



Evaluation of adolescent pregnancies in terms of maternal and perinatal risks

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Abstract

Objective: We aimed to evaluate adolescent pregnancy rates and both maternal and perinatal adverse pregnancy outcomes in a secondary care public hospital.

Methods: Maternal and perinatal pregnancy outcomes of pregnant women of adolescent age who applied to a secondary level public hospital between June 2018 and March 2021 were evaluated. The study was started with 1803 patients. After the exclusion criteria, the study was continued with 1753 patients.

Results: When the parameters that are significant in the binary analysis are analyzed by logistic regression analysis; 2.13-fold the risk of preterm birth (CI: 1.319–4.625), 1.621-fold the risk of premature rupture of membranes (CI: 1.461–2.328), 2.412-fold the risk of low birth weight (CI: 2.894–4.297), and 1.768 fold the need for NICU (CI: 1.013–2.121) were observed to increase.

Conclusion: Negative characteristics of adolescent pregnancies should also be taken into account while developing health policies in the coming years. Poor outcomes of adolescent pregnancies should be transferred to both healthcare professionals and society, and adolescent pregnancies should be reduced.

Keywords: Adolescent pregnancy, birth, pregnancy outcomes.

Introduction

Adolescent pregnancy, which the world stands against and aims to avoid, is defined as pregnancy under the age of 20.^[1] Adolescent women make up more than 20% of the population of the world. When pregnancies all over the world are examined, it is reported that 11% of them occur in adolescence.^[2] The places where adolescent pregnancies are most common are Africa, South Asia, Latin America, and the Caribbean.^[3] When adolescent pregnancies are examined in Turkey, it is seen that the rates have started to decrease since 2008.^[1,4,5] According to Turkey Demographic and Health Survey (TNSA) 2018 data, the adolescent pregnancy level was determined 4.0% in Turkey. However,

there are significant differences among regions (2.0% in the west, and 7.0% in the east of the country).^[1,2]

When evaluated in terms of healthcare, adolescent pregnancies cause poor outcomes for the mother and the baby. Adolescent pregnancies affect the education and future social and economic lives of young people. Also, low birth weight, preterm labor, and perinatal death may cause adverse maternal and perinatal outcomes such as maternal death.^[1,6–9] These poor outcomes show differences among countries, regions, and even cities.^[9–12]

In the present study, the purpose was to evaluate the outcomes of adolescent pregnancies and deliveries in a secondary level public hospital in a city located in the North-Eastern Anatolian region of Türkiye.

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Methods

This is a retrospective study performed between June 2018 and March 2021 in a secondary public hospital in Kars City. There were 8972 pregnant women applying to the obstetrics and gynecology clinic of a secondary state hospital in 2020. Assuming that the same number of pregnant women would apply to the clinic in 2021, the study population consisted of 8972 pregnant women. The number of pregnant women to be sampled was calculated with the formula $n = Nt \frac{2p}{q} \frac{2}{d} \frac{2}{(N-1)} + t \frac{2p}{q}$ because the study population was known (N refers to the number of individuals in the population, n refers to the number of individuals to be sampled, p refers to the incidence (probability) of the event under investigation, q refers to the frequency (probability) of the event under investigation, t refers to the theoretical value in table t at a given degree of freedom and detected error level, and d refers to the desired \pm deviation according to the incidence of the event). In this context, when $p=0.50$, $q=0.50$, $t=1.96$, and $d=0.05$, the sample size was determined 368 pregnant women.

Pregnancies in the adolescent age group and pregnancies between the ages of 18–35 were included. Women with pregnancies over 35 years of age, women with a known chronic disease in the mother, women with insufficient pregnancy data, women with any fetal anomaly, and women with multiple pregnancies were excluded from the study.

The ethics committee approval of the study was received from the Local Ethics Committee with the number 80576354-050-99/246 on 25/11/2020. Also, administrative permissions were obtained from the provincial health directorate and the chief physician of the hospital. The data were obtained from hospital records. The dependent variable was whether there was adolescent pregnancy or not. Independent variables are the presence of pregnancy loss, gestational hypertension, gestational diabetes, preterm birth, placenta previa, abruption, cesarean delivery, low birth weight, premature rupture of membranes, 1- and 5-minute Apgar scores below 7, and whether there was a need for hospitalization in neonatal intensive care unit (NICU) or not.

SPSS 21.0 (Statistics Package for the Social Sciences, Chicago, IL, USA) was used for all analyses. A value of $p \leq 0.05$ was considered significant.

Chi-square test was performed for pairwise comparisons. Fisher's exact test was used for the smallest theoretical frequency < 5 . Logistic regression analysis was performed for the parameters that were significant in pairwise comparisons.

Preterm birth was accepted as delivery before the 37th gestational week. Definitions are included at the end of the statistical explanation.^[13,14] The rupture of the fetal membrane is defined at least one hour before the onset of labor.^[15] Gestational Diabetes Mellitus is defined as a glucose metabolism disorder occurring during pregnancy (GDM was established as if one or more of the followings were increased in the 75 g oral glucose tolerance test: fasting glucose ≥ 92 mg/dL, ≥ 180 mg/dL at 1 hour, and ≥ 153 mg/dL at 2 hours).^[16] Hypertension during pregnancy is defined as the blood pressure of 140/90 and above after the 20 weeks of gestation.^[17]

Results

The study commenced with 1803 pregnant women who applied to the hospital between June 2018 and March 2021. After applying the exclusion criteria, the study was continued with 1753 patients. The study had a retrospective design.

Adolescent pregnancy rate was found to be 6.5%. The mean age of the women who were included in the study was 26.82 ± 4.56 , and the mean age of the adolescent pregnant women was 17.5 ± 1.08 . The distribution of the maternal and perinatal characteristics over adolescent pregnancy is given in **Table 1**. No statistically significant differences were detected between adolescent pregnant women and normal pregnant women in terms of pregnancy loss ($p=0.575$), diabetes ($p=0.525$), hypertension ($p=0.238$), placenta previa ($p=0.174$), placental abruption ($p=0.070$), and having a 1- or 5-minute Apgar score below 7 ($p=0.548$). On the other hand, statistically significant differences were detected between adolescent pregnancies and pregnancies between the ages of 18–35 in terms of preterm birth ($p=0.032$), premature rupture of membrane ($p=0.002$), low birth weight ($p=0.015$), cesarean delivery ($p=0.013$), and need for NICU ($p=0.004$).

When the parameters that are significant in the binary analysis are analyzed by logistic regression analysis; 2.13 fold the risk of preterm birth (CI: 1.319–

Table 1. The distribution of the maternal and perinatal characteristics over adolescent pregnancies.

Variables		Adolescent n (%)	Adult n (%)	Total n (%)	p-value
Loss of pregnancy	Yes	4 (6.6)	57 (93.4)	61(3.5)	0.575
	No	110 (6.5)	1582 (93.5)	1692(96.5)	
Pregnancy-induced diabetes	Yes	5 (6)	79 (94)	84 (4.8)	0.525
	No	109 (6.5)	1560 (93.5)	1669 (95.2)	
Pregnancy-induced hypertension	Yes	10 (8.5)	108 (91.5)	118 (6.7)	0.238
	No	104 (6.4)	1531 (93.6)	1635 (93.3)	
Preterm birth	Yes	8 (13.8)	50 (86.2)	58 (3.3)	0.032
	No	106 (6.3)	1589 (93.7)	1695 (96.7)	
Placenta previa	Yes	1 (2.1)	46 (97.9)	47 (2.7)	0.174
	No	113 (6.6)	1593 (93.4)	1706 (97.3)	
Placental abruption	Yes	3 (20)	12 (80)	15 (0.9)	0.070
	No	111 (6.4)	1627 (93.6)	1738 (99.1)	
Premature rupture of membrane	Yes	19 (13.1)	126 (86.9)	145 (8.3)	0.002
	No	95 (5.9)	1513 (94.1)	1608 (91.7)	
Birth type	Vaginal birth	52 (5.3)	924 (94.7)	976 (55.7)	0.013
	Cesarean section	62 (8.0)	715 (92.0)	777 (44.3)	
Low birth weight	Yes	12 (12.9)	81 (87.1)	93 (5.3)	0.015
	No	102 (6.1)	1558 (93.9)	1660 (94.7)	
Apgar score <7	Yes	4 (6.8)	55 (93.2)	59 (3.4)	0.548
	No	110 (6.5)	1584 (93.5)	1694 (96.6)	
Need for NICU	Yes	8 (19.5)	33 (80.5)	41 (2.3)	0.004
	No	106 (6.2)	1606 (93.8)	1712 (97.7)	

NICU: neonatal intensive care unit.

4.625), 1.621 fold the risk of premature rupture of membranes (CI: 1.461–2.328), 2.412 fold the risk of low birth weight (CI: 2.894–4.297), and 1.768 fold the need for NICU (CI: 1.013–2.121) were observed to increase (Table 2).

Discussion

The adolescent pregnancy rate was determined 6.5% in the group of women who were included in the study. Consistent with the results of the present study, the adolescent pregnancy rates were found to be 2% in the west-

Table 2. Adolescent pregnancy risk factors. Logistic regression analysis table.

		OR	%95 Confidence Interval (minimum value–maximum value)
Preterm birth	Yes	2.13	1.319–4.625
	No		1(reference)
Premature rupture of membranes	Yes	1.621	1.461–2.328
	No		1(reference)
Low birth weight	Yes	2.412	2,894-4,297
	No		1(reference)
Need for NICU	Yes	1.768	1.013–2.121
	No		1(reference)

NICU: neonatal intensive care unit.

ern cities and 7% in the eastern cities in the TDHS-2018 data.^[1] The probable reason why there are more adolescent pregnancies in the eastern cities is because of the cultural structure and economic situation.

Previous studies showed that preterm birth and premature rupture of the membrane are more common in adolescents, which is consistent with the result of the present study. The reason for this is considered to be uterine immaturity in adolescents.^[18–20] Also, a significantly higher rate of low birth weight was detected in adolescents both in previous studies and in the present study. The reason for this seems to be sociocultural factor and inadequate maternal nutrition in adolescence. There are more theories as the nutritional reason.^[21–23]

It was shown in many studies that the need for the NICU is higher in the adolescent age group, which is in line with our study results. We think that the reason for this is the higher incidence of complications in pregnancies in adolescence.^[24,25]

When we examined in terms of delivery type, we found that cesarean section delivery was more common in adolescent pregnancies at statistically significant levels in bilateral analyzes in our study. However, we observed no significance when we performed the logistic regression analysis. Among the data reported in the literature, there are different studies showing that both vaginal delivery and cesarean delivery will be more common in adolescent pregnancies. In the literature, besides the information that vaginal delivery will be more common in the adolescent age group due to better myometrial functions and more elastic connective tissue, there is also information that malpresentation anomalies will be more common due to the immaturity of the uterus.^[18–20]

In the study of Wilson et al., the authors stated that pregnancy loss was higher due to increased dystocia due to insufficient maternal bone development. However, in our study, we found no difference in terms of pregnancy loss. We think that this is due to the preference of cesarean section in a risky situation.^[26]

It has been reported that there is an increased risk of congenital anomaly in adolescent pregnancies. However, in our study, we did not investigate this information because there was no such information in the hospital records.^[27] Limitation of the study is the single-center design but it is the strength of our study that it is the first study in the region where the study was conducted.

Conclusion

Although the adolescent pregnancy rate is decreasing every year in Turkey, the rates are still high in the eastern parts of the country. Maternal and perinatal complications also increase as a natural consequence of this. Precautions must be taken to reduce adolescent pregnancies and decrease related complications.

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