

# Adolescent pregnancies: complications, birth outcomes and the possible solutions

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## ABSTRACT

**Objectives:** In this study we aim to evaluate antenatal, perinatal and postnatal outcomes and complications of adolescent pregnancies, as well as to discuss the social and psychological consequences of these pregnancies.

**Material and methods:** We compare a total of 243 pregnant women at age 14–18 years to a vast control group at age 19–36 who all delivered at Bursa Yüksek İhtisas Training and Research Hospital between years 2005–2014.

**Results:** Antenatal care (folic acid supplementation, pre-conception counseling) was significantly higher in adolescent pregnancy group. Unplanned pregnancy rate was significantly higher in study group ( $p < 0.001$ ). Preterm delivery (before 37<sup>th</sup> week) ratio was statistically higher in pregnancy complications.

**Conclusions:** Adolescent pregnancy is a social entity which should be regulated and prevented by legal measures. Planned pregnancies should be promoted and the public should be educated and informed about the Hazards of adolescent pregnancies. Press institutions, public broadcasting services support the efforts to decrease adolescent pregnancies.

**Key words:** adolescent pregnancy, social results, education, prevention

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## INTRODUCTION

Adolescent pregnancy has both physiological and psychological impact on individuals and impairs their well-being profoundly. Such pregnancies are more common in developing countries and the risk of complications is significantly higher compared to adult pregnancies.

Adolescent pregnancies yield several maternal and fetal problems. Maternal mortality, nutritional issues, economic and social problems, as well as depression, abuse and a tendency to be involved in criminal acts is observed more frequently in pregnant adolescents than adults. Furthermore, adolescent pregnancies are more often complicated with prematurity, IUGR, fetal death, abortion, chronic fetal distress, malformation, placental abruption and lead to more operative deliveries compared to adult age population [1–3].

## OBJECTIVES

In this study we aim to evaluate adverse outcomes and complications of adolescent pregnancies in a group of Turkish women, as well as to discuss the social and psychological repercussions of such condition in Turkish society.

## MATERIAL AND METHODS

This is a retrospective cohort study. Medical records of pregnant women under 18 who delivered at Bursa Yüksek İhtisas Training and Research Hospital between years 2005–2014 were reviewed and data was compared with control group at age 19–36 who delivered in the same facility during same time period. The study group comprised of 243 women who, according to medical records, were under 18 at the time of conception. The control group is composed of 2738 pregnant women at age between 19 and

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36 years old that delivered during the same period in the same healthcare facility.

The inclusion criteria for the study group were as follows: age under 18 at the time of conception, singleton pregnancy, being healthy before pregnancy, attending regular pregnancy visits at least 8 times throughout the pregnancy, delivering at Bursa Yüksek İhtisas Research and Training Hospital. Exclusion criteria were: age over 18 at the time of conception, having a multiple pregnancy, discontinuing periodic antenatal visits and delivering at any other healthcare institution.

Inclusion criteria for the control group were: age of at least 19 at the time of conception, singleton pregnancy, being healthy before pregnancy, having conceived without the help of any assisted reproductive techniques, attending regular pregnancy visits at least 8 times throughout the pregnancy, delivering at our hospital. Exclusion criteria were: multiple pregnancy, conceiving by ART techniques, having a chronic medical condition before conception, failure to attend at least 8 periodic antenatal visits at our hospital or delivering elsewhere.

Patient data including age, gravidity, and parity, number of abortions, mode of delivery, perinatal problems and postpartum complications was recorded. Regarding newborns, data was collected including sex, height, birth weight, head circumference and APGAR scores at 1 min and 5 min. Additional information concerning resuscitation and/or neonatal intensive care unit events were recorded when such circumstance had occurred.

Primary outcomes were: birth weight, gestational week at delivery and mode of delivery (vaginal or cesarean); secondary outcomes were: maternal complications during pregnancy or during delivery (such as preeclampsia or diabetes), neonatal intensive care requirement and NICU stay.

Statistical analyses were performed using IBM SPSS (Statistical Package for Social Sciences) 20.0 (IBM, Armonk, NY). Normality of distributions was checked by Kolmogorov-Smirnov test, variables with normal distribution were analyzed using independent samples t-test, Anova; Wilcoxon signed rank test, Mann-Whitney U test and Kruskal-Wallis test were used for non-parametric variables. Linear and logistic regression was used for regression analyses where appropriate. Probabilities smaller than 0.5 were considered as statistically significant.

## RESULTS

A total of 243 pregnant adolescent women at age 14–18 were compared to a group of 2738 pregnant women at age 19–36, all of whom delivered in the same facility. Characteristics of the adolescent pregnancy group and the control group are given in Table 1. Mean age at delivery was 17.2 years old for the adolescent group and 25.2 years old for the control group. There was an evident statistically significant difference between the two groups. Regarding to marital status, being married or not married at time of pregnancy is more common in the adolescent group ( $p < 0.001$ ). Quite expected, unplanned pregnancy rate in the study group is higher than in the control group and the difference is statically significant ( $p < 0.001$ ). Maternal weight during pregnancy in the study group is less than the control group and the difference is statically significant ( $p < 0.001$ ). The adolescent and control group perinatal outcomes are listed in Table 2. It shows that there is no statistical difference in mode of delivery, whether vaginal or cesarean section (C/S). When it comes to indications for a C/S, the only statistically significant difference between the two groups is previous uterine scar that is more frequent in the control

**Table 1.** Characteristics of the adolescent pregnancies and control groups

	Adolescent group (n = 243)	Control group (n = 2738)	P
Maternal age at delivery, range (years)	17.2 (14–18)	25.2 (19–34)	< .001
Age ≤ 15 years (%)	28 (11.5)	–	
Age 16–18 years (%)	215 (88.5)	–	
Nulliparity (%)	155 (63.8)	1558 (56.9)	0.08
Marital status, single (%)	15 (6.2)	41 (1.5)	< .001
Unplanned pregnancy (%)	169 (69.6)	764 (27.9)	< .001
Mean age of gestation at first visit, range (weeks)	11.3 (8–31)	7.1 (7–22)	< .05
Preconception supplementary folic acid use (%)	27 (11.1)	887 (32.4)	< .001
Prenatal supplementary folic acid use (%)	122 (50.0)	1807 (66.0)	< .001
Smoking	11 (4.5)	181 (5.3)	0.72
Pre-pregnancy BMI*	20.3 ± 3.6	22.5 ± 3.6	0.05
Maternal weight gain during pregnancy [kg]	7.3 ± 2.86	11.5 ± 5	< .001

\*BMI — body mass index, calculated as weight (kg)/height (m<sup>2</sup>). Data are expressed as n (%), or mean ± SD except where otherwise noted. The mean difference is significant at the .05 level

**Table 2. Comparison of the perinatal outcomes of the adolescent and control groups**

Variable	Adolescent group (n = 243)	Control group (n = 2738)	P	Odds ratio (95% CI*)
Mode of delivery			0.17	0.87 (0.71–1.06)
Vaginal	172 (70.8)	1791 (65.4)		
C/S**	71 (29.2)	947 (34.6)		
PPH*** after vaginal delivery	4 (1.64)	49 (1.79)	0.73	0.88 (0.43–1.81)
PPH after C/S	2 (0.82)	25 (0.91)	0.96	0.84 (0.29–2.45)
<b>C/S indications</b>	<b>Adolescent group (n = 71)</b>	<b>Control group (n = 947)</b>		
Previous uterine scar	12 (16.9)	341 (36.0)	< .001	0.31 (0.20–0.48)
Failure to progress or CPD****	31 (43.7)	320 (33.8)	0.005	1.76 (1.23–2.51)
Fetal distress	18 (25.3)	164 (17.3)	0.224	1.30 (0.84–2.00)
Malpresentation	6 (8.5)	60 (6.4)	0.320	0.59 (0.40–1.58)
Macrosomia	3 (4.2)	35 (3.7)	0.355	1.71 (0.34–1.46)
Placenta previa	1 (1.4)	22 (2.3)	0.88	0.82 (0.63–1.06)
Eclampsia	–	2 (0.2)	–	–

\*CI — confidence interval; \*\*C/S — cesarean section; \*\*\*PPH — postpartum hemorrhage; \*\*\*\*CPD — cephalopelvic disproportion

**Table 3. Multiple logistic regression analysis of antenatal complications**

Antenatal complication	Adolescent group (n = 243)	Control group (n = 2738)	P	Odds ratio	95% CI*
Preterm delivery	26 (10.7)	128 (4.7)	< .001	2.46	1.80–3.37
PPROM**	7 (2.9)	45 (1.6)	.201	1.68	0.75–3.76
Preeclampsia	21 (8.6)	142 (5.2)	.005	2.14	1.30–3.51
Eclampsia	0	2 (0.2)	–	–	–
FGR***	20 (3.4)	71 (2.6)	.26	1.33	0.80–2.19
GDM****	2 (0.8)	32 (1.1)	.37	0.62	0.22–1.77
Abruption of placenta	2 (0.8)	31 (1.1)	.23	0.41	0.80–1.09
Placenta previa	1 (0.4)	22 (0.8)	.05	0.52	0.42–2.23

\*CI — confidence interval; \*\*PPROM — preterm premature rupture of the membranes; \*\*\*FGR — fetal growth restriction; \*\*\*\*GDM — gestational diabetes mellitus. Data are expressed as n (%) except where otherwise noted. The mean difference is significant at the .05 level

group ( $p < 0.001$ ) and cephalopelvic disproportion (CPD) that is more frequent in the adolescent group ( $p = 0.005$ ). Multiple Logistic Regression Analysis of Antenatal Complications is presented in Table 3. Preeclampsia ( $p < 0.001$ ) and preterm delivery rates ( $p = 0.005$ ) are higher in the study group and the difference is statically significant. There is no statically significant difference between the study and the control group in preterm premature rupture of membranes (PPROM), fetal growth restriction (FGR), gestational diabetes mellitus (GDM) or abruption of placenta.

## DISCUSSION

Antenatal and postnatal complications of pregnancy are more common in adolescence. Incomplete physical and psychological development of the adolescents is the main etiology of pregnancy complications. Comparing to pregnancies of adults population, preterm birth, intrauterine growth retardation, fetal death, abortion, chronic fetal

distress, fetal malformation, placental abruption and cesarean or operative birth rate are more frequent in adolescent pregnancies [1–3].

Studies show that perinatal mortality rate in adolescent pregnancy is at 11.2%, which is 1.9 times higher than in non-adolescent (adult) pregnancies [4]. Furthermore, apart from fetal outcomes, maternal adverse outcomes have higher rates as well. Maternal mortality rate, nutrition problems, depression, exploitation and inculpation is observed more frequently in adolescent pregnancies. Economic and social problems of adolescence have an impact on their school life and prevents development of proper ties with social surrounding. Pregnant adolescent women who terminate their pregnancy continue attending school. In contrast, pregnant adolescent women who keep the pregnancy hold up their education or even quit it [5].

Studies show that adolescent pregnancies have a lower cesarean rate compared to non-adolescent pregnancies [5].

Also, the second phase of labor is shorter [6]. In our study, cesarean rate is determined in adolescent group to be at 29.2% and in control group at 34.6%. Despite higher cesarean rate in the control group we didn't find the difference to be statically significant.

A literature review indicates that the neonatal outcomes in adolescent pregnancies are similar to non-adolescent pregnancies. The overall rate of congenital abnormality, newborn intensive care requirement or neonatal death is very low [2, 6, 7]. In our study, Apgar score and newborn intensive care requirement is also very low and no neonatal death is recorded.

According to literature, preterm birth is seen frequently in adolescent pregnancies. Similarly, our study preterm birth rate ( $\leq 37$  weeks) is found to be relatively high ( $p < 0.001$ ) [2, 6–8].

When it comes to operative delivery rates in adolescent pregnancies, the literature is inconclusive. Two studies found the operative delivery rate to be high [1, 2]. On the other hand, another study found it to be relatively lower [8]. In our study there is no operative delivery (with use of forceps or vacuum) made because of clinicians preferring cesarean section.

In our study unplanned pregnancy rate is higher in adolescent group (69.6%) compared to control. Unfortunately, this shows that the use of contraception in adolescent group is low. In Turkey, in order to examine physically a patient under the age of 18, parent consent is required. This is the reason why adolescent pregnant women don't attend family planning clinics to learn about contraception. Awareness remains low since some cases of pregnancy are realized when it is too late to terminate pregnancy (due to advanced gestation). One study observed that a parental consent mandate is behind the great amount of decrease in teenagers' attendance at family planning centers but it didn't lead to an increase in underage pregnancies [9].

In developed countries schools run lessons for pupils to give them information about sexuality, reproduction and contraception, which is a practice we don't have in our country. Such sexual education raises awareness in adolescents. Moreover, the use of oral contraceptives has decreased the pregnancy rates, so did other contraceptive techniques while last resort solution in form of abortion remains available and legal [1, 10]. In contrast, in our country or similar underdeveloped countries, adolescents who have sex or get pregnant are forced to marriage because of religious reasons, traditions or family/social pressure.

In one study the adolescents have declared that 64.1% of them had at least 1 or more ( $\geq 1$ ) sexual intercourse and 49.3 %of them had a sexual intercourse with at least 1 or more partners in last 3 months. Unfortunately, it was admitted that only 53% of them have used condom during last

sexual intercourse, while only 32.2% of adolescent women were using oral contraceptives, intrauterine device, implant, patch or ring [11].

Psychological problems arise not only from birth and postpartum period but also from rape [1, 10]. Although it would be possible to obtain a legal abortion in underage pregnancy or any pregnancy in effect of rape by means of prosecution and court order, such possibility will remain usually unexploited if individual and family education is not provided.

Mode of delivery in underage pregnancies is characterized by high operative births since often it is necessary due to problems related with patient compliance. We obtained a similar result in our study. Such issue should be interpreted and handled as a social issue and even though we can't solve it completely, we shall intend to minimize it through social education.

## CONCLUSIONS

Underage pregnancies ( $< 18$ ) not only cause medical problems but also isolate adolescent individuals from the community by sociocultural ostracism. Although means of law attempt to prevent such situations, the challenge remains to decrease their frequency. We postulate the best means for that would be social education so the community is informed about the potential adverse outcomes of adolescent pregnancy. The education should be multichannel and include schools, press institutions, public service broadcasting and organization of free seminars.

### Conflict of interest

Authors have declared that no competing interests exist.

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