

# A comparison of the rates of and indications for cesarean delivery between Syrian refugee women and Turkish women

Kemal Hansu<sup>1\*</sup> 

## SUMMARY

**OBJECTIVE:** The aim of this study was to compare the rates of and indications for cesarean delivery among Syrian refugee women and local Turkish women.

**METHODS:** The study included 74,864 pregnant women, of whom 52,145 were Turkish and 22,719 were Syrian refugee women and who gave birth at our hospital between January 2013 and December 2021. In this study, the pregnant women were divided into two groups: Syrian refugee women and Turkish women, and primary cesarean delivery rates were calculated separately for each group. Cesarean delivery rates for Syrian refugee women and Turkish women were compared separately for each year. Indications for cesarean delivery were determined separately for each group and compared between the groups.

**RESULTS:** The overall cesarean delivery rate was 56% among Turkish women and 32% among Syrian women ( $p < 0.05$ ). The primary cesarean delivery rate was 18.4% for local Turkish women versus 10.7% among Syrian refugee women ( $p < 0.05$ ). The most common indication for cesarean delivery among both Syrian refugee women and local Turkish women was previous cesarean delivery, followed by acute fetal distress and cephalopelvic disproportion.

**CONCLUSION:** Indications for cesarean delivery were similar for Syrian refugee women and local Turkish women, but both overall and primary cesarean delivery rates were higher among local Turkish women compared with Syrian refugee women.

**KEYWORDS:** Cesarean section. Refugees. Pregnancy. Pregnancy rate. Labor presentation.

## INTRODUCTION

Cesarean delivery is defined as the delivery of the fetus through an abdominal incision and is used when vaginal delivery is not safe and when there is an increased risk of morbidity and mortality for the mother or child<sup>1,2</sup>.

Cesarean section is one of the most common surgical procedures across the world. Although the ideal cesarean delivery rate has been declared to be 10–15% by the World Health Organization (WHO), the incidence of cesarean delivery is rapidly increasing worldwide, particularly in middle- and high-income countries<sup>3,4</sup>. While cesarean delivery rates are increasing in middle- and high-income countries, this increase remains low in less-developed countries, particularly in African countries. Differences in cesarean delivery rates between countries may be attributed to pregnant women's access to health care or the policies implemented by governments.

One of the most common indications for cesarean delivery is previous uterine surgery and previous cesarean delivery<sup>5,6</sup>. Studies from both Turkey and other countries have reported

that the most common causes of primary cesarean delivery were malpresentation followed by fetal distress and cephalopelvic disproportion<sup>7-9</sup>. Although there are no significant differences in indications for cesarean delivery globally, there can be significant differences in cesarean delivery rates between countries or even between different regions within the same country. Approximately 5 million Syrians were forced to flee their country due to the civil war that started in Syria in 2011<sup>10</sup>. As of 2022, Turkey has hosted more than 3.5 million Syrians, of whom around 100,000 lived in Kahramanmaraş.

This study aimed to compare the rates of and indications for cesarean delivery among local Turkish women and Syrian refugee women who are from different countries and have different cultural patterns.

## METHODS

Our study included 74,864 pregnant women who gave birth at the Kahramanmaraş Necip Fazıl City Hospital between January

<sup>1</sup>Necip Fazıl City Hospital, Department of Obstetrics and Gynecology – Kahramanmaraş, Turkey.

\*Corresponding author: kemalhansu@hotmail.com

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The study was approved by Kahramanmaraş Sutcu Imam University Faculty of Medicine Clinical Researches Ethics Committee with the ethical committee decision dated November 14, 2022, and numbered 2022/25-09. The study was conducted in accordance with the Declaration of Helsinki and followed the ethical standards of the country of origin; Turkey.

1, 2013, and December 31, 2021. Data were extracted from the hospital information management system using retrospective screening. The study received approval on December 14, 2022 (decision number 2022/25-09) from the clinical research ethics committee of the Kahramanmaraş Sütçü İmam University School of Medicine. The pregnant women included in the study were divided into two groups: Syrian refugee women and Turkish women, after which overall and primary cesarean delivery rates were calculated separately for each group. The overall cesarean delivery rate was calculated using the formula: total number of cesarean deliveries/total number of deliveries, and the primary cesarean delivery rate was calculated using the formula: primary cesarean deliveries/total number of deliveries. The primary cesarean delivery rates for Syrian refugee women and Turkish women were compared separately for each year. Indications for cesarean delivery for local Turkish women and Syrian refugee women were determined and compared between the two groups.

The collected data were analyzed using the IBM SPSS Statistics 22 software. Quantitative variables were reported in mean values and percentage, whereas categorical variables were reported in frequency and percentage. Cesarean delivery rates by year were analyzed, and indications for cesarean delivery were compared between the groups using the chi-square test. Statistical significance was set at  $p < 0.05$  for all statistical evaluations.

## RESULTS

This study included 74,864 pregnant women (of whom 52,145 were Turkish and 22,719 were Syrian refugee women) who gave birth at our hospital between January 2013 and December 2021. Of all the 74,864 pregnant women, 51% (38,156) had vaginal delivery and 49% (36,707) had cesarean delivery. Of the Turkish women, 44% (21,166) had vaginal delivery and 56% (29,374) had cesarean delivery, while 68% (14,991) of the Syrian women had vaginal delivery and 32% (7,332) of them had cesarean delivery. The overall cesarean delivery rate was statistically higher for Turkish women compared with Syrian refugee women (56 vs. 32%;  $p < 0.05$ ).

A comparison of the primary cesarean delivery rate between Turkish women and Syrian women revealed a statistically significantly higher rate of primary cesarean delivery among Turkish women than that Syrian women (18.4 vs. 10.7%;  $p < 0.05$ ). Additionally, an analysis of primary cesarean delivery rates by year revealed that Turkish women had statistically significantly higher rates of primary cesarean delivery compared with Syrian women during all years except in 2013 ( $p = 0.093$ ) (Table 1 and Figure 1).

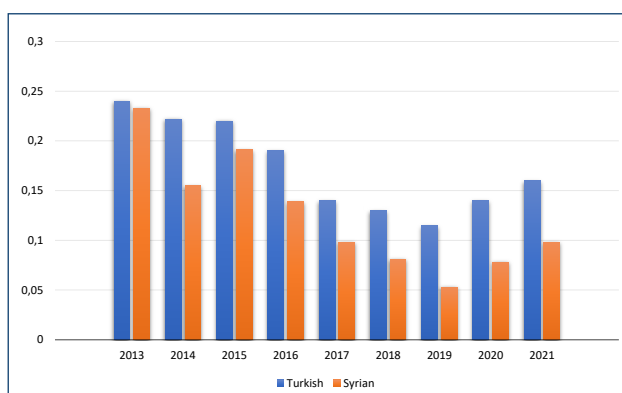
The analysis of the indications for cesarean delivery for Turkish and Syrian women showed that the most common indication for cesarean delivery was repeated cesarean delivery in both groups and the second most common indication was acute fetal distress. A comparison of indications for cesarean delivery between Turkish and Syrian women showed that Turkish women had significantly higher rates of cesarean delivery due to repeated cesarean delivery, prolonged labor, cephalopelvic disproportion, acute fetal distress, malpresentation, and placental abnormality ( $p < 0.05$ ) (Table 2 and Figure 2).

An analysis of the number of births by year showed that, in 2013, 7,920 Turkish women gave birth at our hospital, and this number decreased thereafter; however, only 4,491 Turkish women gave birth in 2021. On the contrary, 916 Syrian women gave birth at our hospital in 2013 versus 2,921 in 2021 (Figure 3).

## DISCUSSION

Cesarean section is a surgical procedure used to preserve maternal and fetal health when vaginal delivery cannot be performed safely. While cesarean delivery is a life-saving procedure when performed for medical indications, it is also associated with increased maternal and fetal morbidity and mortality, including anesthesia complications, peripartum hemorrhage, bowel and bladder injuries, venous thromboembolism, placental adhesion anomalies, surgical site infection, and fetal respiratory problems when performed without appropriate indications<sup>11</sup>.

Cesarean delivery rates are increasing all over the world, and this increase is influenced by changes in lifestyles and health policies in each country<sup>12</sup>. A 2016 study of 150 countries found that the global average cesarean delivery rate was 18.4%. The lowest cesarean delivery rate was 3% in West Africa, and the highest was 56.4% in the Dominican Republic. Turkey was found to have a cesarean delivery rate of 47.5%, the second



**Figure 1.** Primary cesarean section rates of Turkish and Syrian pregnant women (Kemal Hansu).

**Table 1.** Comparison of primary cesarean section rates of Syrian refugee pregnant women and Turkish pregnant women (Kemal Hansu).

Year	Turkish pregnant women	Syrian pregnant women	p-value
	Primary cesarean sections/total birth	Primary cesarean sections/total birth	
2013	24% (1,905/7,920)	14.5% (133/570)	0.093
2014	22% (2,745/7,838)	15.5% (259/1,669)	<b>&lt;0.05</b>
2015	22% (1,509/6,709)	19.1% (411/2,142)	<b>&lt;0.05</b>
2016	19% (1,220/6,354)	13.9% (368/2,644)	<b>&lt;0.05</b>
2017	14% (771/5,336)	9.8% (314/3,181)	<b>&lt;0.05</b>
2018	13% (592/4,578)	8.1% (268/3,291)	<b>&lt;0.05</b>
2019	11.5% (521/4,506)	5.3% (165/740)	<b>&lt;0.05</b>
2020	14% (639/4,443)	7.8% (226/2,881)	<b>&lt;0.05</b>
2021	16% (729/4,491)	9.8% (288/2,921)	<b>&lt;0.05</b>
Total	18.4% (9,631/52,145)	10.7% (2,432/22,728)	<b>&lt;0.05</b>

Statistically significant values are indicated in bold.

**Table 2.** Comparison of cesarean section indications of Syrian refugee pregnant women and Turkish pregnant women (Kemal Hansu).

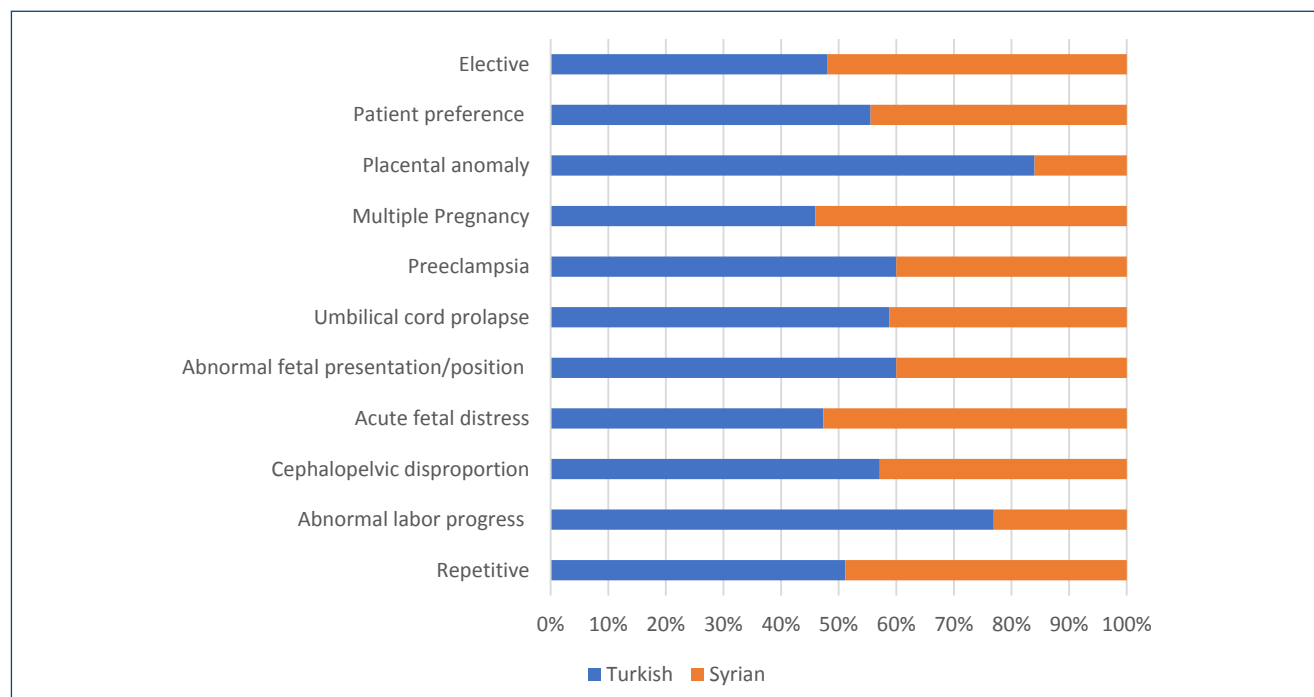
Indications	Percentage of Turkish pregnant women (n/N)	Percentage of Syrian pregnant women (n/N)	p-value
Repetitive	70.2% (20,643/29,374)	67% (4,901/7,332)	<b>&lt;0.05</b>
Abnormal labor progress	1% (313/29,374)	0.3% (22/7,332)	<b>&lt;0.05</b>
Cephalopelvic disproportion	2% (611/29,374)	1.5% (113/7,332)	<b>&lt;0.05</b>
Acute fetal distress	24% (7,095/29,374)	26.7% (1,959/7,332)	<b>&lt;0.05</b>
Abnormal fetal presentation/position	1.5% (439/29,374)	1% (71/7,332)	<b>&lt;0.05</b>
Umbilical cord prolapse	0.02% (7/29,374)	0.014% (1/7,332)	0.59
Preeclampsia	0.18% (54/29,374)	0.12% (9/7,332)	0.25
Multiple pregnancy	0.85% (249/29,374)	1% (78/7,332)	0.8
Placental anomaly	0.63% (185/29,374)	0.12% (15/7,332)	<b>&lt;0.05</b>
Patient preference	1% (316/29,374)	0.8% (61/7,332)	0.066
Elective	1.2% (353/29,374)	1.3% (101/7,332)	0.229

n: number of cesarean sections; N: total number of cesarean sections. Statistically significant values are indicated in bold.

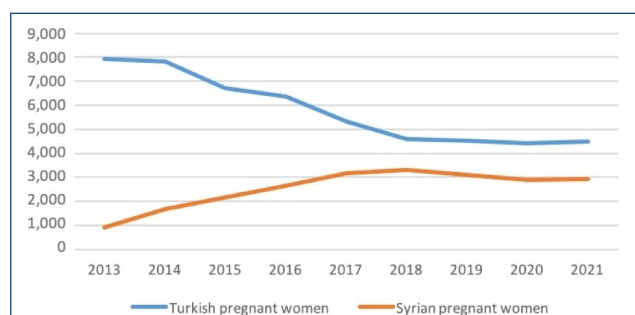
highest rate in Asia after Iran<sup>3</sup>. Statistics from Turkey show gradually increasing cesarean delivery rates; it was around 7% in 1993 and reached 58.4% in 2021, while the primary cesarean delivery rate was 29.1%<sup>13,14</sup>. In 2015, Turkey had the highest cesarean delivery rate among all the Organisation for Economic Co-operation and Development countries.

As a result of the civil war that broke out in Syria in 2011, approximately 5 million Syrians were forced to flee their country. Turkey hosts approximately 3.5 million Syrian refugees, of whom approximately 100,000 live in Kahramanmaraş. Cesarean delivery rates are known to be influenced by lifestyles, beliefs, cultural patterns, level of access to health services, and health policies implemented by governments. In this study, the

cesarean delivery rate was found to be 56% among local Turkish women versus 32% among Syrian refugee women. Although the ideal cesarean delivery rate was declared to be 15% in a 1985 recommendation by the WHO, this rate seems to have changed today as a result of changes in lifestyles, increase in sedentary lifestyle, advanced maternal age, increase in pregnancies achieved with assisted reproductive techniques, development of antenatal tests, and an increase in medical malpractice lawsuits<sup>4</sup>. These developments prompted the WHO to recommend in 2015 that cesarean delivery should be used only for women who need it instead of trying to reach a certain cesarean delivery rate. In Turkey, both overall and primary cesarean delivery rates are higher in Western Anatolia and the Aegean



**Figure 2.** Comparison of cesarean section indications in Turkish pregnant women and Syrian pregnant women (Kemal Hansu).



**Figure 3.** Change in the total number of births of Turkish and Syrian pregnant women in our hospital according to the years (Kemal Hansu).

region than those in Central and Eastern Anatolia. This points out the importance of factors affecting differences in cesarean delivery even within the same country. In this study, the overall cesarean delivery rate was 49% and the primary cesarean delivery rate was 16.1% at our hospital. Although these rates are below the national average, they are well above the targets set by the WHO. It is also noteworthy that both overall and primary cesarean delivery rates were significantly higher among local Turkish women compared with Syrian refugee women. This result may be attributed to the limited access to health services and antenatal follow-up for Syrian refugee women compared with local Turkish women<sup>15</sup>. Lower cesarean delivery rates among Syrian refugee women may also be attributed to their tendency to have a greater number of children due to

their cultural and social patterns, which may result in them preferring or insisting on vaginal delivery<sup>16</sup>. In line with our study, previous studies from Turkey comparing cesarean delivery rates among Syrian refugee women and local Turkish women have found lower cesarean delivery rates among Syrian refugee women compared with local Turkish women<sup>17-20</sup>. Akin et al. reported a higher primary cesarean delivery rate among Syrian women compared with Turkish women, but their study included only 328 Syrian women and 9,086 Turkish women<sup>10</sup>. Their report may not reflect the reality because of the significant difference between the number of Turkish and Syrian women.

The analysis of primary cesarean delivery rates by year found that the primary cesarean delivery rate was statistically significantly higher among Turkish women compared with Syrian refugee women in all the years analyzed except for 2013. Primary cesarean delivery rates decreased among both local Turkish women and Syrian refugee women after 2016 but started to increase again after 2020 (Table 1). However, it should also be noted that the number of local Turkish women giving birth at our hospital has been decreasing since 2013 (Figure 3). In 2013, 7,920 local Turkish women gave birth at our hospital, and this number decreased to 4,578 in 2018 and remained stable during the following years. The change in cesarean delivery rates in this study may be due to more local women turning to private clinics and university hospitals and to the decrease in the number of pregnant women who presented to hospitals after

2019 as a result of the COVID-19 pandemic, which naturally led to less antenatal follow-up. This may show the impact of access to health services and antenatal follow-up on cesarean delivery rates. This result may also be attributed to low rates of pregnant Syrian women presenting to a hospital or receiving antenatal care due to their cultural characteristics. In addition, the physicians' preference for cesarean delivery to normal birth due to increasing medicolegal problems may have caused an increase in the rate of cesarean section in both Turkish and Syrian refugee pregnant women after 2020.

In this study, the most common indication for cesarean delivery among both Turkish and Syrian women was previous cesarean delivery, followed by acute fetal distress, cephalopelvic disproportion, malpresentation, and obstructed labor. Although some studies<sup>21,22</sup> have reported similar results in terms of the incidence of indications for cesarean delivery, others have reported that the second most common indication was cephalopelvic disproportion or obstructed labor<sup>9,23</sup>. The difference between these studies may be due to the clinical approach of the physicians or to differences in the equipment available in obstetric clinics. Cesarean delivery rates were shown to be significantly higher among women who received continuous fetal

monitoring compared with women who received intermittent auscultation<sup>24</sup>. In our clinic, all pregnant women in labor received continuous fetal monitoring, which may have caused an increase in false-positive diagnoses of acute fetal distress. It has also been shown that cesarean section rates may increase due to physicians not waiting long enough before establishing a diagnosis of cephalopelvic disproportion<sup>25</sup>. This study found similar rates of indications for cesarean delivery among both Syrian refugee women and local Turkish women.

The strength of this study is that it included a large number of Turkish and Syrian women and covered a 9-year period. Our study has also some limitations: its retrospective design prevented us from finding out in which cases and for which indications cesarean delivery was decided and precluded the tracking of the perinatal outcomes of the patients.

## CONCLUSION

In conclusion, the indications for cesarean delivery were similar for both Syrian refugee women and local Turkish women, but the rates of both overall and primary cesarean delivery were higher among local Turkish women compared with Syrian refugee women.

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