

# Adolescent pregnancies and obstetric outcomes in Southeast Turkey: data from two regional centers

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## Summary

**Purpose of investigation:** To evaluate adolescent pregnancy and obstetric outcomes. **Methods:** This retrospective cohort study was performed by analysis of patient files and birth records of pregnant women who delivered in two cities in Southeast Anatolia, Turkey. Pregnant women aged 19 years old and younger were included in the study group. Women between 20 and 35 years of age constituted the control group. **Results:** The incidence of adolescent pregnancy during the study period was 11%. Birth weight and hemoglobin level were significantly higher in the control group ( $p < 0.05$ ). The majority of the women in the study group delivered vaginally ( $p < 0.05$ ). The incidence of preterm labor, intrauterine growth retardation, and stillbirth was significantly higher in the study group ( $p < 0.05$ ). Adolescent mothers were most likely to have low birth weight and very low birth weight babies ( $p < 0.05$ ). **Conclusion:** Adolescent pregnancies were associated with adverse pregnancy outcomes in our study population. Possible grounds for such increase warrant further evaluation and discussion.

**Key words:** Adolescent pregnancy; Obstetric outcomes; Turkish women.

## Introduction

Adolescent pregnancy continues to be a challenging public health issue around the world and is considered a high-risk type of pregnancy, involving physiological, psychological, and sociological risks [1]. Despite regional differences adolescent pregnancies constitute 0.9-21% of all pregnancies globally. Especially in developing countries social problems, poor healthcare, and poor socioeconomic status cause an increase in the rate of adolescent pregnancies [2]. The incidence of pregnancy among women aged 15-19 years in various Turkish studies was reported to be 8.7% [3], 7.9% [4], and 11.8% [5].

Adolescent pregnant women suffer substantially higher maternal and perinatal morbidity and mortality than adult women [6-9]. Poor pregnancy outcomes may be aggravated by socioeconomic, cultural, geographic, and racial factors [10-14]. Most studies report that certain physiological risks are higher among adolescent mothers, such as inadequate maternal weight gain during pregnancy, preterm births, low-birth-weight (LBW) infants, cephalopelvic disproportion (CPD), pregnancy-induced hypertension (PIH), abortion, stillbirth, and iron deficiency anemia [8-10, 15]. In contrast, some studies have suggested that adolescent pregnancies are not associated with increased risks of adverse perinatal outcomes compared with adult pregnancies [16-20]. All studies highlight the importance of preventing adolescent pregnancies, or, if that is not possible, close follow-up strategies should be implemented to reduce complications.

The purpose of this study was to compare obstetric and perinatal outcomes in pregnant adolescents with those in pregnant adults who delivered in two cities in Southeast Turkey.

## Materials and Methods

This retrospective cohort study was performed by analysis of patient files and birth records of pregnant women who delivered at Kahramanmaraş Sutcuimam University Medical Faculty Hospital, Obstetrics and Gynecology Clinic and Siirt Government Hospital (in two cities in Southeast Anatolia, Turkey), during the period January 2007 to January 2009. Pregnant women aged 19 years old and younger were included in the study group. Women between 20 and 35 years of age constituted the control group. Multiple pregnancies, deliveries before the 24<sup>th</sup> gestational week, and fetuses lower than 500 g were excluded from the study. Patient data were retrieved from records.

All demographic features such as age, nulliparity, multiparity, and hemoglobin (Hb) levels, and any data from gestation and the neonatal period were recorded. Preterm labor, postmaturity, birth weight, cesarean section (CS), operative delivery (vacuum extraction), preterm rupture of membranes (PPROM), PIH, intrauterine growth retardation (IUGR), breech presentation, and stillbirth rates were examined as outcomes of gestation and perinatal complications. Delivery before 37 weeks was classified as preterm labor. Deliveries after more than 41 weeks were classified as postmature. Preeclampsia was diagnosed with a blood pressure  $> 140/90$  mmHg and  $\geq 1+$  proteinuria in the urine examination. All intrauterine and intrapartum deaths were considered in a single group, the stillbirth group. Birth weight was divided in three categories: under 1,500 g, very low birth weight (VLBW); 1,500-2,500 g, LBW; and above 4,000 g; macrosomia.

SPSS 15.0 was used for the statistical analysis. Chi-square and Student's t-tests were performed to identify differences in obstetric and perinatal complications between pregnant adolescents and adult pregnant women.

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## Results

There were 311 pregnancies in women aged  $\leq 19$  years [13-19] (study group) compared with 2,525 pregnancies in the 20-35 age group (control group). The incidence of adolescent pregnancy during the study period was 11%. The mean age of pregnant adolescents was 17.1 (range 13-19, SD:  $\pm 0.8$ ). Mean gestational age was similar in the two groups, i.e.,  $37.6 \pm 2.6$  vs  $38.1 \pm 2.5$ . Mean birth weight and hemoglobin level were significantly higher in the control group, i.e.,  $3,031.5 \pm 575.3$  vs  $3,177.8 \pm 649.4$  and  $11.5 \pm 1.0$  vs  $11.7 \pm 1.3$ , respectively, ( $p < 0.05$ ) (Table 1). Some obstetric outcomes compared among the adolescents and adults are shown in Table 2. Two hundred fifty-four (81.7%) of the pregnant adolescents were nulliparous compared to 519 (20.6%) of the pregnant adults ( $p < 0.05$ ). The majority of the women in the study group delivered vaginally (75.9% vs 59.1%;  $p < 0.05$ ). The incidence of CS in the study and control groups was 24.1% and 40.1%, respectively, ( $p < 0.05$ ). There was no difference in the rate of vacuum extraction between the groups (3.5% vs 3.9%). Antenatal complications and problems are listed in Table 3. The incidence of preterm labor, IUGR, breech delivery and stillbirth was significantly higher in the study group, i.e., 19.3% vs 9.1%, 6.8% vs 2.7%, 10.0% vs 6.3% and 7.7% vs 1.8%, respectively, ( $p < 0.05$ ). There were no significant differences in PIH, PPROM or prolonged pregnancy between the groups. The distribution of birth weights is given in Table 4. Adolescent mothers were more likely to have LBW and VLBW babies, i.e., 17.0% vs 5.5% and 7.1% vs 2.2%, respectively, ( $p < 0.05$ ).

## Discussion

The adolescent pregnancy rate in our study was 11.0%, which was similar to the 11.8% rate reported by Keskinolu *et al.* [5] and higher than the incidence of 8.7% reported by Aksit *et al.* [3]. According to the Turkey Demographic and Health Survey (TDHS)-2003 the overall level of teenage childbearing is approximately 8% in Turkey, and the Eastern region has the highest level, with 9.1% [21]. The recently reported TDHS-2008 demonstrates that the age-specific fertility rate of the 15-19 age group declined from 60 births per 1,000 women in 1998 to 46 births per 1,000 women in 2003 and eventually to 35 births per 1,000 women in 2008 [22]. The prevalence of adolescent pregnancies in Turkey is still higher than it is in several Europe countries and the USA; for example, it has been reported to be 20 births per 1,000 women in the Netherlands [23], 42.9 per 1,000 women in 2002 in the USA [24], and 5.6% in Greece [25]. Some developing countries like India [26] and Brazil [27] have higher prevalences, i.e., 14.7% and 29%, respectively. TDHS-2003 emphasized that the level of adolescent fertility is strongly associated with women's educational level. The proportion of teenage women who are pregnant or who have already given birth decreases from about 15% among women with less than primary education to 3% among women with at least a high school education.

Table 1. — Maternal and perinatal characteristics of the groups.

	Study group (n = 311) Mean $\pm$ SD	Control group (n = 2,525) Mean $\pm$ SD	p
<i>Maternal and neonatal characteristics</i>			
Maternal age (year)	17.1 $\pm$ 0.8	28.2 $\pm$ 4.2	0.00
Hb level (mg/dl)	11.5 $\pm$ 1.0	11.7 $\pm$ 1.3	0.00
Gestational age (wk)	37.6 $\pm$ 2.6	38.1 $\pm$ 2.5	0.56
Birth weight (g)	3,031.5 $\pm$ 575.3	3,177.8 $\pm$ 649.4	0.00

n: number of cases; SD: standard deviation; p values were generated using the Student's t-test to compare quantitative data of the groups.

Table 2. — Obstetric and delivery characteristics of the groups.

	Study group		Control group		p
	n	%	n	%	
<i>Obstetric characteristics</i>					
<i>Parity</i>					
Nulliparous	254	81.7	519	20.6	0.00
Multiparous	57	18.3	2,006	79.4	0.00
Vaginal delivery	236	75.9	1,512	59.1	0.00
Cesarean section	75	24.1	1,013	40.1	0.00
Vacuum extraction	11	3.5	98	3.9	0.76

n: number of cases; p values were generated using chi-square test to compare the differences of proportions between the groups.

Table 3. — Comparison of maternal and neonatal complications in the groups.

	Study group		Control group		p
	n	%	n	%	
<i>Complication</i>					
Breech delivery	31	10.0	158	6.3	0.01
PIH	27	8.7	165	6.5	0.15
PPROM	18	5.8	109	4.3	0.24
IUGR	21	6.8	69	2.7	0.00
Stillbirth	24	7.7	45	1.8	0.00
Preterm labor	60	19.3	229	9.1	0.00
Prolonged pregnancy	10	3.2	126	5.0	0.17

n: number of cases; p values were generated using the chi-square test to compare the differences of proportions between the groups.

Table 4. — Birth weight distribution in groups.

	Study group		Control group		p
	n	%	n	%	
<i>Birth weight (g)</i>					
< 1,500	22	7.1	56	2.2	0.00
1,500-2,500	53	17.0	138	5.5	0.00
> 4,000	8	2.6	133	5.3	0.04

n: number of cases; p values were generated using the chi-square test to compare the differences of proportions between the groups.

Current use of modern contraceptive methods was reported as 16.9% in the 15-19 age group in the same study, which may be another reason for the high incidence of adolescent pregnancy in this country. Seventy-six percent of adolescent pregnancies were intended and planned. Another reason why adolescent pregnancies are high in this country is that 26% of adolescents want to have another child within two years and only 19.2% of this age group want no more children [21]. As a consequence, in Turkey, most of the pregnant adolescents are married and most of the adolescent pregnancies are wanted. Yildirim *et al.* reported that 76% of adolescent pregnancies were planned and 70% of the patients with a non-planned pregnancy were not using any contraception

in Turkey. They think that this low rate of contraceptive use is the reason for unintended pregnancies [2]. With increasing education and socioeconomic status the incidence seems to fall, but it remains a problem.

Most of the adolescent mothers in our study were nulliparous and delivered vaginally. The CS rate was significantly higher in the control group. There are contradictory views about this. Some studies report adolescent pregnancy as a risk factor for CS [12, 16, 17, 26], whereas others have disproved this [8, 9, 15, 18, 19, 25, 28, 29]. Our study does not support the belief that adolescent mothers are at increased risk for fetopelvic disproportion as a consequence of incomplete development. Jolly *et al.* attributed the etiology of high incidence of vaginal delivery in adolescents to the presence of a more functional myometrium, greater connective tissue elasticity, and lower cervical compliance, which allowed for more spontaneous vaginal deliveries [9]. Another possible explanation for this condition could be the high prevalence of LBW babies in the study group, which would be associated with a higher chance of successful vaginal delivery. In addition, the families in this region usually want more than four or five children and they know that this will not be possible if a CS is performed, and so the families compel adolescent pregnant women to deliver vaginally. We think this parental pressure increases the possibility of vaginal delivery among adolescents in our region.

The most common antenatal complication in pregnant adolescents in our study was preterm labor, with a 19.3% rate ( $p < 0.05$ ). The association between young maternal age and preterm labor remains controversial. As reported in several studies, in adolescents poor antenatal care, poor nutrition, anemia, cigarette smoking, and drug addiction during pregnancy may increase the rates of stillbirth, LBW, and preterm delivery [8-10, 12, 14, 15, 17-19, 23], while other studies [16, 20, 28, 29] do not corroborate this. Smoking rates have been found highest among adolescent mothers in the USA [24], but in Turkey adolescents have the lowest rate [21]. In THDS-2003, in order to assess women's nutritional status, the body mass index (BMI) of women who had given birth in the five-year period was calculated and a BMI less than 18.5 was used to identify cases of chronic malnutrition. The incidence of mothers' BMI falling below 18.5 in the 15-19 age group was 9.6% and was significantly higher than that in older age groups [21]. Stevens-Simon *et al.* reported that a low BMI was associated with preterm delivery in adolescents [30]. Another most important factor that increases the risk of preterm labor is low gynecologic age (biological immaturity) [10].

We found a significantly high incidence of LBW and VLBW babies in the study group ( $p < 0.05$ ). This also is debated in various studies. Some studies report a correlation between maternal age and LBW or VLBW [2, 7, 8, 9, 12, 15, 19, 24, 26], while others do not [20, 28, 29]. The incidence of macrosomia was significantly high in the control group ( $p < 0.05$ ). In a study performed in

Turkey the most common obstetric complication was LBW, with a rate of 28.7% [2]. The incidence of LBW in our study was 17.0% and it was the second most common obstetric complication. The reasons for these conditions may be poor socioeconomic status, poor nutrition, and high incidence of preterm labor.

Since the 1970s, especially in developed countries, the perinatal consequences of adolescent pregnancies have shown significant improvement due to early and appropriate antenatal care and support. Antenatal care is an important issue for better obstetric outcomes; usually pregnant adolescents receive no or late antenatal care compared to pregnant adults [13]. However, because menstrual irregularities are common in adolescents they tend to have later awareness of their pregnancy, later first prenatal visits, and fewer total prenatal visits than adults. In Turkey, younger, low parity women, women living in urban areas and in the regions other than the East, and women with at least a first primary level education are more likely to have received antenatal care compared to other women. While in the Eastern region of Turkey 57% of pregnant women receive antenatal care from a doctor, this rate rises to 85.8% in the Western region [21]. Oboro *et al.* found that the risks for younger teenagers were not significantly different from those in older mothers when women with inadequate prenatal care were removed from the analysis [12]. In Turkey, with the change in the medical care system in 2008 every women below 18 age can receive free antenatal care from all hospitals, and social support is readily available from the government whether they have any health insurance or not. This (medical accessibility) condition with the decrease in incidence of adolescent pregnancies in Turkey may enhance the perinatal outcomes of adolescent pregnancies in the future.

In conclusion, there is incongruity about the perinatal outcomes of adolescent pregnancies. As mentioned above, while some reported studies demonstrate high risk some others do not. The studies in the literature usually attempt to establish the reason for these maternal and perinatal risks in pregnant adolescents. Therefore, we asked the same question and tried to find an answer; the incidence of adolescent pregnancies is decreasing, the use of contraception is increasing, most of the pregnant adolescents are married, the current pregnancy is wanted, the families desire another baby within two years, smoking among adolescents is very low, and they can access free antenatal care from all hospitals – then what is the reason for these unfavorable prenatal outcomes in Turkey? We thought that low socioeconomic and low educational status were the main reasons for these consequences. Special attention is required to educate these women to achieve more positive outcomes. Furthermore, timely and appropriate prenatal care must be advised to adolescents to obtain better obstetric outcomes. Every effort should be made to reach out to adolescents to ensure that they receive optimal care and outcomes.

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