



## Fetal Outcomes and Complications of Pregnancy among Teenage and Adult Primigravid Saudi Women: A Retrospective Comparative Study

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### ABSTRACT

**Aim:** The study aimed to find out the fetal outcome (miscarriage, birth weight, prematurity, and stillbirth) and complications of pregnancy (hypertensive disorders, preterm birth, diabetes mellitus, and anemia) among teenage mothers in comparison to adult Saudi women. **Methods:** This was a retrospective comparative study, which includes 129 teenage primigravid mothers aged 19 years or younger and 740 adult primigravid mothers aged 20-29 years with fetal and maternal complications. **Results:** Higher incidence of miscarriage was found among teenage mothers  $p=0.0016$ ,  $OR=5.25$ ,  $95\% CI=1.87-14.74$ . The higher rate of low birth weight was recorded among adolescent mothers  $p=0.0033$ ,  $OR=2.1129$ ,  $95\% CI=1.28-3.48$ . A higher proportion of premature babies was reported among teenage mothers  $p=0.0001$ ,  $OR=3.95$ ,  $95\% CI=2.16-7.24$ . The teenage group showed a higher incidence of stillbirth in comparison to an adult group with statistically insignificant  $p=0.9$ ,  $OR=1.15$ ,  $95\% CI=0.133-9.91$ . Higher incidence of hypertensive disorders was found to be among the adult primigravid mothers  $p=0.45$ ,  $OR=0.63$ ,  $95\% CI=1.88-2.1$ . The higher proportion of preterm birth was reported among teenage mothers  $p=0.0001$ ,  $OR=3.95$ ,  $95\% CI=2.16-7.24$ . One case of DM was reported among adult primigravid mothers and no any similar case among the study group was found,  $p=0.6939$ ,  $OR=1.29$ ,  $95\% CI=0.86-1.94$ . Higher incidence of anemia was found among teenage group  $p=0.2135$ ,  $OR=1.29$ ,  $95\% CI=0.86-1.94$ . **Conclusion:** Our study concluded that teenage pregnancy was associated with a high risk of miscarriage, low birth weight, premature babies and preterm birth. Proper antenatal care, health education and elevation of community awareness might reduce the number of teenage pregnancies and their complications.

**Keywords:** Primigravid mothers, Teenage, Adult, Saudi women

**Abbreviations:** OR: Odd ratio; CI: Confidence interval; SPSS: Statistical Package for Social Sciences; DM: Diabetes mellitus; CS: Caesarean Section

### INTRODUCTION

Teenage pregnancies and births are considered as risky, deleterious maternal outcomes of teenage pregnancy, include preterm labor, anemia, hypertensive disorders of pregnancy. Many health problems were associated with adverse fetal outcomes, which include premature babies, low birth weight infants, stillbirths and miscarriages [1, 2].

Studies on outcome and complications in teenage pregnancy have contradictory results. Some of these studies found that there was no significant difference between teenage and adult in fetal and maternal outcome pregnancy and did not carry extra risk if they have good antenatal care, early booking and family support [3-5]. Thaithae, et al., found that teenage pregnancy was associated with increased risks of adverse maternal and neonatal outcomes, which include preterm delivery, preeclampsia and low birth weight [6]. Leftwich, et al., found that detrimental maternal outcomes, which include preterm labor, anemia and hypertensive disorders of pregnancy, were associated with teenage pregnancy. Poor fetal outcomes include premature babies, low birth weight infants, miscarriages and stillbirths and

are more common among teenage pregnancies [7-10]. Watcharaseranee, et al., found that teenage pregnancies were associated with a significantly higher risk of anemia in pregnancy and poor fetal outcome [11,12].

**PATIENTS AND METHODS**

This study was a retrospective comparative study. A total of 129 teenage primigravid pregnancies and 740 adult primigravid pregnancies were compared. Case files were retrieved and analyzed concerning the teenager patients aged ≤ 19 years and adult women aged 20-29 years with pregnancies, attended antenatal care, delivered vaginally, via CS or other instrumental delivery (vacuum extraction) or admitted with complications during pregnancy at Hail Maternity Hospital. Fetal outcome (miscarriage, stillbirth, premature babies and birth weight), and complications during pregnancy (hypertensive disorders, diabetes mellitus, preterm delivery, and anemia) were compared with the adults. Data were analyzed using SPSS version 16. Chi-square test, odd ratio, and 95% confidence interval were calculated. The p-value of less than 0.05 was considered statistically significant. Descriptive results were expressed as frequencies and percentages.

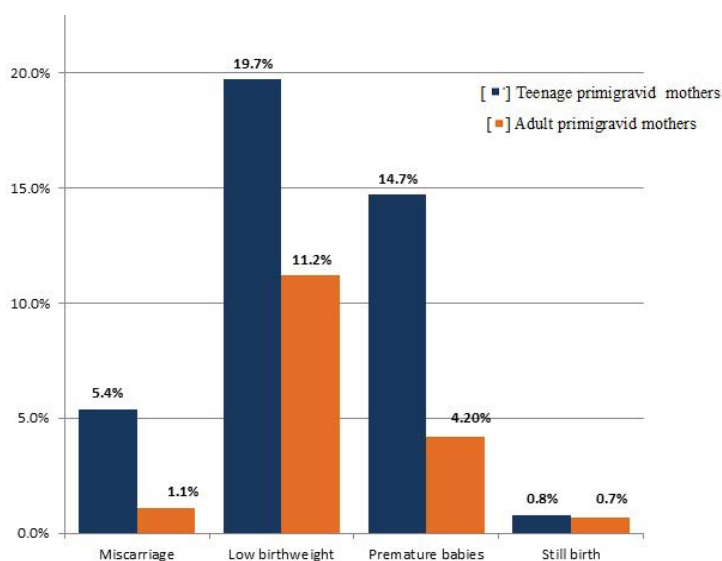
The proposal for this study was submitted and approved by the Ethical Research Committee, College of Medicine. Permission to collect the data from the medical records was taken by the Maternity Hospital administration.

**RESULTS**

Table 1 shows the risk associated with miscarriage among teenage, which was found to be statistically significant p=0.0016, OR=5.25, 95% CI=1.87-14.74. This table also shows a higher risk of low birth weight in the teenage group in comparison to the adult group with p=0.0033, OR=2.1129, 95% CI=1.28-3.48. This table demonstrates a higher rate of premature babies among the teenage group in comparison to adult group with statistical significance p=0.0001, OR=3.95, 95% CI=2.16-7.24. This table records a higher incidence of stillbirth among the teenage group in comparison to adult group with statistically insignificant difference p=0.9, OR=1.15, 95% CI=0.133- 9.91 (Figure 1).

**Table 1 Fetal outcome among maternal age groups**

Variable	Teenage primigravid mothers (n=129)	Adult primigravid mothers (n=740)	OR (95% CI)	p-value
	N	N		
Miscarriage	7	8	5.25 (1.87-14.74)	0.0016
Low birth weight	24	82	2.11 (1.28-3.48)	0.0033
Premature babies	19	31	3.95 (2.16-7.24)	0.0001
Stillbirth	1	5	1.15 (0.13-9.91)	0.9000

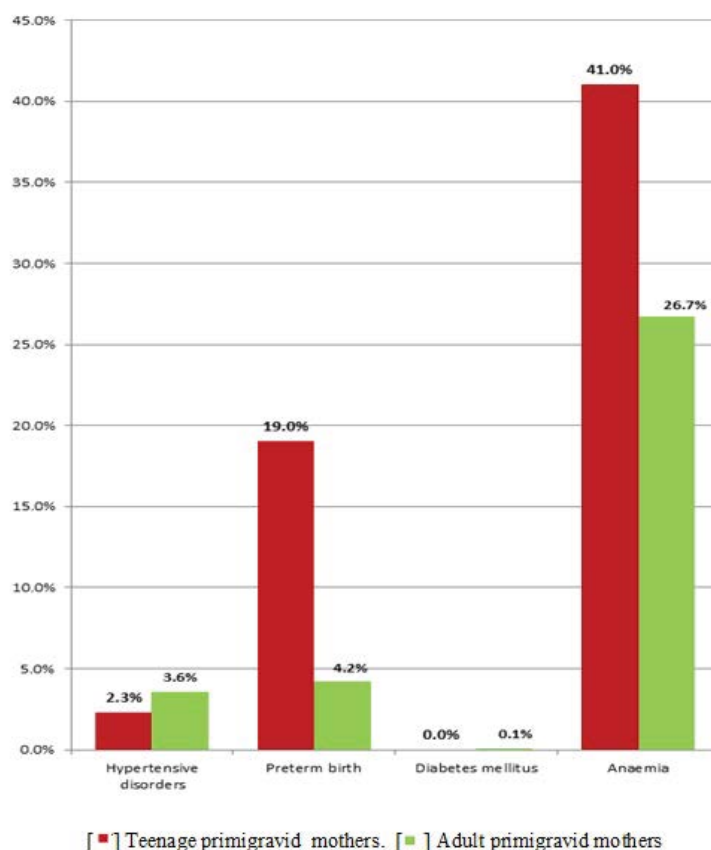


**Figure 1 Comparison of fetal outcomes between the maternal age groups**

Table 2 shows the incidence of hypertensive disorders among the adult primigravid mothers, it was higher than the study group with statistically insignificant difference  $p=0.4514$ ,  $OR=0.63$ ,  $95\% CI=1.88-2.10$ . This table also shows a higher risk of preterm birth in the teenage group in comparison to the adult group with  $p=0.0001$ ,  $OR=3.95$ ,  $95\% CI=2.16-7.24$ . This table records only one case of DM among adult primigravid mothers and no any similar case among the study group  $p=0.6939$ ,  $OR=1.29$ ,  $95\% CI=0.86-1.94$ . This table demonstrates a higher incidence of anemia among the teenage group in comparison to the adult group with statistically insignificant difference  $p=0.2135$ ,  $OR=1.29$ ,  $95\% CI=0.86-1.94$  (Figure 2).

**Table 2 Distribution of maternal complications in the two age groups**

Variable	Teenage primigravid mothers (n=129)	Adult primigravid mothers (n=740)	OR (95%CI)	p-value
	N	N		
Hypertensive disorders	3	27	0.63 (0.188-2.10)	0.4514
Preterm birth	19	31	3.95 (2.16-7.24)	0.0001
Diabetes mellitus	0	1	1.29 (0.86-1.94)	0.6939
Anemia	41	196	1.9 (0.08-46.98)	0.2135



**Figure 2 Comparison of maternal complications between two age groups**

**DISCUSSION**

The present study includes 869 primigravid mothers, 129 of them were teenage primigravid mothers (study group) with the mean age was 18.23 years, median age was 19 years, and minimum age was 14 years. Adult primigravid group (comparative group) includes 740 cases age between 20 and 29 years old with the mean age was 24.37 years, and the median age was 24 years.

The incidence of miscarriage was higher among teenage primigravid mothers in the present study compared to adult primigravid mothers. This result agrees with the results of previous studies, which found that adolescent mothers had

a higher incidence of miscarriage compared with adult primigravid mothers (Figure 1) [1,2]. Our findings contradict the results of some previous studies, which showed no difference in the fetal outcomes between teenage primigravid and adult primigravid mothers [13].

The rate of low-birth-weight babies was higher among teenage primigravid mothers in the present study compared to adult primigravid mothers. Our findings support the results of the previous studies, which found that teenage mothers had a higher rate of low-birth-weight babies compared with adult primigravid mothers (Figure 1) [14,15].

Our findings disagree with the results of some previous studies, which showed no difference in the neonatal outcomes of teenage and adult mothers [13]. The proportion of premature babies in the present study among teenage mothers was higher than adult mothers. This result supports the findings of the previous studies, which found that teenage mothers had a higher proportion of premature babies compared with adult primigravid mothers (Figure 1) [16,17]. Our findings contradict the results of some previous studies, which showed no significant difference in the fetal outcome between teenage and adult mothers [3]. The frequency of stillbirth among teenage mothers in our study was higher than in adult primigravid mothers. This result agrees with the finding of previous studies, which found that there was a higher incidence of stillbirth among teenage mothers (Figure 1) [18-20]. Our findings contradict the results of some previous studies, which showed the lower rate of stillbirth among teenage mothers [9].

Our findings agree with the results of previous studies, which showed no significant difference in the proportion of hypertensive disorders between teenage and adult mothers, and the results of the present study contradict the findings of the study conducted by Liu, et al., who found that teenage mothers had a higher incidence of hypertensive disorders compared with adult primigravid mothers [19,20]. The proportion of preterm labor among adolescent mothers in our study was higher than in the adult group. Our findings support the result of previous studies, which found that teenage mothers had a higher proportion of preterm labor compared with adult primigravid mothers, and contradicts the results of a study which showed no significant difference in the incidence of preterm labor between teenage and adult mothers [4,21,22] (Figure 2). No case of gestational diabetes was reported among teenage mothers in our study. This result supports the findings of the previous studies, which found that the risk of gestational diabetes increased with advanced age of the mother, whereas contradicts the results of a study, which found that gestational diabetes was more common among teenage mothers [9,23]. The results of present study agree with the results, which showed that higher frequency of anemia among teenage mother, and contradicts the results of a study, which showed a low incidence of anemia among teenage mothers [5,17,24,25] (Figure 2).

### CONCLUSION

Our study concluded that teenage pregnancy was associated with a high risk of miscarriage, low birth weight, premature babies and preterm birth. Proper antenatal care, health education and elevation of community awareness might reduce the number of teenage pregnancies and their complications.

### DECLARATIONS

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#### Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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