



## A comparison between pregnancy outcome in women in 15 to 19 and 20 to 35 years age group

Seyedeh Zahra Masoumi<sup>1</sup>, Maryam Kashanian<sup>\*2</sup>, Elaheh Arab<sup>2</sup>, Narges Sheikhsari<sup>3</sup>, Reyhaneh Arab<sup>4</sup>

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### Abstract

**Background:** Pregnancy is one of the most important periods of a woman's life and is influenced by many different factors. For years, it was assumed that teenage pregnancy can cause poor pregnancy outcome.

The purpose of this study was to compare some pregnancy complications between 2 groups of 15 to 19 and 20 to 35 year- old primi-gravida pregnant women

**Methods:** This was a cross- sectional study conducted on the data sheets of primigravida women who delivered their babies in a teaching hospital. A total of 3040 eligible women entered the study; of them, 280 (9.3%) were in the 15 to 19 years age group and 2756 in the 20 to 35 years age group. The 2 groups were compared for preeclampsia, PROM, preterm birth, SGA, placental abruption, and placenta previa. A logistic regression model was used for data analysis.

**Results:** The women of the 2 groups significantly differed in BMI and socioeconomic background. The rate of preeclampsia ( $p=0.008$ ), PROM ( $p=0.002$ ), and preterm delivery ( $p=0.001$ ) were less in the 15 to 19 years age group. The rate of placental abruption, placenta previa, IUFD, and SGA was not significantly different between the 2 groups. After multivariate regression analysis, preeclampsia (adjusted odd ratio= 2.157; 95% CI= 1.38- 4.21) and preterm delivery (adjusted odd ratio= 2.443; 95% CI= 1.78- 5.13) were found to be higher in the 20 to 35 years group.

**Conclusion:** The risk of poor pregnancy outcome is not higher in teenage pregnancies compared to pregnancies in the 20 to 35 years age group if confounding factors, including socioeconomic factors, are carefully controlled.

**Keywords:** Teenage pregnancy, Pregnancy outcome, Preeclampsia, Preterm delivery, PROM (premature rupture of membranes), SGA, Placental abruption, Placenta previa, IUFD

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### Introduction

Pregnancy is one of the most important periods in a woman's life and is accompanied with huge physiological changes, which can be similar to a tsunami for the body. Many different factors can influence the process of pregnancy and consequently the pregnancy outcome. Maternal age, parity, and socioeconomic factors are among these

important factors (1). Also, other factors, including bleeding at the first months of pregnancy (2), maternal BMI (body mass index) (3, 4), and maternal disorders before entering pregnancy (5, 6) influence pregnancy outcome. Among these factors, maternal age is one of the well-known influential factors, and for many years it was hy-

**Corresponding author:** Dr Maryam Kashanian, [maryamkashanian@yahoo.com](mailto:maryamkashanian@yahoo.com)

<sup>1</sup> Department of Midwifery, School of Nursing and Midwifery, Mother and Child Care Research Center Hamadan, Hamadan University of Medical Sciences, Hamadan, Iran.

<sup>2</sup> Department of Obstetrics & Gynecology, Akbarabadi Teaching Hospital, Iran University of Medical Sciences, Tehran, Iran.

<sup>3</sup> Faculty of Medicine, University of Exeter, Exeter, UK.

<sup>4</sup> Midwife.

#### ↑What is "already known" in this topic:

Maternal age is one of the well-known influential factors, and for many years, it was hypothesized that young maternal age or teenage pregnancy is accompanied with poor pregnancy outcome. Thus, because teenage pregnancy constitutes a substantial number of pregnancies and it is increasing in some countries, it should be considered more seriously.

#### →What this article adds:

The risk of poor pregnancy outcome is not higher in teenage pregnancies compared to pregnancies in the 20 to 35 years age group if confounding factors, including socioeconomic factors, are carefully controlled. Perhaps, concurrent socioeconomic and cultural problems are the main issues in this field rather than maternal young age per se.

pothesized that young maternal age or teenage pregnancy is accompanied with poor pregnancy outcome (1). Considering the fact that teenage pregnancy constitutes a substantial number of pregnancies and is increasing in some countries (7), thus, it should receive sufficient attention and consideration. The number of teenage pregnancies shows a small reduction in the UK, however, the number is higher than the other European countries (8).

Pregnancy in teenagers have been reported to have higher risks in different developed and developing societies (1, 8-13). However, these poor outcomes are probably related to other concurrent socioeconomic or other influential factors, and not solely to maternal young age per se (14, 15).

Considering the notable percentage of teenage pregnancies in Iran and likelihood of its inclination due to the recent policies introduced in Iran, its effects on maternal mortality and morbidity is of serious concern. Thus, the present study aimed at comparing pregnancy outcome between 15 to 19 and 20 to 35 years age groups by considering cultural and socioeconomic factors.

## Methods

This was a cross-sectional study conducted on the data sheets of women who gave birth in a period of one year (2010-2011) in Akbarabadi teaching hospital in Tehran, Iran. This hospital is a very busy maternity hospital in the south of Tehran, which is a deprived part of the city. The women had approximately a similarly poor socioeconomic condition. The average number of deliveries in this hospital is around 12 000 deliveries per year.

Inclusion criteria included maternal age of 15 to 35 years, primigravida, gestational age of more than 20 weeks, singleton pregnancy, legally married women, BMI between 19 to 26, having prenatal care of at least 8 times during pregnancy, and being a housewife (unemployed). Exclusion criteria were smoking, drug abuse, alcohol consumption, any known systemic disorders, or drug use except for ordinary supplements including iron and folic acid. Evaluated outcomes were preeclampsia, PROM, IUFD, SGA, preterm birth, placental abruption, and placenta previa. The women were divided into 2 age groups of 15 to 19 and 20 to 35 years. Then, the above-mentioned outcomes were compared between the 2 groups. Data were analyzed using SPSS 16 (IBM; Chicago, IL, USA). A two-sided  $p$  value  $\leq 0.05$  was considered statistically significant. Categorical variables were assessed using chi square test. Forward logistic regression model was for data analysis.

## Results

The 2 groups were not significantly different in BMI and socioeconomic background. In total, 7600 women were in the 20 to 35 age group and 290 in the 15 to 19 age group. A total of 3040 eligible women entered the study, of them, 2765 women (90.7%) were in the 20 to 35 age group and 284 (9.34%) in the 15 to 19 years age group. Mean  $\pm$  SD age of the teenage group was  $17.3 \pm 2.1$  years and that of the other group was  $27.3 \pm 7.7$  years. The different outcomes of the 2 groups are presented in Table 1. Preterm birth (27.8% vs. 17.3%,  $p = 0.001$ , OR = 2.238; 95% CI = 1.629- 3.077), preeclampsia (10.7% vs. 5.6%,  $p = 0.008$ , OR = 2; 95% CI = 1.179- 3.36), and PROM (31.8% vs. 22.9%,  $p = 0.002$ , OR = 1.573; 95% CI = 1.179- 2.098) were found more in the 20 to 35 years age group. There were no significant differences between the 2 groups in placental abruption, placenta previa, IUFD, and SGA. Adjusted odd ratio was calculated for preterm delivery (adjusted odd ratio = 2.443; 95% CI = 1.78- 5.13) and preeclampsia (adjusted odd ratio = 2.157; 95% CI = 1.38- 4.21), which was higher in the 20 to 35 years age group.

## Discussion

In the present study, pregnancy outcome was better in the 15 to 19 age group than the 20 to 35 age group. In this study, it was tried to omit the confounding factors which can be underlying reasons for poor pregnancy outcomes in teenage pregnancies. All women were legally married and were supported by their families and had at least 8 times prenatal care. They were not smokers or drug addicts and did not use alcohol. They all were primigravidas and entered the study after 20 weeks of pregnancy, without having a history of bleeding in the first half of pregnancy. BMI was calculated and found to be in the normal range, so the effects of maternal weight were omitted.

In a study, support received by family and relatives has been emphasized to reduce poor pregnancy outcome in teenage pregnancy (16). Another study has proposed that in some societies, teenage pregnant women are more likely to be smokers, or use alcohol and cannabis (17). Approximately, 10% of pregnancies in the world occur in teenagers (8), and mostly, these women have poorer socioeconomic conditions than older mothers (18-20). In 2008, approximately a birth rate of 16 million was reported among teenagers, most of which in poor and developing countries (19). Perhaps, by controlling the confounding factors, we could be able to find a better correlation between maternal age and pregnancy outcome. In a study in Jordan (21), which was performed on pregnancy out-

Table 1. The characteristics of pregnancy in the 2 groups

Characteristics	Age group (15-19) N=284	Age group (20-35) N=2756	p	Crude odd ratio	95% CI
Preeclampsia [N= 310(10.2%)]	16(5.6%)	294(10.7%)	0.008*	2	1.179- 3.36
Placenta previa [N= 12(0.4%)]	0(0%)	12(0.4%)	0.265	----	----
SGA [N= 111(3.7%)]	7(2.5%)	104(3.8%)	0.263	1.552	0.715- 3.369
PROM [N= 942(31%)]	65(22.9%)	877(31.8%)	0.002*	1.573	1.179- 2.098
Preterm birth [N= 860(27%)]	49(17.3%)	811(27.8%)	<0.001*	2.238	1.629- 3.077
IUFD [N= 87(2.9%)]	6(2.1%)	81(2.9%)	0.426	1.403	0.607- 3.245
Placental abruption [N= 139(4.6%)]	7(2.5%)	132(4.8%)	0.074	1.991	0.922- 4.3

\*Statistically significant

come in teenage nulliparous women, anemia, pregnancy hypertension, and antepartum hemorrhage were comparable (the same) between teenagers and women aged 20 to 29 years. In that study, maternal weight gain during pregnancy, PROM, and gestational diabetes were less in teenagers, but preterm labor was seen more in teenagers. This study is representative of good pregnancy outcome in teenagers, which is compatible with the present study. Higher preterm delivery rates in teenagers have been reported in another study (10), while rate of IUGR, low APGAR Score, IUFD, and neonatal death and postpartum hemorrhage were not higher in teenagers. Also, rate of cesarean delivery, instrumental delivery, and episiotomy were lower in teenagers. Moreover, another study showed no poor pregnancy outcome in early teenage group (14-16 years) and older teenage group (17-19 years) (22). In contrast, one study in Oman (11) reported higher rates of preterm delivery, PROM, anemia, and LBW in teenage pregnant women aged 14 to 19 years in comparison with 20 to 25 age group.

A study in India (12) showed that the incidence of teenage pregnancy was 10%, which is similar to the present study. That study (12) compared pregnancy outcome between women aged  $\leq 19$  years old and women aged 20 to 35 years. They found higher rates of anemia, preterm labor, gestational hypertension, and LBW in teenagers. The authors proposed that good prenatal care and delivery in the hospital can reduce the risks of pregnancy in teenagers, making them comparable to pregnancy in older ages. Another study (13) emphasized these factors in developing countries. Considering the above-mentioned points, it can be concluded that teenage pregnancy is not risky per se (13, 20).

With regards to this point that previous miscarriages can make the next pregnancy a higher risk (5), we considered only nulliparous in this study and because even bleeding in the first half of pregnancy can influence the outcome of pregnancy (2), those with gestational age of 20 weeks and more and a normal fetus without a history of hemorrhage in the first half of pregnancy were considered and included in the study. A study in Iran revealed that (24) maternal age did not have any effects on the rate of preeclampsia independently. Also, in developed countries, the outcome of pregnancy in teenagers of more than 15 years is generally good (14), and it has been proposed that psychological and socioeconomic support can improve pregnancy outcome (1, 14-15).

Higher rates of STD in teenage mothers were reported in a study and compared with older mothers (25). Also, preterm delivery was higher in this age group. However, glucose intolerance was less in teenage mothers, and there was no difference between the 2 groups in cesarean delivery. Overall, perinatal outcome was good, which has been attributed to better prenatal care, quality of support by families, and socioeconomic welfare (25-27).

Other studies in North Jordan and India showed better or comparable outcome of pregnancy in teenagers than in older mothers, except for preterm labor, which was more in teenagers (21, 22).

## Conclusion

The debate will continue about teenage pregnancies and whether their outcomes are significantly poor (13). Perhaps, concurrent socioeconomic and cultural problems are main issues in this field rather than maternal young age per se.

## Conflict of Interests

The authors declare that they have no competing interests.

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