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ORIGINAL ARTICLE

Comparison of the pregnancy and newborn results of Turkish pregnant women and Syrian refugee pregnant women

[1]Resul KARAKUŞ
[2]Zafer BÜTÜN
[3]Gökhan ÜNVER
[1]Sultan Seren KARAKUŞ
[1]Erman ÇİFTÇİ

[1]Obstetric and Gynecology, University of Health Sciences, Türkiye. Zeynep Kamil Maternity and Children's Training and Research Hospital, İstanbul, Türkiye

[2]Department of Perinatology, Eskişehir City Hospital, Eskişehir, Türkiye

[3]Obstetric and Gynecology, Samsun Training and Research Hospital, Samsun, Türkiye

ORCID ID
RK : 0000-0003-2654-6119
ZB : 0000-0001-5297-4462
GÜ : 0000-0002-0887-2634
SSK : 0000-0003-4032-9604
EÇ : 0000-0001-5250-2481

ABSTRACT

Objective: The aim of the study was to compare the pregnancy and newborn outcomes of Turkish pregnant women and Syrian refugee pregnant women.

Material and Methods: This two-centered study was carried out retrospectively on 5505 pregnant women between 2016 and 2019 in Zeynep Kamil Maternity and Children's Health Training and Research Hospital and Akçakale State Hospital.

Results: The study was conducted with a total of 5505 pregnant women, whose ages ranged from 13 to 48. 2766 of the cases were Turkish and 2739 of them were Syrian. Antenatal follow-up rates of Syrian cases were significantly lower than of Turkish cases ($p<0.001$). The incidence of pre-eclampsia (PE) in Turkish cases (11.1%) was statistically significantly higher than in Syrian cases (2.6%) ($p<0.001$). The incidence of gestational diabetes mellitus (GDM) in Turkish cases (9.7%) was statistically significantly higher than in Syrian cases (1%) ($p<0.001$). The incidence of intrauterine growth restriction (IUGR) in Turkish cases (6.5%) was statistically significantly higher than in Syrian cases (1.9%). ($p<0.001$). While the rates of normal spontaneous vaginal delivery (NSVD) and cesarean section without episiotomy were higher in Turkish cases, the rate of NSVD with episiotomy was higher in Syrian cases ($p<0.001$). The mean values of antepartum, postpartum hemoglobin (Hb), and hematocrit of Turkish cases were statistically significantly higher than Syrian cases ($p<0.001$).

Conclusion: In this study, we determined that adolescent pregnancy, pregnancy at younger age, inadequate antenatal follow-up rates, and the rate of birth with interventions were high in Syrian immigrants, and Hb values were low due to insufficient nutritional support. We also determined that PE, GDM, oligohydramnios, and polyhydramnios were common in Turkish population, and the need for neonatal intensive care and amount of postpartum bleeding was similar in both groups.

Keywords: Newborn, pregnancy outcomes, refugee, Syria, Türkiye.

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Correspondence: Zafer BÜTÜN, MD. Eskişehir Şehir Hastanesi, Perinatoloji Kliniği, Eskişehir, Türkiye.
Tel: +90 222 611 40 00 **e-mail:** zaferbutun@hotmail.com
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INTRODUCTION

Since the outbreak of Syrian civil war in 2011, many Syrian refugees have had to emigrate. According to the United Nations report, 6.6 million Syrians have emigrated and approximately 3.7 million of them have been accepted by Türkiye. While 1.5% of the immigrants have been staying in temporary shelters, the rest reside in 81 provinces. The needs of immigrants such as shelter, health, and food are provided by the support of United Nations and the Turkish government. Approximately 25% of the immigrants in Türkiye are women of reproductive age.[1] One of the most important issues of women in the reproductive age is their follow-up and care during pregnancy. The Turkish Ministry of Health recommends in their guidelines that pregnant women should be examined at least 4 times and recommends closer follow-up for high-risk pregnancy. During the follow-ups, general evaluation of pregnant women is made, aiming to minimize pregnancy complications. Although the Turkish Ministry of Health undertakes the follow-up and treatment of pregnant women, Syrian immigrants do not get regular pregnancy follow-ups done. Malnutrition, anemia, infectious diseases, and similar comorbidities are more common in immigrants compared to the local population; therefore, antenatal and neonatal complications are expected to increase.[2,3] In the previous studies, cesarean section (C/S) delivery rates, fetal distress, pre-term labor, and GDM were more common in immigrant pregnant women, and neonatal complications were observed more frequently in immigrant pregnants.[4]

The aim of this study is to compare the obstetric and neonatal outcomes of Syrian immigrant pregnant women and Turkish pregnant women.

MATERIAL AND METHODS

The two-centered study was carried out retrospectively between 2016 and 2019 in Zeynep Kamil Gynecology and Pediatrics Training and Research Hospital and Akcakale State Hospital. The study was approved by the ethics committee of Zeynep Kamil Gynecology and Pediatrics Training and Research Hospital (Approval number 6, January 17, 2017). Turkish and Syrian pregnant women were evaluated as two different groups. The first Turkish patients who applied to the clinic on the day the Syrian patients applied were selected as the control group. In both groups, maternal characteristics, age, gravidity, parity, mode of delivery, interventions at birth, comorbid diseases, birth complications, additional postpartum surgical treatments, need for blood transfusion, pre-natal hemoglobin (Hb), hematocrit (HCT), platelet values, gestational diabetes mellitus (GDM), pre-eclampsia (PE), intrauterine growth restriction (IUGR), birth weights, APGAR scores, the need for neonatal intensive care, and causes for hospitalization in neonatal intensive care were compared.

While evaluating the findings obtained in the study, IBM SPSS Statistics 22 program was used for statistical analysis. The conformity of the parameters to the normal distribution was evaluated with the Kolmogorov–Smirnov test. In the comparison of quantitative data, Student's t-test was used for the comparisons between two groups of normally distributed parameters, and Mann–Whitney U test was used for the comparisons between two groups of parameters that did not show normal distribution. Chi-square test, Fisher Freeman Halton Exact test, and Continuity (Yates) Correction were used to compare qualitative data. Significance was evaluated at $p<0.05$ level.

RESULTS

This study was conducted with a total of 5505 pregnant women, aged between 13 and 48. The mean age was 26.45±6.53. The number of Turkish cases was 2766 and Syrian cases was 2739.

The mean age of the Turkish cases was statistically significantly higher than of the Syrian cases ($p<0.001$) (Table 1). There was no statistically significant difference between the gravidity, parity, and number of living children in Turkish and Syrian cases ($p>0.05$) (Table 1). Antenatal follow-up rates of Syrian cases were significantly lower than the Turkish cases ($p<0.001$) (Table 1). The mean gestational week determined by ultrasonography of Turkish cases was statistically significantly higher than that of Syrian cases ($p<0.001$) (Table 1).

There was no statistically significant difference between the newborn weight averages of Turkish and Syrian cases ($p>0.05$) (Table 1). There was no statistically significant difference between infant genders of Turkish and Syrian cases ($p>0.05$) (Table 1). The APGAR scores of Syrian patients' newborns at 1 min and 5 min after birth were statistically significantly higher than those of Turkish patients' newborns ($p<0.001$) (Table 1).

The incidence of PE in Turkish cases (11.1%) was statistically significantly higher than in Syrian cases (2.6%) ($p<0.001$) (Table 1). The incidence of GDM in Turkish cases (9.7%) was statistically significantly higher than in Syrian cases (1%) ($p<0.001$) (Table 1). The incidence of IUGR in Turkish cases (6.5%) was statistically significantly higher than in Syrian cases (1.9%). ($p<0.001$) (Table 1). The incidence of oligohydramnios and polyhydramnios in Turkish cases was statistically significantly higher than in Syrian cases ($p<0.001$) (Table 1).

There is a statistically significant difference between the delivery types of Turkish and Syrian cases ($p<0.001$) (Table 1). While the rates of normal spontaneous vaginal delivery (NSVD) and C/S were higher in Turkish cases, the rate of NSD with episiotomy was higher in Syrian cases (Table 1).

There was no statistically significant difference between the incidence of uterine atony and the rates of blood transfusion in Turkish and Syrian cases ($p>0.05$) (Table 1).

The mean values of antepartum Hb and HCT, postpartum Hb, and HCT of Turkish subjects were statistically significantly higher than Syrian subjects ($p<0.001$) (Table 2).

The rate of comorbidities in Turkish cases (22.7%) was statistically significantly higher than in Syrian cases (9.7%) ($p<0.001$) (Table 3). There was a statistically significant difference between the comorbid characteristics seen in Turkish and Syrian cases ($p<0.001$) (Table 3). While fetal anomaly, premature rupture of membranes, Rh incompatibility and fetal distress rates were significantly higher in Turkish cases, the rates of placenta previa totalis, adolescent pregnancy, delivery with meconium, and birth with intervention were higher in Syrian cases (Table 3).

While there was no statistically significant difference between the rates of need for neonatal intensive care in infants of Turkish and Syrian cases ($p>0.05$) (Table 3), there was a significant difference in terms of intensive care causes ($p<0.001$) (Table 3). While the rate of need for intensive care due to respiratory distress was significantly

Table 1: Evaluation of two groups with study parameters

	Turkish (n= 2766) Mean±SD	Syrian (n= 2739) Mean±SD	Total (n=5505) Mean±SD	p
Age	28.13±6.44 (28)	24.76±6.16 (23)	26.45±6.53 (26)	0.000*
Gravida	2.36±1.37 (2)	2.38±1.71 (2)	2.37±1.55 (2)	0.597
Parity	1.06±1.08 (1)	1.26±1.56 (1)	1.16±1.35 (1)	0.515
Live birth	1.02±1.03 (1)	1.21±1.5 (1)	1.11±1.29 (1)	0.502
NSVD n (%)	1156 (41.8 %)	929 (33.9%)	2085 (%37.9)	+0.000*
NSVD number	1.6±0.88 (1)	2.19±1.57 (2)	1.86±1.27 (1)	0.000*
C/S n (%)	964 (34.9 %)	723 (%26.4)	1687 (30.6%)	+0.000*
C/S number	1.36±0.63 (1)	1.85±0.95 (2)	1.57±0.82 (1)	0.000*
Antenatal follow-up				
0–4 times	279 (9.9%)	1048 (38.2%)	1327 (24.1%)	+0.000*
≥4 times	2490 (90.1%)	1691 (61.8%)	4178 (75.9%)	
EFW (g)	3169.7±724.65 (3275)	3146.54±631.24 (3243)	3158.15±679.74 (3258)	0.003*
Neonatal weight (in gram)	3029.4±880.26 (3200)	3046.24±678.82 (3140)	3037.77±786.48 (3160)	++0.426
APGAR 1. min	7.15±1.63 (8)	7.47±1.44 (8)	7.31±1.55 (8)	0.000*
APGAR 5. min	8.45±1.53 (9)	8.67±1.37 (9)	8.56±1.46 (9)	0.000*
HT±PE n (%)	308 (11.1%)	72 (2.6%)	380 (6.9%)	+0.000*
GDM or DM n (%)	268 (9.7%)	27 (1.0%)	295 (5.4%)	+0.000*
IUGR n (%)	179 (6.5%)	53 (1.6%)	232 (4.2%)	+0.000*
Uterin Atony n (%)	40 (1.4%)	38 (1.4%)	5428 (98.6%)	+0.763
AFI n (%)				
Normal	2332 (84.3%)	2451 (89.5%)	4783 (86.9%)	+0.000*
Oligohydramnios	289 (10.4%)	182 (6.6%)	471 (8.6%)	
Polyhydramnios	103 (3.7%)	57 (2.1%)	160 (2.9%)	
Anhydramnios	42 (1.5%)	49 (1.8%)	91 (1.7%)	
Type of birth n (%)				
NSVD without episiotomy	983 (35.5%)	627 (22.9%)	1610 (29.2%)	+0.000*
C/S	1099 (39.7%)	963 (35.2%)	2062 (37.5%)	
NSVD with episiotomy	684 (24.7%)	1149 (41.9%)	1833 (33.3%)	
Gender n (%)				
Female	1310 (47.4%)	1282 (46.8%)	2592 (47.1%)	+0.680
Male	1456 (52.6%)	1457 (53.2%)	2913 (52.9%)	
Blood transfusion n (%)	79 (2.9%)	78 (2.8%)	5348 (97.1%)	+0.985

Mann–Whitney U Test; +: Chi-square test; ++: Student t-test; *: P<0.05; SD: Standard deviation; NSVD: Spontan vaginal delivery; PE: Pre-eclampsia; GDM: Gestational diabetes mellitus; IUGR: Intrauterine growth restriction; AFI: Amniotic fluid index.

higher in Turkish cases, the rate of need due to jaundice was higher in Syrian cases (Table 3).

The rate of additional surgery in Turkish patients (5.1%) was statistically significantly higher than in Syrian patients (0.4%) (p<0.001) (Table 3). While additional surgery in all Syrian cases was boom curettage; compression suture and tubal ligation rates were higher in Turkish cases (Table 3).

CONCLUSION

After the outbreak of civil war in Syria in 2011, the local had to emigrate to other countries due to pressures of the Syrian government. Approximately 3.7 million of the immigrants have been accepted by the Turkish government, which is a border neighbor. Refugee camps were established in border provinces, basic needs of immigrants and health services were provided by the local government. Many immi-

Table 2: Antepartum and postpartum evaluation of two groups in terms of hemoglobin, hematocrit, and platelet values

	Turkish (n= 2766) Mean±SD	Syrian (n= 2739) Mean±SD	Total (n=5505) Mean±SD	p
Antepartum Hb	11.57±1.36	11.34±1.5	11.45±1.44	0.000*
Antepartum Htc	35.29±3.77	34.64±4.04	34.97±3.92	0.000*
Antepartum Plt	225285.79±67915.22	231720.63±68995.42	228487.43±68524.17	0.000*
Postpartum Hb	10.52±1.48	10.28±1.48	10.4±1.49	0.000*
Postpartum Htc	32.49±9.07	31.32±4.15	31.91±7.1	0.000*
Postpartum Plt	213554.48±69494.52	219227.84±67637.86	216368.94±68632.15	0.002*

Student t-test *p<0.05; SD: Standard deviation; Hb: Hemoglobin; HTC: Hematocrit; PLT: Platelet.

grants remained in the camps in the Akcakale district of Sanliurfa, and with the support of the Turkish Ministry of Health, preventive health services and treatments of immigrants were carried out in state hospitals. Immigrants who did not stay in refugee camps resided in 81 provinces and were treated free of charge in state institutions with the support of the ministry.[1] The high number of immigrant women in reproductive age has led to an increase in pregnancy, childbirth, and pregnancy complications. Free pregnancy follow-ups are carried out by the Ministry of Health and free iron and Vitamin D support is provided to immigrants, although it is known that immigrants do not commit to regular follow-ups, and accordingly, it is stated in the literature that pregnancy complications occur more frequently in immigrants.[2,3] The number of immigrant applications is constantly increasing in education and research hospitals in cities neighboring Syria and in big cities, and these patients constitute the majority of daily practice. Since there is a refugee camp in Akcakale and since Zeynep Kamil Gynecology and Pediatrics Training and Research Hospital in Istanbul is a reference hospital, the number of Syrian immigrant applications has been very high.

In this study, the mean age of Syrian patients was lower than Turkish patients and adolescent pregnancy rates were higher than Turkish patients. This is due to the fact that early marriages are common among the Syrian people and that girls are wanted to be protected by getting married during the migration period.[5] Pregnancy duration of Syrian cases according to the last menstrual period was statistically significantly higher than Turkish cases, and antenatal follow-up rates were low. Similar to the previous studies, this is due to the fact that Syrian patients do not apply to the hospital until labor begins and do not commit to their regular follow-ups.[5,6]

No statistically significant difference was found between the mean newborn weight of Turkish and Syrian cases, inconsistent with the literature. We think that this is due to the fact that the local residents in the centers where the study was conducted have similar characteristics and their socioeconomic levels are not very good.[5–7]

The incidence of PE and GDM in Turkish cases was higher than in Syrian cases, which is consistent with the literature.[8–10] We think that this difference is due to ethnic origin, diet, and age difference.

The incidences of IUGR, oligohydramnios, and polyhydramnios in Turkish cases were statistically significantly higher than in Syrian cases. We think that the higher rate of pregnancy complications in Turkish cases is due to the fact that local residents commit to pregnancy follow-ups more often and can be diagnosed more often. In the literature, it is supported that immigrants do not commit to regular follow-ups due to social reasons and communication difficulties.[11–13]

While the rates of NSVD and C/S are higher in Turkish cases, the rate of NSVD with episiotomy is higher in Syrian cases. The previous studies have also shown that C/S rates are lower in immigrants. The late admission of immigrant people to the hospital, and therefore less use of labor induction, and consequently less fetal distress, may explain the low C/S rates. In our study, fetal distress rates were observed to be higher in Turkish cases. The fact that Syrian patients are younger and have fewer comorbidities also reduces C/S rates.[5,14,15] The high rates of delivery with intervention are consistent with the studies in the literature. In a study conducted in Iceland in 2021, the rate of delivery with intervention was observed more in immigrants.[16] While postpartum bum-curettage was more common in Syrian cases, tubal ligation and compression sutures were more common in Turkish cases. We suggest that the high rate of NSVD in Syrian cases increases the rates of retained placenta and curettage. We think that the high rate of C/S in Turkish cases increases the rate of tubal ligation as an additional surgery, and the increased amount of bleeding and loss of tone due to the operation is treated with compression suture.

There was no statistically significant difference between the incidence of uterine atony and blood transfusions in Turkish and Syrian cases. In the literature, it is stated that postpartum hemorrhage and emergency interventions increase in immigrants with a low developmental index, in our study, we think that there was no difference in terms of bleeding since Syrian immigrants and local residents have similar characteristics.[16]

Antepartum and postpartum Hb and HCT values were found to be low in Syrian cases when compared to Turkish cases, consistent with the literature. The most important cause of anemia is that Syrian patients do not go to regular antenatal follow-ups and therefore do not receive iron and vitamin supplements. In addition to the difficulty of communication and the inability to access vitamin supplements for social reasons, malnutrition is another important cause of anemia.[5,8,9]

Table 3: Evaluation of two groups in terms of comorbidities, need for neonatal intensive care, and additional surgeries

	Turkish (n= 2766)		Syrian (n= 2739)		Total (n=5505)		p
	n	%	n	%	n	%	
Presence of comorbidity							[+]0.000*
Yes	627	22.7	267	9.7	894	16.2	
No	2139	77.3	2472	90.3	4611	83.8	
Comorbid features							[++]0.000*
Maternal renal failure	7	1.1	0	0	7	0.8	
In utero fetal death	36	5.7	8	3	44	4.9	
Maternal multiple sclerosis	4	0.6	0	0	4	0.4	
Placenta previa totalis	21	3.3	32	12	53	5.9	
Adolescent pregnancy	12	1.9	28	10.5	40	4.5	
Fetal anomaly	69	11	16	6	85	9.5	
Maternal tuberculosis	4	0.6	0	0	4	0.4	
Need for maternal ıntensive care	8	1.3	4	1.5	12	1.3	
Premature rupture of membranes	57	9.1	12	4.5	69	7.7	
Fetal anemia	4	0.6	0	0	4	0.4	
Maternal cardiac disease	4	0.6	0	0	4	0.4	
Maternal Hypotiroidism	4	0.6	0	0	4	0.4	
Meconium	27	4.3	24	9	51	5.7	
Rh incompatibility	113	18	0	0	113	12.6	
Placental invasion anomaly	4	0.6	0	0	4	0.4	
Cholestasis of pregnancy	11	1.8	4	1.5	15	1.7	
Pregnancy of renal transplant recipients	4	0.6	0	0	4	0.4	
Termination of pregnancy	4	0.6	0	0	4	0.4	
Operative vaginal delivery	36	5.7	107	40.1	143	16	
Maternal epilepsy	13	2.1	4	1.5	17	1.9	
Pregnancy with ivf	10	1.6	0	0	10	1.1	
Vaginal birth after cesarean delivery	16	2.6	0	0	16	1.8	
Isolated thrombocytopenia	10	1.6	8	3	18	2	
Multiple pregnancy	36	5.7	0	0	36	4	
Fetal distress	89	14.2	12	4.5	101	11.3	
Pregnancy with intrauterin device	4	0.6	0	0	4	0.4	
Uterine anomaly	6	1	0	0	6	0.7	
Fetal arythmia	7	1.1	0	0	7	0.8	
Maternal anemia	3	0.5	8	3	11	1.2	
Need for neonatal Intensive care							[+]0.317
Yes	325	11.7	346	12.6	671	12.2	
No	2441	88.3	2393	87.4	4834	87.8	
Reason for neonatal intensive care							[+]0.000*
Respiratory distress	245	75.4	196	56.6	441	65.7	
Fetal anomaly	27	8.3	26	7.5	53	7.9	
Juandice	19	5.8	80	23.1	99	14.8	
Sepsis	5	1.5	16	4.6	21	3.1	

Table 3 (cont.): Evaluation of two groups in terms of comorbidities, need for neonatal intensive care, and additional surgeries

	Turkish (n= 2766)		Syrian (n= 2739)		Total (n=5505)		p
	n	%	n	%	n	%	
Meconium aspiration	6	1.8	4	1.2	10	1.5	
Stillbirth	20	6.2	24	6.9	44	6.6	
Hypoglisemia	3	0.9	0	0	3	0.4	
Additional surgery							+++0.000*
Yes	141	5.1	12	0.4	153	2.8	
No	2625	94.9	2727	99.6	5352	97.2	
Additional surgeries							++0.000*
Hysterectomy	4	2.8	0	0	4	2.6	
Uterine compression sutures	27	19.1	0	0	27	17.6	
Myomectomy	4	2.8	0	0	4	2.6	
Bumm uterine curettage	33	23.4	12	100	45	29.4	
Hypogastrik artery ligation	5	3.5	0	0	5	3.3	
Bilateral tubal ligation	58	41.1	0	0	58	37.9	
Bakri balloon insertion	5	3.5	0	0	5	3.3	
Uterine compression sutures with hypogastric artery ligation	5	3.5	0	0	5	3.3	

+: Chi-square test; ++: Fisher freeman halton exact test; +++: Continuity (yates) correction; *: P<0.05.

Unlike the literature, while there was no statistically significant difference between the rates of need for neonatal intensive care in infants of Turkish and Syrian cases, there was a significant difference in terms of intensive care causes.[3,5,9,17] We think that the similarity of intensive care hospitalization rates is due to the fact that the socioeconomic levels of the patients are similar and gestational ages at birth are similar. While the rate of need for intensive care due to respiratory distress was significantly higher in Turkish cases, the rate of need due to jaundice was higher in Syrian cases. We think that the difference in the causes of hospitalization in the neonatal intensive care unit is due to the mode of delivery and nutritional status. While the high rate of C/S in Turkish cases creates an additional risk factor for respiratory distress, we think that insufficient breast milk is an additional risk factor for jaundice in Syrian immigrants with insufficient nutritional status.

The limitations of this study are that it is retrospective and it was carried out with the data in the patient health record system, but the high number of patients and the fact that it was two-center increase the value of the study. In our study, we found that adolescent pregnancy, early pregnancy, inadequate antenatal follow-up, and the rate of delivery with interventions were high in Syrian immigrants, and Hb values were low due to insufficient nutritional support. We found that PE, GDM, oligohydramnios, and polyhydramnios were common in Turkish population, and unlike the literature, the need for neonatal intensive care and amount of postpartum bleeding was similar in both groups.

The governments of the countries have been trying to overcome the problems in the health system caused by the increasing number of immigrants all over the world. We believe that obstetric and neonatal complications will be overcome with the full adaptation of immigrants to the system and with the measures to be taken by the ministry.

Statement

Ethics Committee Approval: The Zeynep Kamil Maternity and Children's Training and Research Hospital Clinical Research Ethics Committee granted approval for this study (date: 17.01.2017, number: 6).

Informed Consent: Written informed consent was obtained from patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – RK, GÜ; Design – ZB, SSK; Resource – EÇ, RK; Materials – GÜ, ZB; Data Collection and/or Processing – GÜ, RK; Analysis and/or Interpretation – ZB, GÜ; Literature Search – RK, SSK; Writing – ZB, GÜ; Critical Reviews – EÇ, RK.

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