (13.5 million) performed in the 69 countries with CS rates >15 percent, where 37.5 percent (48.4 millions) of the total number of births occur. Countries with <10 percent CS rates are considered to show underuse of CS, while countries with >15 percent are considered to have overuse [1]. Using these criteria, in 2008 (latest available data), 3.18 million additional CS were needed and 6.20 million unnecessary CS were performed; the cost of the excess CS averaged US\$2.32 billion [9]. This overuse commands a disproportionate share of global economic resources and can be a costly load on public-sector services.

In times of conflict, seeking and providing maternal care is challenging. Services can be interrupted or reduced, logistical access to facilities difficult, and health care workers can

be targeted [10]. These factors may contribute to difficulty in adherence to well-established clinical standards [11]. There is limited literature on CS in humanitarian settings. During the Balkans war (1992-1995), it was noted that the rates of CS and post-term deliveries dropped, while there were more spontaneous abortions and vaginal deliveries following CS [12,13]. An article in 2006 about the Lebanese conflict and maternal care showed that the use of antenatal care (ANC) sharply declined among displaced populations, with issues in accessibility and availability of services being the main determinants of that decline [11]. Another study showed that during the armed conflict in Northern Sri Lanka, the CS rate among the internally displaced was 44.3 percent, despite adequate ANC attendance [14]. This article aims to determine the CS rate among the Syrian refugee population accessing care through the United Nations High Commissioner for Refugees (UNHCR)-contracted hospitals in Lebanon and the possible driving factors behind those rates.

THE SYRIAN REFUGEE CRISIS: BACKGROUND AND UNHCR'S POLICY ON DELIVERIES

The Syrian conflict began more than 3 years ago and has displaced more than 2.7 million refugees into neighboring countries. Lebanon is the smallest of all hosting countries, yet provides asylum for the largest number of Syrian refugees (more than 1 million). With a 2012 population estimated at 4.425 million and a gross domestic product of \$42.95 billion, Lebanon is today classified by the World Bank as an upper middle income country [15]. The Lebanese government estimates there are more than 1 million refugees in Lebanon today. According to UNHCR's website, there were a total of 1,067,151 refugees in Lebanon as of May 15, 2014; 1,014,530 of them were registered and the rest awaiting registration [16]. Geographically, refugees are concentrated in the Bekaa, the North, and the Beirut area (Figure 1).

Registered Syrian refugees are entitled to a specific level of health care coverage as outlined in UNHCR's Standard Operating Proce-

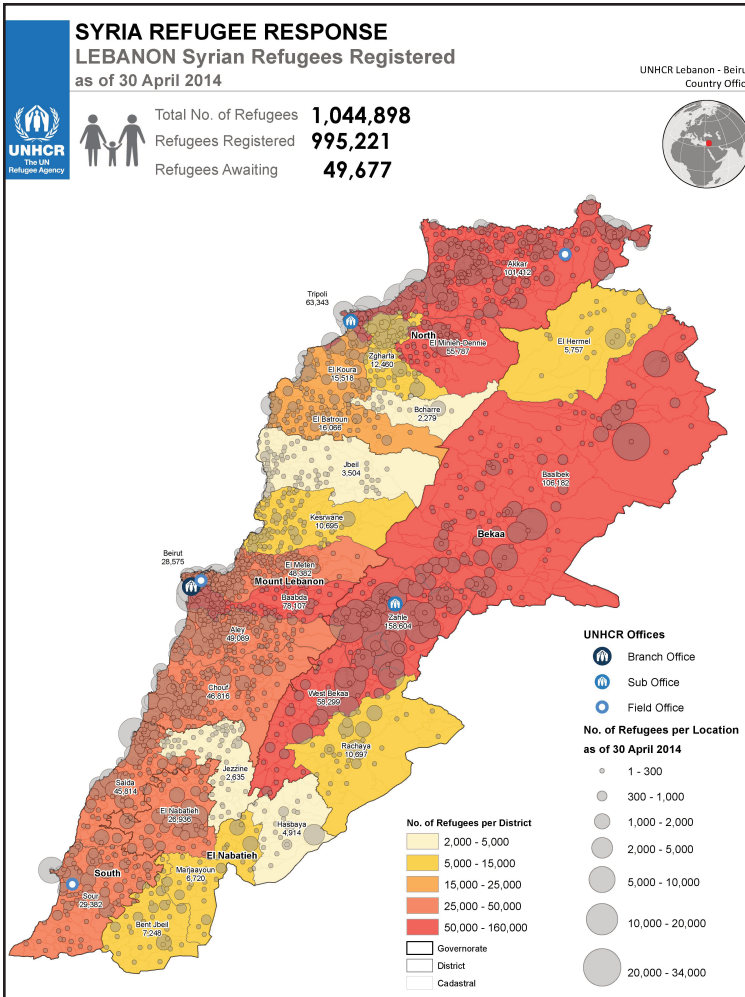


Figure 1. The boundaries, names, and designations used on this map do not imply official endorsement of the United Nations or UNHCR. All data used were the best available at the time of map production. Refugee population and location data by UNHCR as of 30 April 2014. GIS and Mapping by UNHCR Lebanon. Map used with permission by UNHCR Lebanon, Beirut Country Office.

dures for medical services. Mobile registration units exist for non-registered refugees to become registered, even for those in hospital. Pregnancy, including delivery, falls within the life-saving procedures and is therefore covered by UNHCR at 75 percent of the total cost. For deliveries, packages have been negotiated with hospitals for natural vaginal deliveries (NVDs) and CS. For NVDs, registered refugees pay a maximum of \$50 per incidence, depending on hospital class. CS have been contracted to stay up to 3 days in the hospital post-delivery and an NVD for 1 day.

C-SECTION RATES FOR LEBANON AND SYRIA

It is difficult to obtain systematic and standardized data about CS rates in Arab

countries because they often lack functioning national registration systems. According to a 2009 overview of CS in Arab countries, Lebanese and Syrian women >35 years had 7 to 8 percent higher rates of CS than women between 15 and 34 years [7]. High levels of education (secondary or higher) were positively associated with CS (Lebanon: 20.1 percent vs. 14.9 percent). According to the WHO’s 2010 World Health Report, Lebanon’s CS rate (from the National Perinatal Survey of 1999/2000) was 23.3 percent, with 5,478 estimated unnecessary CS costing approximately US\$2.4 million [8,9]. Another report assessing hospital-based deliveries estimated the CS rate at 18 percent in 2000 [7]. However, there is much in-country variation; some hospitals in the Beirut area have reported CS

rates as high as 35 percent [17]. Syria's CS rates have reportedly experienced a dramatic increase since 2002, when it was reported at 15 percent [7,18]. The United Nations Population Fund (UNFPA) now reports Syria's CS rate in 2013 to be 45 percent, up from 29 percent [19], an increase most likely related to the crisis. However, these data must be interpreted cautiously as it was not obtained by a rigorous study.

METHODS

We combined quantitative and qualitative methods to address the overall goals of determining the CS rate among the Syrian refugee population accessing care through UNHCR-contracted hospitals in Lebanon as well as the possible driving factors behind those rates. For the quantitative aspect of the analysis, we analyzed data previously collected by UNHCR's three main health partners — the International Medical Corps (IMC) for the Bekaa and North regions, Makhzoumi Foundation (MF) for Beirut and Mount Lebanon regions, and Caritas Labor Migrant Center (CLMS) for the South region — on Syrian refugees' overall hospital admissions. For the Bekaa/North and Beirut/Mount Lebanon regions, data were collected from January 1 to June 30, 2013. For the South region, data were collected from December 12, 2012, to June 30, 2013. All hospitals used by UNHCR's partners listed above were included. The data was then filtered to include all admissions and diagnoses where "*Intervention = Normal Delivery*" or "*Intervention = Cesarean Section*" were the outcomes of interest. Excluded from this analysis were abortions and dilation and curettages or any other form of obstetric surgery. Using this filter, the data analysis was performed on 6,366 deliveries.

We collected qualitative data through the administration of semi-structured in-depth informant interviews with a targeted sample of medical providers (medical doctors and midwives), hospital administrators, and women who gave birth by CS to aid in the interpretation of the results of the quantitative part of the survey. For this qualita-

tive part of the research, the hospitals were selected according to the following criteria: a) contracted by UNHCR to serve Syrian refugee women; b) comprised most of the deliveries in their category (private/public) for the area we surveyed; and c) a mixture of public and private hospitals. Data were then compiled and sorted to identify recurring themes. Interviews were conducted using three trained surveyors and a convenience sample of 37 purposefully selected informants: eight hospital administrators, six medical doctors, 12 midwives, and 11 patients. All medical doctors interviewed were Medical Directors of the maternity units, and all were men but one. All midwives were women and working in the delivery area of the hospitals. Data were then compiled and sorted to identify recurring themes.

Data collection was achieved through a voluntary in-depth interview using a semi-structured questionnaire as a supporting guide. Verbal consent was obtained from all participants after surveyors explained the project's goals and what the interviews were about. Three individual questionnaires were designed for: 1) administration staff; 2) medical providers; and 3) patients (Appendix). All were reviewed and piloted internally for content relevance. Questionnaires were used as guides when conducting the interview and could be filled in during or after the interviews were completed. Interviews with beneficiaries were conducted in Arabic using a UNHCR translator, then transcribed into English if needed. Most questions related to women's past obstetric history, understanding of the procedure, as well as provider preference. When possible, women with first-time CS were interviewed. The hospital administration questionnaire contained six questions and covered areas related to human resources, procedure costs, and hospital data. The medical provider questionnaire contained 14 questions, six of them specific to midwives. It covered topics such as provider perspective on the procedure, perceptions of delivery preferences for Syrian and Lebanese women, and commonly observed

Table 1. Personnel surveyed by region and type of hospital (Bekaa and Beirut/Mt Lebanon).

Public/Private	Regional Location	Personnel Surveyed
Public	Beirut/Mt Lebanon	Hospital admin; MD; Midwife; Beneficiary (patient)
Private	Beirut/Mt Lebanon	Hospital admin; MD; Midwife
Private	Beirut/Mt Lebanon	Hospital admin; MD; Midwife; Beneficiary
Public	Beirut/Mt Lebanon	Hospital admin; MD; Midwife; Beneficiary
Public	Bekaa	Hospital admin; MD; Midwife; Beneficiary
Private	Bekaa	Hospital admin; MD; Midwife; Beneficiary
Private	Bekaa	Hospital admin; MD; Midwife

delivery complications, as well as length of hospital stay after delivery. The patient questionnaire contained 22 questions and was administered to women who were still in the hospital and had delivered by CS. Topics that were covered addressed past obstetric history, provider preference (male/female), understanding of procedure, labor experience and timing, and ANC history. Personnel surveyed by region and type of hospital are shown in Table 1.

This work was reviewed by the University of Washington's Human Subjects Division, which deemed it a quality improvement activity/program evaluation work. As such, "the U.S. Department of Health and Human Services regulations for the protection of human subjects do not apply, and there is no requirement under these regulations for such activities to undergo review by an IRB."

RESULTS

Quantitative

Between December 12, 2012 (South Region) and January 1, 2013 (all other regions) to June 30, 2013, of the 14,546 admissions recorded in all of UNHCR-contracted hospitals, 6,366 (44 percent) deliveries were recorded (Table 2). Thirty-four percent of all deliveries occurred in Bekaa, followed by 29 percent in the North, 22 percent in Beirut and Mount Lebanon, and 15 percent in the South.

The average CS rate was 35 percent for all deliveries for all regions, with the Bekaa having the highest at 41 percent, compared to 31 to 34 percent in the other regions.

From the data collected, public hospitals appeared to have higher rates of CS compared to private hospitals in all regions except the South. In the Bekaa, 90 percent of deliveries occurred in private hospitals, with 66 percent in one single private hospital. The other regions had fewer deliveries in private hospitals (North, 58 percent; Beirut/Mt Lebanon, 26 percent; and South, 25 percent). In Beirut/Mt Lebanon, 63 percent of all deliveries took place in one single public hospital.

Of the 6,366 births paid for by UNHCR between January and June 2013, an estimated cost of US\$1.4 million was spent on CS (2,240 procedures) and US\$1.4 million for the 4,126 natural vaginal deliveries.

There were limited data as to the reasons why CS were carried out among the 2,240 women who had the procedure. We were able to document the reason among 453 of 1,803 (25 percent) women who had CS in the Bekaa, North and South regions; no information was available in Beirut and Mount Lebanon. The main reason for having a CS was a "repeat CS" (57 percent), with several cases accounting for the woman's third or fourth CS. The second most common reason was "post-term" (13 percent), followed by "breech presentation" (12 percent) (Figure 2).

Table 2. Hospital deliveries for Syrian refugee women by region in Lebanon among UNHCR partners, December 12 2012/January 1 2013 to June 2013.

Bekaa						
(Jan 1 2013-June 30 2013)						
	# hospitals	NVDs	CS	Total Deliveries	%CS	
Private hospital	7	1156	785	1941	40.4%	
Public hospital	2	116	108	224	48.2%	
Total:	9	1272	893	2165	41.2%	
North						
(Jan 1 2013-Jun 30 2013)						
	# hospitals	NVDs	CS	Total Deliveries	%CS	
Private hospital	5	757	321	1078	29.7%	
Public hospital	1	489	267	756	35.3%	
Total:	6	1246	588	1834	31.9%	
Beirut/Mt Lebanon						
(Jan 1 2013-Jun 30 2013)						
	# hospitals	NVDs	CS	Total Deliveries	%CS	
Private hospital	10	284	107	391	27.3%	
Public hospital	4	685	325	1010	32.1%	
Total:	14	969	432	1401	30.8%	
South						
(Dec 12 2012-Jun 30 2013)						
	# hospitals	NVDs	CS	Total Deliveries	%CS	
Private hospital	7	152	114	266	42.8%	
Public hospital	4	487	213	700	30.4%	
Total:	11	639	327	966	33.8%	
Total in All Regions:	40	4126	2240	6366	35.30%	

Qualitative

Of the seven facilities where we conducted interviews, two were public hospitals and five were private hospitals. Nine women in hospital at the time of the interview discussed their experiences and understanding regarding their CS. None of the nine women interviewed had a planned CS. When asked whether they understood and agreed with the decision for a CS, all women but one said they did. That woman had an umbilical cord prolapse, a clear indication for CS. Yet she initially refused it and insisted on the NVD. It took “a lot of discussion” with the midwife to convince the woman about the necessity of the procedure, stated the doctor. Four of the nine women had no ANC visits, and two had the recommended >4 visits. The majority expressed a strong preference for female providers, and most preferred a midwife over a male physician. Only one of the seven hospitals visited had a majority of female health care providers for deliveries. Seven of the nine CS were performed by

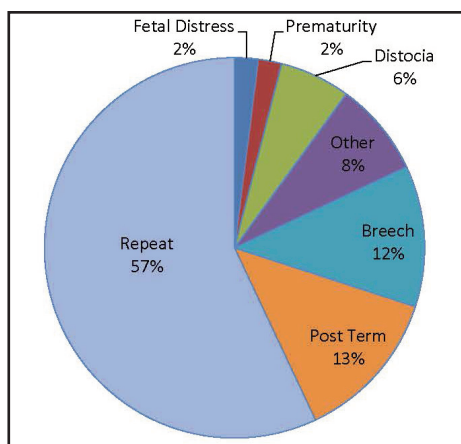


Figure 2. Reasons for cesarean sections among Syrian refugees in all regions in Lebanon, December 12, 2012/January 1, 2013 to June 2013 (N = 453).

male health care providers. In separate interviews conducted with an additional 16 pregnant women waiting at registration centers or in informal tented settlements, eight reported no ANC visits, six reported one to two ANC visits, two reported three to four visits, and none reported >4 visits.

The Syrian women interviewed stated that they usually insisted on having a NVD, even against medical advice, because it is an act mostly performed by the midwives and under supervision of a medical doctor. They often resist, and sometimes refuse, to have male providers for the delivery. Of the 18 clinicians interviewed, almost all observed that Syrian refugee patients had a high incidence of birth and health complications diagnosed only at delivery time that often required emergent CS due to various diagnoses, including placenta previa, oligohydramnios, meconium in amniotic fluid, pre-eclampsia, and eclampsia. They attributed this to many Syrian women never having visited a health care provider during their pregnancy.

“Many women come in the second stage of labor to the hospital, with untreated pre-eclampsia, or meconium in the amniotic fluid.”

“Syrian women don’t know about complications. Even if they have very noticeable edema, they will not go to the doctor.”

The general manager at a private hospital in the Bekaa stated that the number of deliveries has increased and that Syrian refugees composed 85 percent of those deliveries. He also noted that NICU admissions were dominated by Syrian children. Managers and health care providers at other hospitals reported being overwhelmed with the demand for deliveries and NICU admissions by Syrian refugees. Some stated that the demand exceeded the capacity of the hospital, and non-UNHCR contracted hospitals had to be contacted to provide care for some pregnant women. As one hospital general manager stated, “You can’t grow as fast as the problem is growing.”

No hospital provider admitted to providing CS on demand. Two hospital workers said that if the woman and her husband really wanted it, they would do a CS after counseling the woman on the risks and benefits.

“With Syrian women, there are more C-sections even though they don’t want a C-section. With Lebanese women, there are less C-sections, but women sometimes request it. And if after discussion with the provider they still want it, we do it.”

They were all very clear that Syrian women never ask for a CS and strongly prefer a NVD, which is cheaper for them, has a quicker recovery, and a faster discharge. “Syrian women hate C-sections,” said a midwife. Syrian women, it was noted by all health care workers, had a very high rate of repeat CS (up to nine previous CS were observed), and they often came to the hospital with no previous ANC visits, leading to births with complications that resulted in a CS. Some providers explained the high rate of CS by directly linking it to the effects of the war in Syria, explaining that women want to plan their deliveries for safety reasons, drawing a parallel to the times when Lebanon was at war.

DISCUSSION

Deliveries were the biggest reason for admission to hospitals for Syrian refugees from December 12, 2012/January 1, 2013, to June 30, 2013 in UNHCR-contracted hospitals that provided obstetrical care. Of these deliveries, 65 percent were NVD and 35 percent were CS; this proportion is significantly higher than the WHO recommended CS rate of between 5 and 15 percent. CS rates were not uniform among regions and in hospital types in Lebanon. The Bekaa had the highest CS rate at 41 percent, compared to 31 to 34 percent in the other regions. Public hospitals had higher rates of CS compared with private hospitals in all regions except the South. The demand on the existing public and private hospitals for delivery of obstetrical services has rapidly increased due to the Syrian refugee influx and, in some cases, exceeded existing capacity.

Much has been written about Lebanon’s high rate of CS and the atmosphere that exists to encourage its use. Lebanon’s over-

medicalized birth process, which often unnecessarily intervenes with the natural process of labor, and the high rates of CS can be related to its health care system that is dominated by the private sector, limited of physician accountability, private health insurance system, limited role for midwives, and women's misunderstanding of the CS procedure and its safety [6,20-22]. Our results are similar to another study that documented high CS rates due in part to primiparity and obstetric complications [23]; however, we did not collect women's ages and thus could not correlate high maternal age as did this study.

In the same study, insurance coverage in the Beirut/Mount Lebanon area was also a factor in the CS rate. This area has a population with higher socio-economic background and a more highly developed medical infrastructure than the rest of Lebanon. Another study in greater Beirut assessed the predictors for nulliparous women of having a CS at a hospital with CS rates within the WHO recommendations of 5 to 15 percent (control hospitals) to the CS predictors at eight other hospitals with CS rates (25.2 percent to 42.2 percent) well above WHO's recommendation. The main differences for having higher rates of CS were increased odds of a male provider, higher socioeconomic status of the patient, and having private or public health insurance as opposed to "unspecified" mode of payment; the latter comprised women of a lower socioeconomic background and education at the study hospitals. All women at the control hospital with lower CS rates had their labor attended by a midwife [24]. Since UNHCR pays for all or most of the CS for Syrian refugee women at UNHCR-contracted hospitals, such financial guarantees may increase number of CS doctors perform. This factor would be in line with the studies mentioned above [23,24].

In Syria, a large study examining women's preferences for birth place and attendant type showed an overall preference to deliver in a hospital setting (65.8 percent), with most preferring their provider to be a doctor rather than a midwife (60.4 percent

vs. 21.2 percent) [6]. Over 85 percent of the interviewees preferred their provider to be a female [25]. Historically for Syria, 87.7 percent of women had at least one ANC visit during their pregnancy in 2009, and 64 percent had at least 4 ANC visits (68 percent in urban areas, 59 percent in rural areas) [26]. According to the World Bank, 96 percent had a birth attended by skilled health personnel [27]. The qualitative interviews with Syrian women and Lebanese health care providers confirm these findings. Furthermore, more men than women health care professionals were providing care during the pregnancy in UNHCR-contracted hospitals. One of the studies mentioned earlier found that male health care providers increased the probability of a CS [24]; however, we did not attempt to measure this in our study.

The high CS rates among Syrian refugee women are likely a combination of the numerous factors stated above. Our qualitative interviews found that Syrian refugee women report low ANC attendance, particularly when compared to a previous study undertaken in Syria [25], even though ANC services are free for Syrian refugee women. Unfortunately, currently UNHCR and its partners do not have sufficient quantitative data to confirm the low ANC coverage. However, low ANC attendance could be one significant factor that accounts for more high-risk pregnancies arriving at hospitals at time of delivery. Reasons for low ANC attendance for Syrian refugee women may include limited access due to insufficient or lack of services, shortage of money for transport and more expensive investigations or procedures, difficulty of access to care, or other more pressing needs given the difficult situation of being a refugee, and lack of female health care providers. Supporting providers' statements that Syrian refugee women present late often with serious complications that require emergent CS, an analysis of the referral care requests sent to the UNHCR office found that 48 out of 150 total referral cases from May 27 to August 8, 2013, were for NICU admissions following birth. As stated above, hospital administrators reported having to close their maternity wards because their NICU was full.

Furthermore, the privatized Lebanese health care system that already has high CS rates for Lebanese likely plays an important factor. Besides the UNHCR partial or full payment for CS to UNHCR-contracted hospitals that may serve as an incentive for hospitals and doctors to perform CS, other important issues such as a purported preponderance of male doctors in the obstetric wards and increased complications at time of arrival to hospital with minimal to no previous obstetrical care likely play an important role for high CS rates among Syrian refugee women, despite their stated preference for NVD by a female provider at hospital.

The purported low ANC attendance and high CS rates of Syrian refugee women need to be actively addressed by the Lebanese government, UNHCR, and other organizations working with Syrian refugees.

Comprehensive, consistent, and systematic data collection remains a challenge in humanitarian emergencies. Efforts should nonetheless be undertaken to unify the data collected by government, private, and humanitarian organizations that refer refugees from primary care centers to all referral hospitals. A centralized patient database should be established so that data can reliably be used for monitoring, analysis, identification, reporting, and better decision-making. A set of agreed-upon indicators should be defined and used consistently to better track all refugee patients accessing care in Lebanon. The ANC coverage of Syrian refugee women by region in Lebanon needs to be assessed and barriers documented.

Audits and feedback to providers and hospital management on CS rates have an impact on reducing the rates of CS and increasing provider accountability. Identifying the barriers to change as well as the strategies that would be most efficient within the context of refugee health will help with an effective intervention as well as improvement of adherence to established and internationally accepted clinical guidelines.

The sex of the health care provider was an important factor for Syrian refugee women. Most obstetrical physicians in the hospitals were male, while midwives were

always female. The former was often cited by midwives as an issue for many Syrian women and their husbands who often requested a female provider. A male-dominated field may also be a barrier for Syrian refugee women to access ANC. Midwives reported numerous discussions with Syrian refugee women to try to convince them to accept care from a male provider in hospital. UNHCR and its partners need to work with selected public and private health care providers at the primary care and hospital level to find solutions to this issue. The hiring of female health care providers by UNHCR and its partners to help the overstretched Lebanese health care services may be a possibility, including the use of qualified Syrian refugees.

Incentives for ANC attendance could be considered, such as baby welcome kits, transportation vouchers, or increased subsidization of medical costs related to pregnancy complications. The quality of ANC and the sex of health care providers also need to be assessed and possible improvements undertaken.

Sensitization of the Syrian refugee community about the importance of ANC, deliveries, and when CS may or may not be needed should be undertaken. The government, UNHCR and its partners have developed a wide range of methods to reach out at the individual, household, and community levels to Syrian refugees. These were used in the recent polio campaign and include text messages from UNHCR's comprehensive database, traditional and social media, as well as home visits and via community centers.

There are limitations to this study that must be noted. While UNHCR's referral partners recorded all hospital admissions and types of delivery, important maternal indicators (e.g., para, gravida, primary/secondary CS, gestational stage, birth complications) were often absent from the data. This limited our analysis and understanding of the causes behind the CS rates. A lack of data uniformity among referral partners made any comparison between hospitals or geographical areas difficult. Moreover, while most Syrian

refugees access UNHCR-contracted hospitals for births, not all of them do, and thus not all deliveries by Syrian refugees were captured during this time period. For example, in the Bekaa region, many Syrian women chose to deliver in the Palestinian hospital where care is cheaper, often reimbursed by UNWRA, and midwives generally deliver the babies. Due to limited time and some logistical and security constraints, no hospitals in the North and South of Lebanon were visited for the qualitative component of the study.

In future studies of a similar nature, we would recommend that comparisons of CS rates between Syrian refugees and Lebanese are assessed. Furthermore, if the number of CS allows, we would recommend examining trends of CS by geographical region, context (e.g., urban, rural, informal tented settlements) and over time. While the overall CS rate is elevated, the data available do not always distinguish between primary and secondary CS, an indicator that should be considered in the future. Finally, a concomitant study of ANC coverage and barriers to access according to geographical region and context should occur.

The Syrian refugee crisis is a humanitarian tragedy whose magnitude has not been seen in recent history. Refugees fleeing the conflict in Syria have often settled in Lebanon in precarious living conditions. Those with the lowest socio-economic status live in informal tented settlements in rural areas with difficult access to established medical care services. Others are lost in the urban anonymity of cities. Some are unaware of the services available to them. A 2006 article on the Lebanese conflict and maternal care showed that the use of ANC sharply declined in displaced populations during that time. Issues related to accessibility and availability of services were the main determinants [11]. Seeking regular maternal care under these conditions is very challenging and may explain why many Syrian refugee women present very late to the hospital with minimal to no ANC together with health complications requiring emergent medical intervention such as CS. How-

ever, other factors such as a privatized Lebanese health care system, a guaranteed partial or full payment by UNHCR for CS, predominance of male obstetrical providers in hospitals may also be important factors. To address these issues, UNHCR must work with the government and other international, national, public, and private partners to assess and likely improve access to and quality of ANC for Syrian refugee women and sensitize refugees and health care workers to the risks and benefits of undertaking CS.

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Appendix

Interview Questionnaires

These will be semi-structured interviews (up to 30 minutes in length) for data collection to allow for detailed exploration of participants' decision making and thoughts surrounding the c-section decision process. Open ended questions were used to avoid limiting discussion, by structuring interviews around the researcher's ideas and assumptions.

Interviews will be conducted by UNHCR staff or senior field assistants when UNHCR staff is unavailable.

Interviews with providers will be performed in English, and interviews with beneficiaries will be conducted in Arabic to allow for maximum retention of quality information, and translated later on by local staff for analysis.

INTERVIEWER:

- Introduce yourself as the researcher and inform of the goal of the study
- Please remind participants that this is a **voluntary** interview and that it will remain completely **anonymous**. No identifying information will be shared with the hospital, administration or medical providers (depending on who you interview)

Interview Questionnaire

These will be semi-structured interviews (up to 30 minutes in length) for data collection to allow for detailed exploration of participants' decision making and thoughts surrounding the c-section decision process (especially PRIMARY c-sections). Open ended questions were used to avoid limiting discussion, by structuring interviews around the researcher's ideas and assumptions.

Interviews will be conducted by UNHCR staff or senior field assistants when UNHCR staff is unavailable.

Interviews with providers will be performed in English, and interviews with beneficiaries will be conducted in Arabic to allow for maximum retention of quality information, and translated later on by local staff for analysis.

INTERVIEWER:

- Introduce yourself as the researcher and inform of the goal of the study
- Please remind participants that this is a **voluntary** interview and that it will remain completely **anonymous**. No identifying information will be shared with the hospital, administration or medical providers (depending on who you interview)

HOSPITAL ADMINISTRATION QUESTIONS

1. What is the total number of beds in your hospital?	
2. What is the number of registered Medical Practitioners for your maternity ward? (Obstetrician/Gynecologists). How many women, how many men?	OB/GYN MALES: OB/GYN FEMALES: TOTAL:
3. What are the costs of a c-section and a NVD in your hospital? What is the typical length of stay for those two admissions?	
4. What is the number of graduated midwives in your hospital? Registered Nurses in the maternity ward?	Midwives: Nurses:
5. What is the role of the midwife at your hospital (if there are midwives)? Are they allowed to deliver babies?	
6. What is the role of the nurse in the maternity wards?	

BENEFICIARIES QUESTIONNAIRE FORM

These will be semi-structured interviews (up to 30 minutes in length) for data collection to allow for detailed exploration of participants' decision making and thoughts surrounding the c-section decision process. Open ended questions were used to avoid limiting discussion, by structuring interviews around the researcher's ideas and assumptions.

Interviews will be conducted by UNHCR staff or senior field assistants when UNHCR staff is unavailable.

Interviews with beneficiaries will be conducted in Arabic to allow for maximum retention of quality information, and translated later on by local staff for analysis.

INTERVIEWER:

- Introduce yourself as the researcher and inform of the goal of the study
- Please remind participants that this is a **voluntary** interview and that it will remain completely **anonymous**. No identifying information will be shared with the hospital, administration or medical providers (depending on who you interview)

HOSPITAL NAME:

Past Medical History information

1. What is your age?

2. How many children do you have, including this one?
3. How many of your children were born by c-section?
4. Did you know <u>before you entered the hospital</u> that you would have your baby by c-section? A. Yes B. No
5. [If Yes to Question 4, ask this question] If you didn't need a c-section, would you have come to the hospital to deliver, or would you have delivered at home? A. I still would have come to the hospital B. I would have delivered my baby at home with a daya
6. In the hospital, did the doctor explain to you the delivery process? Did he/she explain to you <u>why</u> you needed a c-section? What did he say? Please tell us.
7. Had you ever met the doctor that delivered your baby? (for example, at an antenatal visit)? A. I only met this doctor in the hospital B. I met this doctor once before C. I met this doctor more than once before
<i>Medical Provider information & Preferences</i>
8. For <u>this birth</u>, was your doctor a woman or a man? A. Woman B. Man C. I don't remember
9. What type of medical provider would you have preferred? Obstetrician/Gynecologist or Midwife? Man or Woman? A. Midwife B. Obstetrician/Gynecologist Woman C. Obstetrician/Gynecologist Man D. I have no preference
10. Do you prefer that your doctor makes all the decisions regarding how you will deliver your baby, or would you like to be involved? A. I want the doctor to make all the decisions B. I want to discuss with the doctor about how I deliver my baby

10. Do you prefer that your doctor makes all the decisions regarding how you will deliver your baby, or would you like to be involved?

- A. I want the doctor to make all the decisions
- B. I want to discuss with the doctor about how I deliver my baby

11. Did you have antenatal visits before the birth of your baby?

- A. 1
- B. 2-3
- C. 4 or >
- D. None

Choice making

12. Did you have any choice in how you would deliver your baby?

- A. Yes
- B. No

13. How do you feel about the c-section you had? Would you have preferred a normal vaginal delivery? Please explain.

14. Do you understand why you had a c-section?

- A. Yes, I understand and agree
- B. Yes, I understand but I disagree
- C. No, I don't understand

15. Did you feel intimidated by your doctor? Please explain.

- A. Yes
- B. No

Explain:

16. Did the nurse discuss with you and explain how you would have your baby?

- A. Yes, she explained to me what would happen and why
- B. No, she didn't say anything

17. If you had the choice, would you have wanted to try to have the baby's head turned and try a normal vaginal delivery? [Only ask if this is a 1st delivery and baby was breech]

- A. Yes
- B. No
- C. I don't know

Timing of Delivery

18. How long approximately after you entered the hospital was your baby born? [TIMING]

- A. I arrived in the morning and the baby was born in the morning
- B. I arrived in the morning and baby was born in the afternoon/evening
- C. I arrived in the morning and baby was born during the night
- D. I arrived in the afternoon/evening and the baby was born in the afternoon/evening
- E. I arrived in the afternoon/evening and baby was born in the night
- F. I arrived in the evening and baby was born the next day
- G. I arrived at night and baby was born during the night
- H. I arrived at night and baby was born the next day
- I. I arrived at night and baby was born the next evening
- J. I arrived one day and the baby was born the next day

19. How long were you in labor before it was decided to do a c-section? [TIMING]

- A. I knew before coming to the hospital that I needed a c-section (planned)
- B. I was in labor for a very short time (less than 2 hours)
- C. I was in labor for a few hours (3-6 hours)
- D. I was in labor for many hours
- E. I don't remember

20. Did you have your baby during the week or during the week-end? [TIMING]

- A. During the week [Monday – Friday]
- B. During the week-end [Saturday-Sunday]

21. When did you have your c-section? [TIMING]

- A. During the day
- B. During the night

22. Would you like to tell us something else about your delivery process?

Interview Questionnaire – Medical Providers

These will be semi-structured interviews (up to 30 minutes in length) for data collection to allow for detailed exploration of participants' decision making and thoughts surrounding the c-section decision process (especially for PRIMARY CS). Open ended questions were used to avoid limiting discussion, by structuring interviews around the researcher's ideas and assumptions.

This is a purposive sample of medical providers (MDs, midwives, RNs) involved in the delivery process.

Language: Interviews will be conducted by UNHCR staff or senior field assistants when UNHCR staff is unavailable. Interviews with providers will be performed in English when appropriate and in Arabic if this is the preferred language. When in Arabic, interview transcripts will be translated into English for analysis.

Important Note: Please attempt to recruit male and female medical providers, and include midwives (registered and non-registered) when appropriate. Also, if possible, attempt to include as many different religions as possible.

Interviewers:

- Introduce yourself as the researcher and inform of the goal of the study
- Please remind participants that this is a **voluntary** interview and that it will remain completely **anonymous**. No information will be shared with the hospital administration or other medical providers.

<i>Medical Providers (Obstetricians, Gynecologists)</i>
1. Hospital of practice:
2. Which mode of delivery do you think is better, natural vaginal delivery or cesarean? Why?
3. How important is it to you to enable natural birth to happen?
4. Do you think there is an issue with the rate of cesarean section in Lebanon? (too high? Too low? On demand?)
5. Do you feel Syrian patients overall have more c-sections than Lebanese patients? Please explain.

<p>6. Do your Syrian patients often ask you to have a c-section?</p> <p>A. Always B. Often C. Sometimes D. Rarely E. Never</p>
<p>7. Do you explain to your patients their delivery options?</p> <p>A. Rarely / I don't have time B. Sometimes C. Often D. Always E. I let the midwives/nurses do it</p>
<p>8. How do you typically approach deciding to perform a c-section on a pregnant woman? Please explain.</p>
<p>9. In women with no contra-indications to natural vaginal delivery, how long do you let them labor before you decide on a c-section?</p> <p>A. 0-2 hours B. 3-6 hours C. 7-10 hours D. >10 hours</p>
<p>10. What factors do you consider in a patient before you decide on a C-section (medical and/or non-medical factors)?</p>
<p>11. If a woman has had <u>ONE</u> previous c-section, do you attempt VBAC or do you perform a c-section right away?</p> <p>A. I always try a VBAC before going for a c-section B. I do not try VBAC and go straight to c-section C. I let the woman choose</p>
<p>12. Typically, how often have you met your Syrian patients in antenatal clinics before delivering their babies?</p> <p>A. Never B. Rarely C. Sometimes D. Often E. Always</p>

<p>13. Do you find yourself performing more c-sections during the week-end? During the night?</p> <p>A. Yes B. No C. Don't know</p>
<p>14. What are the drawbacks of vaginal deliveries in your opinion (medical and/or non-medical)?</p>
<p><i>RN/MIDWIFE</i></p>
<p>1. Tell me in your own words what normally happens when a woman comes to your hospital to have her baby delivered?</p>
<p>2. Comparing the experiences of a Lebanese and a Syrian pregnant woman. Do you see any differences when a Syrian woman comes to deliver her baby? Select <u>all</u> that apply.</p> <p>A. No difference B. Syrian women seem to have more c-sections C. Syrian women seem to have less c-sections D. Syrian women prefer to have a natural delivery than a c-section E. Syrian women prefer to have c-sections, even if there is no medical need for it</p>
<p>3. Compared to Lebanese patients, how much do Syrian women question the doctor about the care they receive?</p> <p>A. They almost never ask questions and obey what the doctors say B. They ask less questions than Lebanese patients C. They ask more questions than Lebanese patients</p>
<p>4. Typically, and in your opinion, how much time is the woman allowed to be in labor before it is decided to perform a c-section? Select all that apply.</p> <p>A. Doctors rarely allows enough time for women to labor B. Doctors mostly allow enough time for women to labor C. Women-doctor usually allow women to labor longer than men-doctors D. If it is night or the week-end, women often labor for shorter times</p>

5. Do you have any influence on the doctor if you think a woman should labor longer?

- A. Yes
- B. No
- C. Sometimes. It depends on the provider

6. Do you inform the woman about her options when delivering her baby? When this is a 1st baby? A 2nd baby? If she has had a previous c-section?

- A. Often
- B. Sometimes
- C. Never. It is not my job