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Late teenage pregnancy and reproductive outcomes

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ABSTRACT

Whether the association between teenage pregnancy, especially after 16 years of age and adverse birth outcomes could be explained by deleterious social environment, inadequate prenatal care, or biological immaturity remains controversial. The objective of this study was to determine whether teenage pregnancy aged above 16 years is associated with increased adverse reproductive outcomes. A hospital based comparative study of 120 deliveries to compare the outcomes between teenage (16-19 years) and non-teenage pregnancies (20-14 years). The maternal and fetal outcomes were similar between late-teenage and non-teenage pregnancies.

Keywords: Teenage pregnancy, obstetric outcomes, low birth weight, pre-term, Apgar score.

INTRODUCTION

Teenage pregnancy is an important public health problem worldwide as it often occurs in the context poor social support. Most studies have consistently reported that teenage pregnancy were at increased risk for pre-term delivery, small for gestational age (SGA), low birth weight, perinatal mortality and increased maternal complications (1-5). Whether the observed association between teenage pregnancy and adverse birth outcomes simply reflects the deleterious sociodemographic environment that many pregnant teenagers confront or whether biological immaturity is also causally related remains controversial. The increased risk probably was attributable to other factors that were related to teenage pregnancy such as: race, unmarried, low socioeconomic status and inadequate prenatal care.

In rural India still a significant number of teenage women get married and bear children. The social structure, antenatal care, perinatal care and the quality of services available in developing countries differ from that of developed countries. In developing countries, the common causes for teenage pregnancy are early menarche, low education level, poverty, sexual activity is initiated at a much younger age, low use rate of contraception, and early marriages.

This study was conducted to determine whether teenage pregnancy is associated with increased risks of adverse outcomes.

MATERIALS AND METHODS

A hospital based retrospective cohort study. A total of 120 patients included in our study, 60 pregnant women in each group i.e. teenage group and control group. Inclusion in the study group was restricted to maternal age between 16-24. Maternal age was categorized into 2 groups: 16 to 19 (teenage group), and 20 to 24 years (control group). The patient demographic data and maternal and fetal outcomes of interest in this study were maternal age, body mass index (BMI), parity, marital status, antenatal care, anemia (hemoglobin <10gm%), pregnancy induced hypertension (PIH), gestational diabetes, gestational age at delivery, delivery complications, type of delivery,

preterm (live infant delivered at <37 weeks' gestation), low birth weight (LBW i.e., live infant weighting <2500 g at birth irrespective of the gestational age), low apgar score at 5 minute (<7), congenital anomalies, and neonatal intensive care admissions and still born.

Maternal age was defined as the age of mother in completed years at the time of delivery. Since mothers with 20–24 years old had the lowest risk of adverse outcomes, they served as the reference group in our analysis. Gestational age was calculated as the interval between the date of delivery and the date of last normal menstrual period (LMP) in completed weeks. When the last normal menstrual period date was missing, a clinical estimate of gestational age was used instead (about 5% of the records). Post Partum Hemorrhage (PPH) was defined as blood loss greater than 500 ml following birth of baby during the hospital stay. Maternal age <16 years and delivery before 28 weeks of gestation at birth were excluded from study.

Statistical analysis: All continuous data was analyzed by the student's t test (independent sample t test) and discrete variables were analyzed with chi-square test. The statistical package for the social sciences (SPSS) 17.0 (SPSS inc., Chicago, IL, USA) was used for statistical analysis. All the statistical tests were considered statistically significant whenever p value < 0.05.

RESULTS

All 120 pregnant women were included for statistical analysis. The demographic characteristics and maternal outcomes of the study population are shown in table 1. As expected teenage pregnant women had low mean age of 18.6 ± 0.55 years (16-19) when compared to non-teenage pregnant women 21.97 ± 1.13 years (20-24) and 53 (88.3%) were primi in teenage group, where as 38 (63.3%) were primi in control group (table 1). All the maternal outcomes of the teenagers versus the reference women were similar, except for the high incidence of spontaneous delivery in control group (table 1). There were no differences regarding fetal outcome between the two groups (table 2). There was no incidence of stillbirth in any group. Even though there were high incidence of preterm deliveries and LBW babies among teenage pregnant group, this was not statistically significant.

Table 1. Patient characteristics and maternal outcomes

Variable		Teenage group (n=60)	Control group (n=60)	p value
Age		18.6±0.558	21.97±1.31	.000*
BMI		23.26±3.83	25.41±5.12	.010*
Booked		48 (80%)	55 (91.7%)	.114
Married		60 (100%)	60 (100%)	1
Hb <10gm%		3 (5%)	4 (6.7%)	.697
Gestational age at delivery		38.52±1.53	38.85±1.70	.263
Parity	Primi	53 (88.3%)	38(63.3%)	.002*
	Multi	7(11.7%)	22(33.7%)	
PIH		8(13.3%)	2(3.3%)	.095
Labor spontaneous		37(61.7%)	48 (80%)	.044*
Induced		23 (38.3%)	12 (20%)	
APH		1(1.7%)	2(3.3%)	.559
PPH		1 (1.7%)	2(3.3%)	.559
Gestational diabetes		1 (1.7%)	3(5%)	.619

*BMI= body mass index; Hb= hemoglobin; PIH= pregnancy induced hypertension; APH= antepartum hemorrhage; PPH= post partum hemorrhage; *p value <0.05 considered as statistically significant.*

Table 2. Fetal outcomes

Variable	Teenage group (n=60)	Control group (n=60)	p value
Preterm	7(11.7%)	5(8.3%)	.762
Fetal birth weight	2.74±0.42	2.89±0.43	.053
Low birth weight	10 (16.7%)	4(6.7%)	.153
5 minute apgar score <7	1 (1.7%)	1(1.7%)	1.00
NICU admission	2 (3.3%)	1(1.7%)	.559
Congenital anomalies	1(1.7%)	0	.315.
Still birth	0	0	-

*NICU= neonatal intensive care unit. *p value <0.05 considered as statistically significant.*

DISCUSSION

Our study indicated that teenage pregnancy after 16 years of age was not associated with increased risk of maternal and fetal outcome, similar findings were observed by satin et al., (6) who concluded that teenage pregnancies aged between 16 and 19 years had no risk for intrinsic maternal youth and the obstetric risk increased only in teenage <16 years of age, while Fraser et al., (7) number of prenatal care visits, onset time of prenatal care or gestational age

were coded as unknown in the linked data set and were excluded from the present study. Many researchers considered that pregnant teenagers were not a high-risk group if good prenatal care was provided (8-11).

Despite the magnitude of the problem, it is unknown whether the poor outcomes of teenage pregnancy are partly attributable to the biologic fact of a young maternal age or are solely the consequence of sociodemographic factors generally associated with pregnancy among teenagers. The poor maternal and fetal outcomes in teenaged pregnancies aged less than 16 years basically attributed to biological immaturity, where as sociodemographic factors like low socio economic status, maternal race, less well education, unmarried status, and inadequate prenatal care are mainly responsible for poor reproductive outcomes in teenage pregnancies aged after 16 years.

However, many studies stated that, inspite of age-appropriate education level, adequate prenatal care and without smoking and alcohol during pregnancy, increased risk of adverse birth outcomes was less likely to be secondary to socioeconomic factors and prenatal care, and more likely intrinsic to maternal youth

Studies in animals and a small number of epidemiologic studies suggest, however, that a young age alone may be an independent risk factor for adverse outcomes of pregnancy (2, 9-11). Previous studies suggested that a young gynaecological age **6** (conception within 2 years after menarche) and the effect of a teenager's becoming pregnant before her own growth has ceased might be associated with the increased risk of adverse outcomes in teenage pregnancy (12-15). Immaturity of the uterine or cervical blood supply in teenage pregnancy could increase the risk of subclinical infection and prostaglandin production, and lead to increased risk of pre-term delivery. Teenage mothers who themselves continued to grow during pregnancy could compete with the developing fetus for nutrients, which has been supported by some studies that weight gain during pregnancy might be more critical for teenage mothers than for older mothers (14-15)**.** Even though in our study, we found no association between teenage pregnancy and adverse birth outcomes, however further studies are needed to confirm or rule out the mechanisms on how younger maternal age increases the risk of adverse birth outcomes.

Limitations of our study should not be overlooked. In this study, gestational age was estimated based on self-reported last menstrual period. Last menstrual period was more likely to be uncertain among teenagers than among older women. We did not include certain factors like emotional stress, education level, smoking, alcohol consumption, use of illicit drugs such as cocaine, economic status and lack of family support which were known to influence reproductive outcomes. Another important limitation is small sample size.

We conclude that teenage pregnancy after 16 years of age is not associated with increased incidence of adverse maternal and fetal outcome, and we support the accepted opinion that adverse birth outcome associated with teenage pregnancy is attributable to low socioeconomic status, and inadequate prenatal care rather than biological immaturity.

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