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Maternal mortality in Lebanon: Increased vulnerability among Syrian refugees

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Keywords

maternal health, maternal mortality, Lebanon, preventable deaths, refugees

Synopsis

Syrian refugee women are at increased risk of maternal mortality in Lebanon. Improving access to timely and quality care is needed within the health system.

Abstract

Objective: To compare the burden and causes of maternal deaths between Syrian and Lebanese women for the period of 2010–2018.

Methods: A retrospective analysis was conducted of maternal deaths from the national notification system at the Ministry of Public Health in Lebanon during the period of 2010–2018. Maternal deaths among Syrian refugees and Lebanese citizens were compared based on cause of death, age of the woman, and nationality. Causes of maternal deaths were categorized as direct and indirect following WHO definitions.

Results: The maternal mortality ratio among the Syrian refugee women in Lebanon was higher than that of Lebanese women in the period 2010–2018, with its highest rate of 55.1 in 2017. Hemorrhage and indirect causes of maternal deaths are more common among Syrian refugee women whereas embolism and hypertension have higher proportions among Lebanese women. Maternal deaths within 48 hours after birth are more common among Syrian than Lebanese women.

Conclusion: Syrian refugee women carry an increased risk for maternal mortality in Lebanon. Improving timely access and equitable provision of appropriate care should be a priority for the health system in Lebanon.

1 INTRODUCTION

Globally, maternal mortality remains unacceptably high despite achieving a 75% reduction in maternal mortality ratio (MMR) by 2015 following efforts to reach the UN Millennium Development Goals. Today, over 800 women die daily from pregnancy-related and childbirth complications, 99% of which occur in low-income countries [1]. The high number of maternal deaths around the world is considered unacceptable as maternal mortality is often preventable with appropriate reproductive health services before, during, and after a woman's pregnancy and when proper life-saving interventions are administered during labor and birth.

Population groups who are most vulnerable socioeconomically seem to carry the burden of maternal mortality. Displaced and refugee women who are pregnant, laboring, or newly postpartum are especially susceptible, considering their limited access to healthcare systems due to unfamiliarity with the host country, limited resources, and cultural barriers including language or different gender dynamics [2]. The Global Strategy for Women's, Children's and Adolescent's Health [3] calls for attention to improving quality of care and ensuring equitable access to care to women living in conflict-affected settings.

The Syrian crisis that started in 2011 has resulted in a massive population displacement in the Middle East region with around one million refugees registered in Lebanon and an estimated additional 600 000 unregistered refugees in Lebanon [4]. The large majority of those displaced to Lebanon are women and children, and it is documented that 86% of the refugee households included women who gave birth during 2014–2015 [5]. Syrian refugees in Lebanon live in makeshift houses, informal tented settlements, and rented apartments within urban localities characterized mainly by poverty and lack of infrastructure. The enormous flow of forced displacement into Lebanon has had a significant impact on the Lebanese national healthcare system in terms of capacity to absorb the need for maternity services despite the offered humanitarian assistance for subsidized maternity care.

The use of antenatal care and hospital births is universal in Lebanon and these practices were found to be relatively high (89% use of antenatal services and 94% of facility births) among Syrian refugees, however with more out-of-pocket costs incurred on the refugees [5]. Maternal health care is highly medicalized in Lebanon resulting in high levels of cesarean deliveries among both the Lebanese and Syrian women [5] with reports of reproductive health services considered being unresponsive to the needs of refugee women [6]

In Lebanon, the MMR decreased by 79.7%, from 104 deaths per 100 000 live births in 1996 to 15 deaths per 100 000 live births in 2015 [7]. During the same period, a decrease of 44.8% in the MMR was reported in Syria, dropping from 123 deaths per 100 000 live births in 1990 to 68 deaths per 100 000 live births in 2015, with the lowest recorded rate of 49 deaths per 100 000 live births in 2010. The national population-based study conducted in 2003 showed that the primary causes of maternal deaths in Syria were preventable, due to complications such as postpartum hemorrhage amounting to 40% of maternal deaths. The main underlying factors for these deaths were due to insufficient clinical skills and competency of healthcare providers, whereby wrong assessment of risk, wrong diagnosis, and wrong management were identified as the main determinant of maternal deaths in each category of cause of death [8]. A more recent study on maternal near-miss attributed the high mortality index to the quality of care delivered at hospitals [9].

A multitude of factors related to the living circumstances of refugee women in Lebanon as well as the organization and delivery of reproductive health care within the Lebanese healthcare system interplay to explain the gaps in access and use of essential reproductive health services among Syrian refugee women in Lebanon [6, 10]. This limited use of essential care is expected to increase women's risks of unwanted pregnancy as well as maternal mortality. A comparison of maternal deaths between the host and the population of refugee women in Lebanon can highlight specific vulnerable groups in these populations and provide guidance for policy and practice. The aim of the present study was to compare the burden and causes of maternal deaths between Syrian refugees and their Lebanese counterparts, based on the Lebanese national notification system for the period of 2010–2018.

2 MATERIALS AND METHODS

The present study is a retrospective analysis of maternal deaths from the national notification system at the Ministry of Public Health (MOPH) in Lebanon during the period 2010–2018. The national notification system compiles the data received through more than 140 Vital Data Observatory focal persons based in public and private hospitals around the country who report on maternal deaths on a monthly basis through an online application system. Every reported case is reviewed by an independent expert from the Lebanese Society of Obstetrics and Gynecology assigned by the National Notification Committee on Maternal and Neonatal Mortality (NNCMNM) at the MOPH. The independent expert prepares the investigative report on each case based on interviews with the medical team in charge of the case and on reviews of medical charts. After discussion of each case by the NNCMNM, a standard form is filled and filed at the MOPH. The Statistics Department at the MOPH analyzes the data and generates annual statistics about maternal mortality in Lebanon. Completeness of reporting is checked against the national hospital-based cause of death reporting system established at the MOPH since 2017, whereby all hospitals notify the MOPH of every death occurring at their facility, at emergency or in its morgue. Deaths are reported following the ICD10 coding.

For the present study, data were compiled by the MOPH Department of Statistics and a descriptive analysis was used to compare maternal deaths among Syrian refugees and Lebanese citizens based on cause of death, age of the woman, and nationality. Causes of maternal deaths were categorized as direct and indirect [11]. The direct causes of maternal death are those resulting from obstetric complications and are commonly grouped into the following: hemorrhage, hypertensive diseases, abortion, sepsis or infections, obstructed labor, ectopic pregnancy, embolism, and anesthesia-related death. The indirect causes of maternal deaths consist of deaths “resulting from previous existing disease or disease that developed during pregnancy and not due to direct obstetric causes but were aggravated by the physiologic effects of pregnancy” [11]. Data analyses were done on SPSS version 25 (IBM Corporation, Armonk, NY, USA). Missing data counted less than 10%. For the

association of variables Pearson and Fisher χ^2 tests were used. $P<0.05$ was considered significant.

Ethical approval was not required as the researchers used aggregate data for this paper.

3 RESULTS

During the period 2010–2018, there were 136 maternal deaths from which 135 were included in the analysis and one death was excluded due to missing data. A total of 85 cases of maternal mortality were among Lebanese women, 47 among Syrian women, and three women were from other nationalities. Of the 135 deaths, 17.4% were nulliparous before the pregnancy and/or childbirth during which they suffered mortality (74% Lebanese and 26% Syrian) and 12.8% (n=17) were in their postpartum period.

Table 1 presents the number and percentage distribution of maternal deaths during 2010–2018 in Lebanon by nationality. The proportion of maternal deaths decreased over time among the Lebanese women and the contribution of Syrian women to maternal deaths in Lebanon increased from 7% in 2012 to 67% in 2017. In 2018, the proportion of maternal deaths was equal, at around 47% for each group of the population.

Figure 1 shows that the MMR in Lebanon has decreased from 24.6 maternal deaths per 100 000 live births in 2011 to 8.5 in 2014, and then increased to 20.9 in 2016 before dropping to 13.4 in 2018. Despite the decrease in MMR among the Lebanese and the non-Lebanese populations, the MMRs among the non-Lebanese population are much higher compared to the MMRs of the Lebanese population from 2016 and 2018. Between 2017 and 2018, and with the start of collecting segregated data by nationality, the data in the present study show that the MMR among the Lebanese population is stabilized at around 10 maternal deaths per 100 000 live births whereas it is noted to be at its highest of 55.1 maternal deaths per 100 000 live births among the Syrian refugees in 2017 and dropping to 17 in 2018.

Looking at the distribution of maternal death data by age, the estimated mean age for maternal deaths in the Lebanese population and Syrian refugee population is 26.8 ± 7.7 years and 30.7 ± 7.8 years, respectively. The highest proportion of deaths took place in the age group of 25–35 years for all nationalities, followed by the age group

above 36 years. The comparison of deaths by nationality within each age group shows that maternal deaths are significantly higher among younger Syrian refugee women and older Lebanese women (P<0.048) (Fig. 2).

Direct causes account for 63% of maternal deaths among Lebanese women and 87% of maternal deaths among the Syrian refugees (Fig. 3). Indirect causes of maternal deaths show an increase between 2014 and 2016 in both population groups where they overtake direct causes of maternal deaths among the Lebanese population before contributing in equal proportion to maternal deaths in that group in 2018. Indirect causes of maternal deaths decrease tremendously between 2016 and 2018 among Syrian refugees (Fig. 4).

Figure 5 shows that maternal deaths due to hemorrhage and indirect causes are higher among Syrian refugees compared to the Lebanese population, and embolism and hypertension are more common maternal mortality causes among the Lebanese than the Syrian refugee women.

The occurrence of maternal deaths during the postpartum period is more significant for Lebanese women (28.7%) compared to the Syrian refugee women in Lebanon (12.5%) (Fig. 6). Looking at Figure 7, it should be noted that postpartum maternal deaths occur within the first 48 hours after birth for Syrian women and mostly beyond the first 48 hours for Lebanese women.

4 DISCUSSION

The findings of the present analysis based on data from the national notification system show that maternal mortality saw a decline in Lebanon during 2010–2014 followed by a rise in maternal deaths until 2016 before dropping again in 2018. This increase of maternal

mortality across Lebanon can be partly related to the biggest influx of refugees in 2014–2016, which overburdened the health system and introduced a new profile of women that needed urgent life-saving interventions that were not available systematically and promptly. In fact, by April 2014, UNHCR in Lebanon registered the millionth Syrian refugee, and by November of the same year, Lebanon had more than 1.5 million people fleeing the conflict in Syria with 440 000 newcomers in 2014 alone. After December 2014, more than one in four people is a de facto Syrian or Palestinian refugee, not to mention the government's estimate of hundreds of thousands of unregistered individuals [12, 13].

The findings of the present study findings indicate that a large difference in MMR exists between the Lebanese women and Syrian refugees, which is particularly accentuated in the younger age groups among the Syrian refugee population in Lebanon. Reports on Syrian refugees in Lebanon indicate an increase in teenage marriage and pregnancy, which is estimated at 22% in 2017 [14] with a 7% increase in 2018 [15]. This situation is of particular concern considering the increased risk of maternal mortality due to eclampsia, postpartum hemorrhage, infection, and obstructed labor among adolescent girls [16].

The increased risk of maternal deaths among Syrian refugees in Lebanon indicate to differential vulnerabilities in this population in terms of inadequate access to health care, specifically antenatal, contraceptive, and postnatal services [17]. Lebanon has universal coverage of facility-based birth with skilled attendants and high utilization of antenatal care [18]. For the Syrian refugee population in Lebanon, coverage of skilled attendance at birth is reported to be 87%–91% [19] to 99.4% [20]. Attendance to at least four antenatal care visits in this group is similar in Lebanon (63%–64%) to the rates reported in pre-conflict Syria (63.7%) [19]. However, it remains lower than the Lebanese national rates that exceed 90%. The use of postpartum care seems to have dropped from 27.2% in pre-conflict Syria to around 8.3% among Syrian refugees in Lebanon [15, 20], as well as the use of contraception, which dropped from 54% in pre-conflict Syria [21] to 34% among Syrian refugees in Lebanon [22].

Poor attendance of antenatal care has been shown to be a risk factor for maternal mortality and morbidity [23]. Thus, further effort is required to improve access to antenatal care for Syrian refugees. There is also a need to strengthen their access to reproductive health services, which is offered with consideration to cultural preferences in types of contraceptives and to the contextual specificities defining their circumstances [24].

The findings of the study also indicate that between 2010 and 2018, indirect causes of maternal deaths were an increasingly important contributor of maternal mortality among Lebanese women, and more maternal deaths were caused by embolism and hypertension among the Lebanese women compared to the Syrian women, while more Syrian women died of hemorrhage and indirect causes of maternal mortality. These differences in causes of maternal deaths point to the need to develop separate priorities in services and healthcare policies in order to address the different needs of Syrian refugee women in Lebanon. While attention should be given to pre-existing disorders exacerbated by pregnancy to reduce indirect causes of maternal mortality among Lebanese women, quality health care and close postpartum follow-up is needed to address maternal mortality among Syrian refugee women.

The contribution of maternal deaths in the early postpartum period to the overall burden of maternal mortality in Lebanon needs to be considered closely. Short hospital stays after childbirth and the lack of community-based postnatal care are contributing factors to these maternal deaths. There is an urgent need to revisit financing schemes that cover maternity care for both refugee and local women population in Lebanon and implement the recommended 24-hour stay at health facilities after birth in order to have sufficient time to detect and treat complications that might prevent mortality. It is also necessary to understand non-financial reasons for short lengths of stay at health facilities ranging from poor physical environment, inappropriate level of professional support, disrespect, and mistreatment, which are all suggestive of poor-quality care.

The present study provides an initial analysis highlighting the differential risk that Syrian refugee women carry for maternal mortality in Lebanon; however, it has some limitations. It

was only possible to have access to aggregate data, which prohibited more in-depth analysis. Data on nationality were not available for the entire period considered in this analysis, which limited the generated findings.

Future studies should provide an in-depth analysis of the underlying factors that resulted in delays of appropriate and timely care, which can only be achieved through revisiting the dimensions of the data collected in the national notification system and through more in-depth studies looking into the experiences of women with maternal health and reproductive health care in general in Lebanon.

Many maternal deaths are preventable, and the data from the present study shed light on possible ways to improve service delivery and clinical management to save the lives of both Lebanese and Syrian women in Lebanon. Considering that the main underlying determinants of maternal mortality are lack of timely care, including underuse of care and poor access to care, and inappropriate care where care is either “too little too late” or “too much too soon,” consolidated efforts to address these issues within the health system are needed.

Author contributions

FK and TKK led the analysis and interpretation of data and drafted the manuscript. HH, SD, and AN contributed to the interpretation of the data and provided comments on drafts before completion and submission. All authors approved the final manuscript.

Conflicts of interest

The authors have no conflicts of interest.

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Table 1. Distribution of maternal deaths by nationality in Lebanon: 2010–2018.[a]

Nationality	**2010–2011**[b]	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total**
Lebanese	20 (100)	13 (93)	11 (67)	5 (62.5)	10 (67)	11 (46)	7 (33)	8 (47)	85 (63)
Syrian	0 (0)	1 (7)	4 (25)	3 (37.5)	4 (27)	13 (54)	14 (67)	8 (47)	47 (35)
Other	0 (0)	0 (0)	1 (8)	0 (0)	1 (6)	0 (0)	0 (0)	1 (6)	3 (2)
Total (N)	20	14	16	8	15	26	21	17	135 (100)

[a] Values are given as number (percentage).

[b] Maternal mortality was calculated as bulk in 2010–2011 due to gap in data collection.

FIGURE LEGENDS

Figure 1. Distribution of MMR by nationality, 2010–2018, Lebanon. [a] MMR was only available from 2011 onwards and segregated by nationality only from 2015 onwards, and Syrians only after 2017. Syrians are included in the non-Lebanese group between 2015 and 2017. The count for 2011 includes some cases from 2010. Abbreviation: MMR, maternal mortality ratio.

Figure 2. Distribution of maternal mortality cases in Lebanon by age group and nationality: 2010–2018. Pearson χ^2: $P<0.048$. Abbreviation: MM, maternal mortality.

Figure 3. Percentage of direct and indirect causes of maternal deaths in Lebanon: Syrian vs Lebanese, 2010–2018.

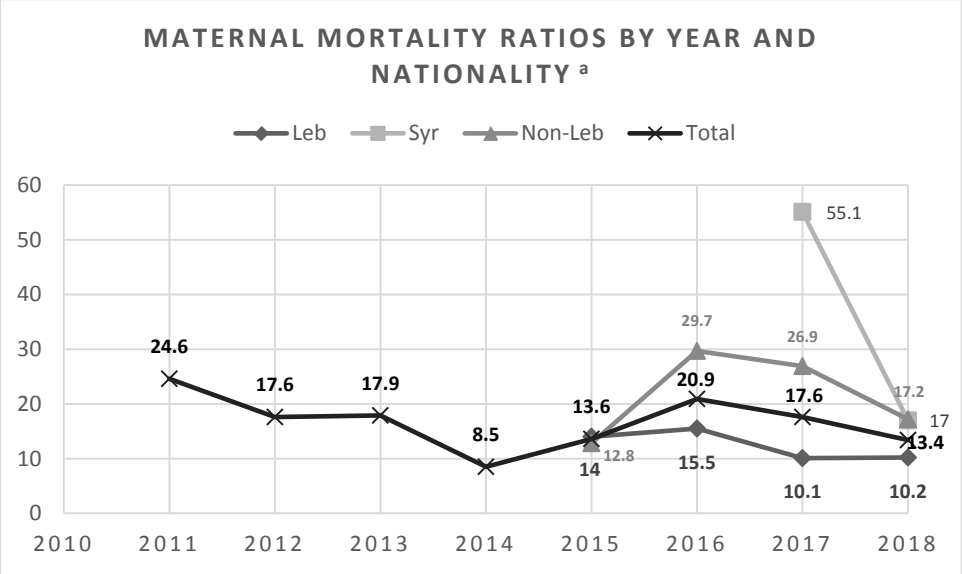
Figure 4. Percentage of direct and indirect causes of maternal deaths in Lebanon: Syrian and Lebanese women, 2010–2018.

Figure 5. Main causes of maternal deaths in Lebanon: Syrian and Lebanese, 2010–2018. Pearson χ^2: $P<0.861$.

Figure 6. Maternal deaths by time and nationality, Lebanon, 2011–2018. No maternal deaths during labor and birth are reported in the data.

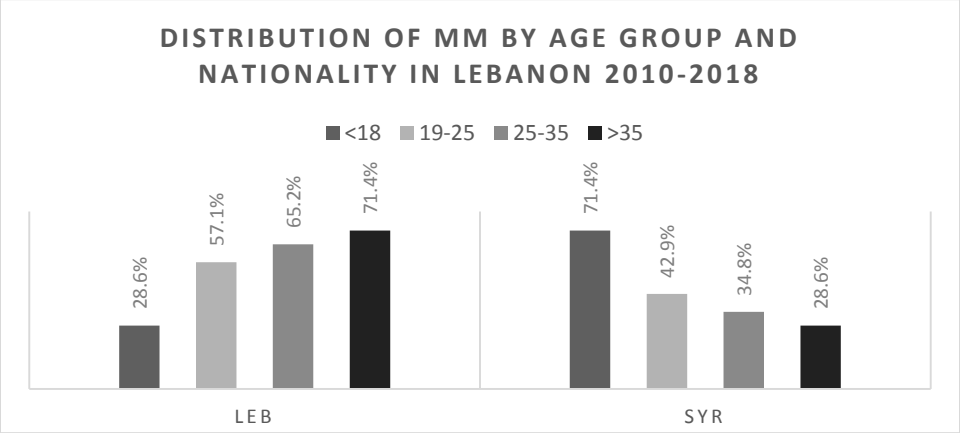
Figure 7. Maternal mortality by nationality and time during postpartum, Lebanon, 2010–2018. *Fisher exact: $P<0.037$. Abbreviation: PP, postpartum.

Figure 1: Distribution of Maternal Mortality Ratio (MMR) by nationality, 2010-2018, Lebanon



[a] MMR was only available from 2011 onwards and segregated by nationality only from 2015 onwards, and Syrians only after 2017. Syrians are included in the non-Lebanese group between 2015 and 2017. The counts for 2011 includes some of 2010 cases.

Figure 2: Distribution of ~~MM~~ maternal mortality cases in Lebanon by age group and nationality: 2010-2018



Pearson chi square p<0.048

Figure 3: Percent of direct and indirect cause of maternal deaths in Lebanon Syrian vs Lebanese 2010-2018

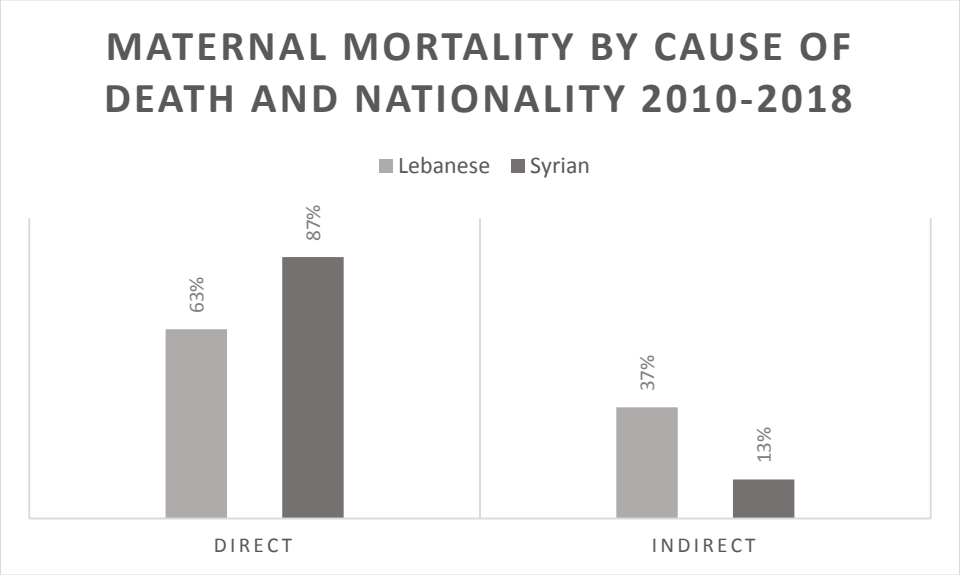
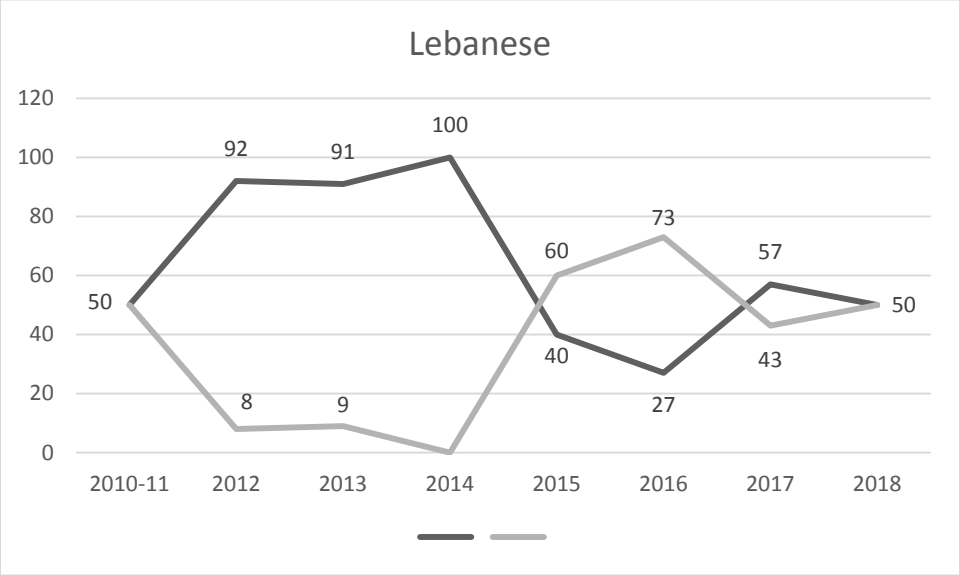


Figure 4: Percent of direct and indirect causes of maternal deaths in Lebanon: Syrian and Lebanese women, 2010-2018



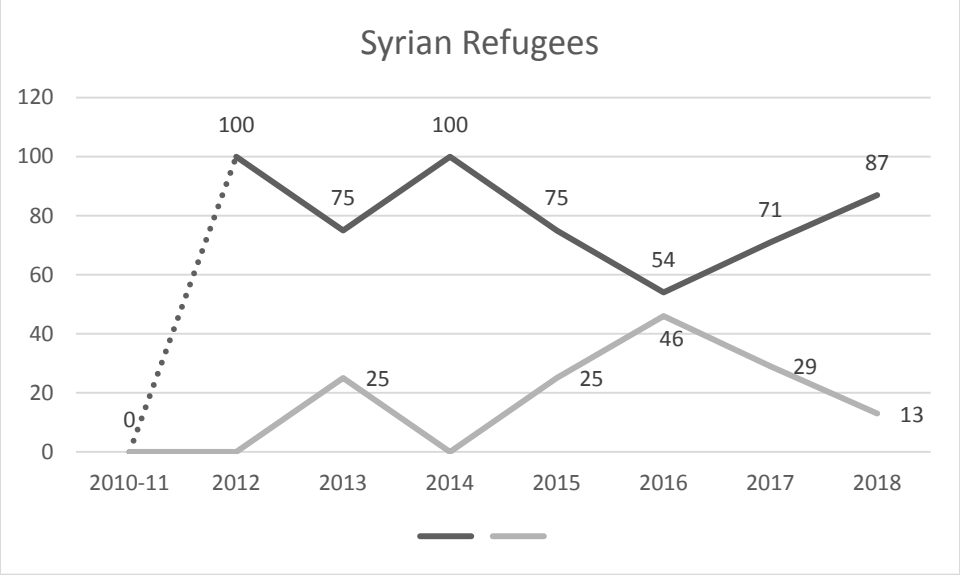
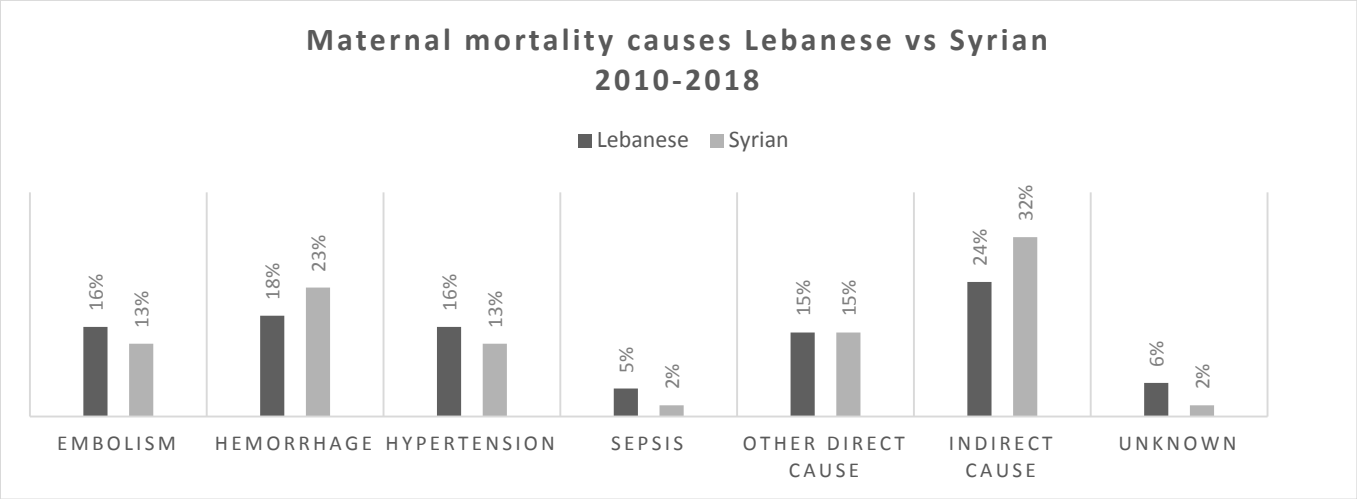
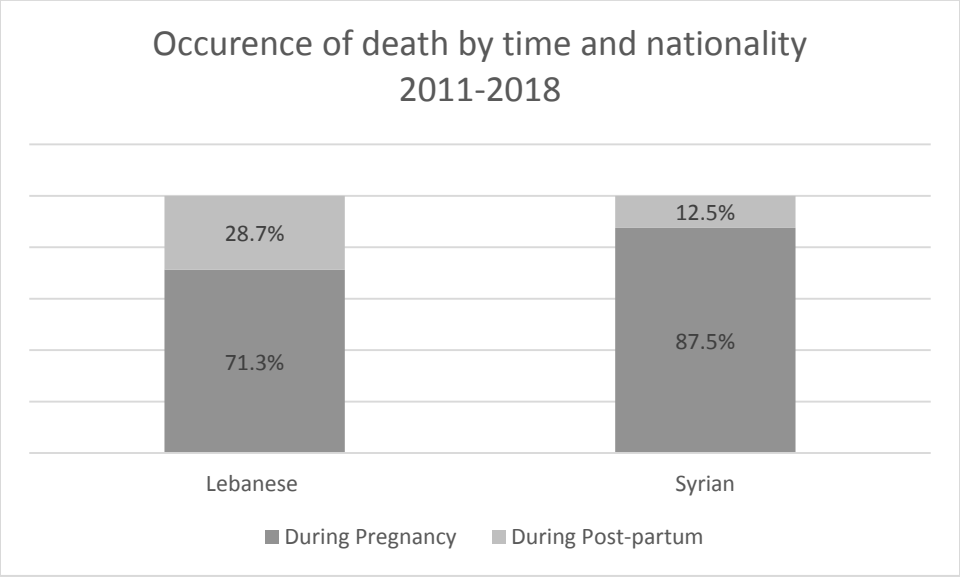


Figure 5: Main cause of maternal deaths in Lebanon, Syrian and Lebanese, 2010-2018



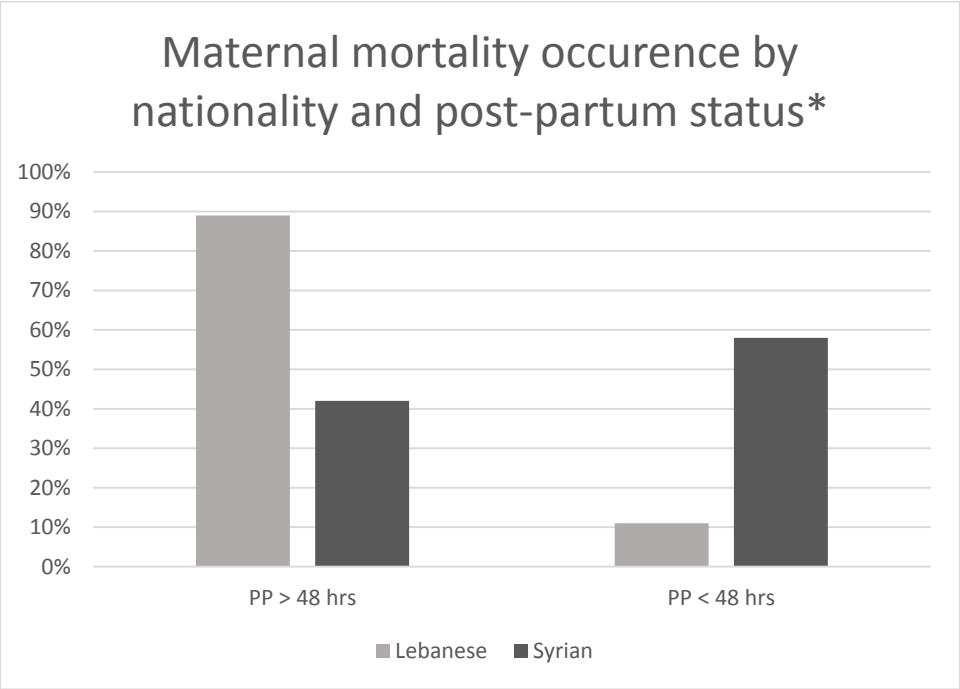
Pearson chi square P <0.861

Figure 6: Maternal deaths by time and nationality, Lebanon, 2011-2018



No maternal deaths during labor and birth are reported in the data.

Figure 7: Maternal Mortality by nationality and time during postpartum, Lebanon, 2010-2018



*Fisher exact p <0.037