Pregnancy outcomes and risks in over 40; a retrospective analysis from Turkey's highest birth rate region

40 yaş üstü kadınlarda gebelik sonuçları ve riskler; Türkiye'nin en yüksek doğum oranına sahip bölgesinin retrospektif analizi

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ABSTRACT

Aim: Pregnancies at advanced maternal age pose significant global health concerns, particularly in regions with high birth rates. This study evaluates the pregnancy outcomes, associated risks, and strategies to improve maternal and neonatal health among women aged 40 and above in Siverek, Şanlıurfa, Turkey—an area with the highest crude birth rate in the country.

Materials and Methods: The short-term pregnancy outcomes of 107 women aged 40 years and older, who delivered at a second level state hospital's obstetrics and gynecology clinic between 2020 and 2021, were retrospectively analyzed.

Results: The study revealed a high average gravida (6.4 ± 2.3) and parity (5.2 ± 2.2) among participants, reflecting the region's high fertility rates. Normal spontaneous vaginal delivery occurred in 69 (64.5%) cases, while 38 (35.5%) women underwent cesarean delivery, with prior cesarean section being the leading indication (31.6%). The mean gestational age was 38.7 ± 1.6 weeks, and the average birth weight was 3282 ± 488 grams. Neonatal outcomes were favorable, with mean Apgar scores of 7.7 ± 1.2 (at the first minute) and 8.8 ± 1.2 (at the fifth minute). However, 2 (1.9%) mothers required blood transfusions, and 5 (4.7%) neonates experienced asphyxia-related complications.

Conclusions: Pregnancies in women over 40 are associated with higher obstetric and neonatal risks, requiring meticulous monitoring and individualized care strategies. These findings emphasize the need for targeted interventions to enhance maternal and neonatal outcomes in regions with high fertility rates and limited healthcare resources.

Keywords: Multipar, Pregnant Women, Blood Transfusion, Apgar Score, Advanced Maternal Age

ÖZ

Amaç: *İleri anne yaşı gebelikleri, özellikle yüksek doğum oranlarının görüldüğü bölgelerde önemli küresel sağlık sorunları oluşturmaktadır. Bu çalışma, Türkiye'nin en yüksek kaba doğum oranına sahip Siverek, Şanlıurfa'da 40 yaş ve üzeri kadınlar arasında gebelik sonuçlarını, ilgili riskleri ve anne ve yenidoğan sağlığını iyileştirmek için potansiyel stratejileri değerlendirmektedir.*

Gereç ve Yöntem: *2020-2021 yılları arasında kırsal bir devlet hastanesinin kadın doğum kliniğinde doğum yapan 40 yaş ve üzeri 107 kadının kısa dönem gebelik sonuçları retrospektif olarak analiz edilmiştir.*

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Bulgular: *Çalışma, katılımcılar arasında yüksek ortalama gravida (6,4 ± 2,3) ve parite (5,2 ± 2,2) oranlarını ortaya koyarak bölgedeki yüksek doğurganlık oranlarını yansıtmıştır. Olguların 69'unda (%64,5) normal spontan vajinal doğum gerçekleşirken, 38'inde (%35,5) sezaryen doğum yapılmış, sezaryen endikasyonlarının başında önceki sezaryen öyküsü (%31,6) gelmiştir. Ortalama gebelik süresi 38,7 ± 1,6 hafta, ortalama doğum ağırlığı ise 3282 ± 488 gram olarak tespit edilmiştir. Yenidoğan sonuçları olumlu olup, ortalama Apgar skorları 1. dakikada 7,7 ± 1,2 ve 5. dakikada 8,8 ± 1,2 olarak kaydedilmiştir. Ancak 2 anne (%1,9) kan transfüzyonuna ihtiyaç duymuş ve 5 yenidoğan (%4,7) asfiksiye bağlı komplikasyonlar yaşamıştır.*

Sonuç: *40 yaş üstü kadınlarda gebelikler, daha yüksek obstetrik ve neonatal risklerle ilişkilidir ve dikkatli izlem ile bireyselleştirilmiş bakım stratejileri gerektirir. Bu bulgular, yüksek doğurganlık oranlarına ve sınırlı sağlık hizmeti kaynaklarına sahip bölgelerde anne ve yenidoğan sonuçlarını iyileştirmek için hedefe yönelik müdahalelerin önemini vurgulamaktadır.*

Anahtar Sözcükler: *Multipar, Gebe , Kan Transfüzyonu, Apgar Skoru, İleri Anne Yaşı*

INTRODUCTION

The International Federation of Gynecology and Obstetrics (FIGO) classifies pregnancies in women aged 35 and older as "advanced maternal age" and those aged 40 and older as "very advanced maternal age" to standardize pregnancy management and treatment protocols (1). Over the past decade, factors such as delayed marriage, second marriages, women's growing societal roles, extended education and career planning, effective contraception, and advancements in in vitro fertilization have contributed to delayed pregnancies (2-4). While fertility rates have declined in developed and industrialized cities, they remain considerably higher in non-industrialized regions where early marriage is common (5,6). For instance, in 2022, Şanlıurfa, a city in Turkey's southeastern region, recorded the highest total fertility rate in the country, averaging 3.59 children per woman. The province also reported the highest crude birth rate, with 27.3 births per thousand that year (7). Pregnancies among women of very advanced maternal age are notably more frequent in this region, driven by larger family sizes and elevated fertility rates. There is a significantly increased risk of fetal and neonatal complications in pregnancies of very advanced maternal age (8,9). Studies have shown that pregnancies in women of very advanced age are associated with increased risks of gestational diabetes mellitus (GDM), hypertension, postpartum hemorrhage, preterm birth, placenta previa, placental abruption, intrauterine growth restriction (IUGR), low birth weight (SGA), and macrosomia (10-15).

In this study, we aimed to examine the impact of very advanced maternal age on obstetric outcomes in a rural population in southeastern Turkey, which has the highest fertility rate in the country. To our knowledge, no prior clinical study has specifically investigated obstetric outcomes in very advanced maternal age pregnancies within a population with such elevated fertility rates as our study cohort.

MATERIALS AND METHODS

In this retrospective study, pregnant women who presented for delivery at the Obstetrics and Gynecology Clinic of a second level state hospital between March 2020 and July 2021 were examined. The study included a total of 107 pregnant women aged 40 years or older. The patients' data were retrospectively reviewed and recorded from the hospital's digital records system and patient files. Pregnancies under 40 years of age were excluded from the study.

Obstetric histories, maternal and neonatal outcomes, as well as hemogram and biochemical results, were recorded. This study was approved by the Ethics Committee of University of Esenyurt (dated 07.09.2023, No. 2023/08-15).

Statistical Analysis

Statistical analyses were performed using SPSS 27. Descriptive statistics included means and standard deviations for continuous variables and frequencies and percentages for categorical variables. The Kolmogorov-Smirnov test was used to assess the normality of the data distribution. Parametric tests were applied to normally distributed data, while non-parametric tests were used for non-normally distributed data. ANOVA was utilized to evaluate the relationship between the number of abortions and maternal

age in the study population. A p-value of <0.05 was considered statistically significant.

RESULTS

In our study, the mean age of the participants was 41.5 ± 1.8 years. The mean gravida was 6.4 ± 2.3, the mean parity was 5.2 ± 2.2, and the mean number of abortions was 0.16 ± 0.42. It was found that 69 women (64.5%) had normal spontaneous vaginal deliveries, while 38 women (35.5%) delivered by cesarean section. Among those who delivered by cesarean section, 12 cases (31.6%) had a history of previous cesarean as the indication. The indications for cesarean section and obstetric data are presented in (Table-1). No significant difference was found between the number of abortions and maternal age (p=0.377) (Figure-1).

For pregnancies in women aged 40 and older, the mean gestational age was 38.7 ± 1.6 weeks, the mean birth weight was 3282 ± 488 grams, and the mean length was 50.5 ± 2.1 cm. The mean head circumference was 35.0 ± 1.4 cm, the mean 1-minute Apgar score was 7.7 ± 1.2, and the mean 5-minute Apgar score was 8.8 ± 1.2. Two women (1.9%) required blood transfusions due to atony, but no complications were noted in their newborns. Additionally, 5 women (4.7%) had newborns with asphyxia-related complications (Table-2).

The mean hemoglobin level for women aged 40 and older was 12.0 ± 1.4 g/dL, the mean hematocrit was 35.4 ± 4.3%, the mean platelet count was 246 ± 61 x10^9/L, and the mean leukocyte count was 11.9 ± 3.4 x10^9/L (Table-3).

Table-1. Distribution of general characteristics of the study.

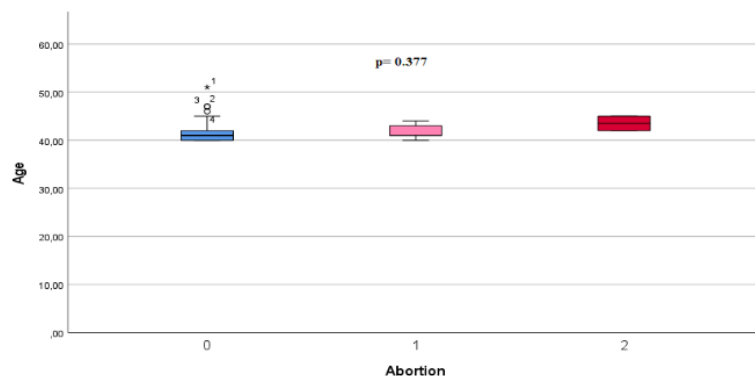| Variable (n=107)	Mean ±S.S.	
Age	41.58 ± 1.82	
Gravida	6.43 ± 2.30	
Parity	5.29 ± 2.29	
Abortion	0.16 ± 0.42	
	n	%
Delivery type		
NSVD	69	64.5
C/S	38	35.5
C/S indication		
Foot presentation	1	2.6
Detachment	2	5.3
Old C/S	12	31.6
FD	11	28.8
Unprogressed labor	3	7.9
Cord	2	5.3
Breast	5	13.2
Pre-eclampsia	2	5.3

Figure-1. Relationship between the number of abortions and maternal age in the study population

Table-2. Distribution of some characteristics of the study

Variable (N=107)	Mean $\pm S.S.$	
Gestational week	38.7 ± 1.6	
Weight	3282 ± 488	
Height	50.5 ± 2.1	
Head circumference	35.0 ± 1.4	
1st minute Apgar	7.7 ± 1.2	
5th minute Apgar	8.8 ± 1.21	
	n	%
Complication		
None	101	94.3
Transfusion (atony)	2	1.9
Preeclampsia	2	1.9
Placental abruption	2	1.9
Neonatal complication		
None	102	95.3
Asphyxia	5	4.7

Table-3. Distribution of biochemical characteristics related to the study

Variable (N=107)	Mean $\pm S.S.$
Hgb	12.0 ± 1.4
Hct	35.4 ± 4.3
PLT	246 ± 6.7
WBC	11.9 ± 3.2

Abbreviations: Hgb: Hemoglobin, Hct: Hematocrit, PLT: Platelet Count, WBC: White Blood Cell Count

DISCUSSION

Women's increased participation in social and professional life, along with the availability of effective contraception, has contributed to delayed pregnancy planning (16,17). However, the drivers of advanced-age pregnancies differ across levels of societal development (18,19). In industrialized regions, delays are primarily due to women's active involvement in professional and social pursuits. In contrast, in non-industrialized regions, women continue to have children into advanced ages due to extended fertility periods and the influence of large family structures (20,21). Furthermore, the limited access to modern contraceptive methods for women in these regions is another contributing factor to advanced-age pregnancies. Our study cohort consisted of pregnant women aged 40 and above from an underdeveloped region in southeastern Anatolia known for its high birth rates.

In this study, the mean age of participants was 41.5 ±1.8 years, with a mean gravida of 6.4 ±2.3 and a mean parity of 5.2 ±2.2. Similar studies in literature have reported mean ages of 41.6 ±2 (22), 41.3 ±1.8 (24), and 40.7 ±2.4 years (24), which are consistent with our findings. However, compared to other studies (22,23), our study demonstrated relatively higher gravida and parity values.

It is well known that increased parity and gravida at very advanced ages can be associated with adverse obstetric and perinatal mortality and morbidity (25). The elevated maternal age, gravida, and parity observed in our cohort, compared to other regions of Turkey, can be attributed to the unique socio-cultural and economic dynamics of the region. The region in question, Şanlıurfa, has a relatively weaker socio-cultural and economic profile compared to the rest of Turkey (26).

This may impact on family structure, reproductive motives, and socio-cultural perspectives within the study cohort, leading to a distinct demographic profile compared to other regions of the country

The rate of cesarean delivery increases with advancing maternal age. Eckner et al. reported a cesarean delivery rate of 43.1% in women aged 40 and older (27). Akarsu et al. reported a cesarean delivery rate of 63% in very advanced-age pregnancies (22). In our study, the cesarean delivery rate was 35% (38 cases). The lower cesarean delivery rate in this study, compared to the literature, may be attributed to a stronger

preference for larger families, the need for a quicker return to daily life, and a cultural inclination toward vaginal delivery in the region. The most common indication for cesarean delivery in our study was a prior cesarean section (31.6%, 12 patients), followed by fetal distress (28.8%, 11 patients). Other indications included breech presentation, placental abruption, failure to progress, cord prolapse, malpresentation, and preeclampsia.

In the study by Akarsu et al., the most common indication for cesarean delivery was a prior cesarean section (35%), followed by fetal distress (21%) (22). Similarly, another study reported a prior cesarean as the leading indication (55.3%), followed by fetal distress (12.1%) (23).

The literature presents conflicting findings on the relationship between fetal birth weight and advanced maternal age. Yogev et al. and Hsieh et al. reported that the number of low-birth-weight infants increases with advancing maternal age, while the same trend is not observed for infants with macrosomia (8,28). Other studies have reported no statistically significant differences in low birth weight among different maternal age groups (23,29). In our study, the mean birth weight was 3282 ± 488 grams, consistent with the literature (22), indicating that the impact of pregnancies in women aged 40 and older on birth weight may be minimal.

Advanced maternal age is associated with increased perinatal and obstetric complications, including preeclampsia, preterm birth, placental attachment abnormalities, and placental abruption (1-4). The relatively low incidence of these complications in our study may be attributed to the small sample size and the referral of high-risk and comorbid pregnant women to tertiary care hospitals. In our study, the rate of bleeding requiring transfusion was consistent with the findings reported in the literature (30). Studies have shown that while hemogram levels do not significantly differ between advanced maternal age pregnancies and other age groups, older mothers tend to experience greater blood loss and lower hemogram levels, which has been attributed to multiparity (31). There was no significant difference between the 1st and 5th-minute Apgar scores, aligning with findings in the literature (32). This suggests that the Apgar score may have a limited ability to predict perinatal mortality in pregnancies at very advanced maternal ages

One of the notable findings of this study is the increased asphyxia rates associated with advanced maternal age (4.7%). It is thought that the physiological and biochemical changes that occur due to advanced maternal age render the necessary adaptation mechanisms inadequate during labour and thus make it difficult to tolerate the oxygenation and metabolic stress exposed during labour. This, together with physiological changes during pregnancy, may directly affect fetal oxygenation and the risk of neonatal asphyxia. It is thought that the limited biological abilities of the woman may affect the healthy delivery process and lead to an increase in complications such as asphyxia. Alsharif et al. In their study, they found that asphyxia rates increased significantly as maternal age increased (33). However, in another study, asphyxia was 2 times more common in the group with advanced maternal age compared to the reproductive period, and the risk of asphyxia increased 4 times (34). In contrast to these studies, Gündoğdu et al. considered maternal age of 35 years and older as a risk factor for asphyxia, and when the infants exposed to asphyxia were analyzed, it was reported that maternal age ranged between 17-48 years, and the mean age was 27.9±6.6 years. In this study, no statistically significant relationship was found between maternal age and perinatal asphyxia (35). Awoyesuku et al categorized maternal ages in infants with asphyxia and found no significant difference between ages (36).

CONCLUSION
This study is among the important to examine maternal and neonatal outcomes in pregnancies at very advanced maternal ages in a socioeconomically and culturally underdeveloped region of Turkey. Our findings, including higher rates of gravida and parity, increased cesarean delivery rates, and a rise in obstetric complications, indicate that women in this region continue to bear children actively throughout their entire reproductive period and into advanced ages. However, the most important finding of this study is the increased rates of asphyxia. Although normal delivery is more common at very advanced maternal age, it has been found to result in a consequence: increased asphyxia rates. Therefore, pregnancies in women of very advanced maternal age should be closely monitored due to the increased maternal and

neonatal risks, with careful attention to obstetric complications.

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