

## Original Research

# Prevalence and acute obstetric outcomes among teenage primigravida reaching the active labour stage

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### Abstract

**Introduction:** Adolescent pregnancy is a condition with significant risk that necessitates expert prenatal care to get positive results. Teenage pregnancies continue to be a significant cause of fatality for both mothers and children. The primary cause of death for females between the ages of 14 and 19 worldwide is complications associated with pregnancy and childbirth. This study compares the delivery outcomes and demographics of teenage moms (ages 14-19) who are pregnant with older mothers who are 20-29 years old to ascertain the rate of teenage hospital deliveries at SNMMCH in Dhanbad, Jharkhand, India. We also pinpoint the variables linked to worse pregnancy outcomes.

**Methodology:** This cross-sectional study had both prospective and retrospective phases. Severe preeclampsia is defined as the following: the mothers must have eclampsia, a persistent platelet count  $<100,000/\text{mm}^3$ , serum transaminases greater than twice normal, proteinuria  $>5$  g per 24 hours or  $\geq +2$  using the dipstick test, and systolic and diastolic blood pressure measurements taken at least twice, six hours apart.

**Results:** Thirteen percent of births were to teenagers. Unfavorable fetal outcomes associated with teenage deliveries included low birth weight (less than 2,500 g) (OR, 2.79; 95% CI, 1.28-6.09), low 5-min Apgar score ( $<7$ ; OR: 1.66; 95% CI, 0.91-3.0), and preterm newborns (less than 37 weeks) (OR: 1.85; 95% CI, 1.01-3.41). Perineal tears were the primary significant maternal outcome linked to teenage pregnancies (OR, 1.6; 95% CI, 0.95-2.7). Premature rupture of the membranes, cesarean section, episiotomy, and preeclampsia/eclampsia have not been significantly linked to teenage pregnancies. Adolescent fetal outcomes were found to be negatively impacted by maternal characteristics such as age and gravidity. In contrast, adverse maternal effects were directly caused by maternal factors such as marital status, age, unemployment, and gravidity.

**Conclusion:** Teenage pregnancies at SNMMCH are not uncommon. Adolescent pregnancies carry a higher chance of unfavorable outcomes for both the mother and the fetus than adult pregnancies.

**Keywords:** Cesarean birth, Adolescent pregnancy, placenta, Gestational period

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### Introduction

Teenage pregnancies are becoming more commonplace worldwide. Negative neonatal and obstetric outcomes can result from this high-risk disease. The World Health Organization classifies pregnancy in females between the ages of 10 and 19 as teenage or adolescent pregnancy [1]. Teenage pregnancy is a severe social and health concern on a worldwide scale [2-4]. An estimated 16-17 million young mothers gave birth worldwide before 2008; Most of these babies were born in low and middle-income countries [5, 6]. Adolescent pregnancies have many detrimental social impacts, such as increased rates of school dropout, violent crimes against minors, suicide, and even murder [6, 7]. The majority of research shows a causal link between underweight births, preterm births, and insufficient prenatal care

[8-10], as well as between teenage pregnancy and these outcomes [5, 6, 11]. This connection is less obvious, though, in situations where the pregnancy results are unpleasant, such as postpartum hemorrhage, cesarean delivery, hypertension, and vaginal instrument delivery [12]. Teenage pregnancy is a societal issue that has an impact on the health of mothers and children. Adolescent pregnancy poses a severe threat to public health in India. While the government's national policy supports 18 years as the legal minimum age for females to marry, this study aimed to track the obstetric results of teenage pregnancies.

### Methodology

**Study Design and Location:** There were prospective and retrospective phases to this cross-sectional

investigation. This study was performed at SNMMCH in Dhanbad, Jharkhand, India.

**Study Setting:** The research was done for a six-month prospective cross-sectional analytic case-control analysis and enrolled as cases were all teenage nulliparous girls of 14 to 19 years who gave birth in the previously mentioned medical institutions as singleton throughout the study period.

**Inclusion Criteria:** The comparator group consisted of nulliparous women aged 14 to 19 who had a single pregnancy and delivered in the same duration.

**Exclusion Criteria:** Women who have experienced any kind of medical issues, such as diabetes, hypertension, heart disease, kidney disease, endocrine disorders, or autoimmune diseases previous to the current pregnancy, were excluded from the study. Women without delivery records and those whose pregnancies were shorter than 28 weeks gestation were also disqualified. Since adolescents under the age of 14 were more vulnerable due to pelvic immaturity, they were also disqualified from the study. Multifetal pregnancies and nulliparous women over 30 were also disqualified since they had previously been categorized as multifetal and advanced maternal-age pregnancies, respectively, which are high-risk pregnancies. Lastly, the study did not include women whose perinatal complications had occurred more than 48 hours earlier.

**Sample Size:**  $S = 192$  was the smallest sample size required. For the study, 254 participants were included, comprising 180 controls and 74 adolescents.

**Study Procedure:** An informed consent form was signed and completed by participants prior to the distribution of a pre-tested research survey. Sociodemographic information was collected in addition to data on mother and fetus outcomes. Age, marital status, gravidity, religion, number of prenatal visits, employment status, and education level were among them for the mother. The last regular menstrual cycle was used to calculate the gestational age of the pregnancy. In many cases, when individuals arrived for ANC early in their pregnancies, we had to rely on first-trimester ultrasound imaging. Comparisons were made between the patients and controls regarding placenta previa,

placenta abruption, perineal tears, episiotomies, premature membrane rupture, and other maternal outcomes. The perineal tears were not documented because healthcare facilities used different classification systems. The study evaluated the two groups' results for low birth weight, preterm, post-term, and Apgar scores of less than 7 at five minutes of observation, as well as newborn mortality. The directors of the participating healthcare facilities granted access to the patient's medical records for the retrospective study.

**Statistical Analysis:** Epi-Info version 7 was used for data analysis. Where appropriate, absolute figures and straightforward percentages were used to illustrate descriptive statistics. Each variable's frequency in the cross-sectional study was computed and shown as a percentage of the overall sample size. Chi-square tests and Fisher's exact tests were used to evaluate predictor and outcome variables in a bivariate study of categorical data when appropriate. Their 95% confidence intervals (CI) are also provided the data were presented as odd ratios (OR). Logistic regressions were employed for multivariable analysis, and the final model contained only variables whose significance threshold was less than 0.1. The adjusted OR and 95% confidence interval were provided with the results.

## Results

29.1% (74/254) individuals in the prospective study were expecting. Only 18.9% of participants had completed postsecondary education, while the majority, 73.6% (186/254), had only completed secondary school. Christians comprised the % of participants- 96.9% (246/254). Of the study participants, 57.7% (148/254) were married, 47.2% (119/254) were working, and 43.7% (111/254) were not having children. Throughout their pregnancy, 148 people (58.3%) visited two or more ANC visits. Of the patients, perinatal pregnancy outcomes accounted for 52.4% (133/254) and fetal outcomes for 43.2%. 105 of the 133 participants who experienced adverse effects were mothers. The education level of adult mothers increased by 3.7 times ( $P < 0.001$ ), while the likelihood of employment increased by 3.1 times ( $P < 0.001$ ). In addition, compared to the teenage group, adults had 3.0 times the likelihood of having multiple children and 3.8 times the likelihood of being married ( $P < 0.001$ ) (Table 1).

**Table -1: Comparing the sociodemographic characteristics of the adult and teenage groups**

Variables	Teenagers (14-19 years)	Control group (20-29 years)	OR (95% CI)	P- value
Education (in years)				
Primary (6)	8 (10.8%)	10 (5.6%)	3.7(2.1-5.5)	<0.001
Secondary (7-13)	64 (87.2%)	122 (68.1%)		
Tertiary (≥14)	1 (2%)	47 (26.4)		
Occupation				
Employed	21 (10.8%)	98 (54.7)	3.1(2.0-4.7)	<0.001
Unemployed	52 (70.9%)	81 (45.3%)		
Marital status				
Single	47 (64.2%)	57 (51.9%)	3.8(2.6-5.7)	<0.001
Married	26 (35.8%)	122 (68.1)		
Gravidity				
≥2	20 (27%)	123 (68.3%)	3.0(2.3-4.9)	<0.001
1	54 (73%)	57 (31.7%)		
Religion				
Muslim	3 (4.1%)	5 (2.8%)	1.7(0.6-4.7)	<0.23
Christian	71 (95.9%)	175 (97.2%)		
ANC				
≥4 Visits	30 (40.5%)	76 (42.2%)	1.02(0.7-4.6)	<0.4
0-3 Visits	44 (59.9%)	104 (57.8%)		

OR: Odds ratio

CI: Confidence interval  
 The two groups did not differ in terms of religion or antenatal care (ANC) visits ( $P < 0.2$  and  $P < 0.4$ , respectively). Poor five-minute Apgar scores (OR, 1.7; 95% CI, 0.9-3.0;  $P < 0.05$ ), low birth weights (OR, 2.8; 95% CI, 1.3-6.1;  $P < 0.006$ ), and preterm newborns (OR, 1.9; 95% CI, 1.0-3.4;  $P < 0.03$ ) were all more common in teenage moms than in adult mothers. However, there was no discernible difference between the two groups in the frequency of stillbirths, post-term deliveries, or neonatal deaths. For young mothers, the risk of unfavorable fetal outcomes was often more than two times higher (OR, 2.1; 95% CI, 1.4-3.2;  $P < 0.001$ ).

A significant relationship was seen between increased gravidity (aOR, 9.08; 95% CI 3.21-25.69) and poorer fetal outcomes and age (aOR, 2.79; 95% CI, 0.05-0.83;  $P < 0.006$ ). By raising the mother's age and gravidity, negative fetal effects were mitigated.

Negative maternal outcomes were significantly correlated with period (aOR, 1.59; 95% CI, 0.95-2.67;  $P = 0.04$ ), employment (aOR, 0.48; 95% CI, 0.29-0.82;  $P = 0.003$ ), marital status (aOR, 0.58; 95% CI, 0.36-0.96;  $P = 0.02$ ), and gravidity (aOR, 9.08; 95% CI, 3.21-25.69;  $P < 0.001$ ).

### Discussion

Work, education, and socioeconomic position variations could cause the high incidence. It has been found that premarital encounters, unemployment, and low educational attainment all play significant roles in the development of teenage pregnancy. These results supported those from prior investigations [14,15].

The frequency of adolescent pregnancy and childbirth is inversely correlated with education level, according to reports from emerging nations [15]. The majority of teenage pregnancies resulted in marriage and were not

stigmatized by society, according to research conducted in low-income nations [3]. We found that teenage pregnancies were more common outside of marriage than inside of it. Kongnyuy et al. [6] corroborate this finding. The small sample size may account for any discrepancies between our research and studies conducted in other low-income nations in our instance and the sociocultural variations between the two contexts [17,18]. Additionally, according to our research, the percentage of teenage pregnancies in their first gestation was 73%, while it was only 31.7% in the group. A non-statistically significant trend was noted within the sample of 74 young mothers who gave birth during the research period. Of them, 58.5% (44/73) received inadequate prenatal care (below 4 ANC). This pattern matched the findings of earlier investigations [17, 18]. In Cameroon, it has been generally reported that 72.8% of teenagers and 892.9% of pregnant women between the ages of 20 and 29 attended four or more ANC [17, 18]. In the Philippines, 81% of women in the 20-30 age group received prenatal care, whereas just 29% of pregnant girls under the age of 18 did [11]. The fact that the majority of youths were less educated, single, and unmarried may help to explain this. Adolescent problems have been connected to inadequate or non-existent prenatal care. With prompt and proper care during and after the pregnancy, the majority of health issues linked to teenage pregnancies and childbearing could be avoided or managed [19].

Studies conducted in low-income nations revealed that the majority of teenage pregnancies took place within marriages, negating any societal stigma associated with them [3,19]. Just 29% of pregnant girls under the age of 18 got prenatal care, compared to 81% of women in the 20–30 age range [18, 19].

### Limitations

Due to the limited sample size of this hospital-based study, we could not examine the pregnancy outcomes of teenage moms across the board. This study did not examine socioeconomic, sociocultural, or psychological aspects that may significantly affect pregnancy outcomes. It was impossible to look into outcomes such as newborn infections because there was no meaningful scope for follow-up. Furthermore, we did not investigate how sex education affects the teenage population. Analogous research ought to be conducted in additional areas to gather national statistics that would illustrate the severity of the issue and assist policymakers in devising solutions.

### Conclusion

Adolescent pregnancy was the direct cause of the unfavorable results experienced by the mother and the fetus. Preterm births (less than 37 weeks), low 5-minute Apgar ratings (less than 7), and low birth rates (less than 2,500 g) have all been associated with adolescent pregnancies. The incidence of post-term deliveries and stillbirths did not significantly differ

between moms in their teens and adulthood. Perineal tears were the primary unfavorable maternal outcomes resulting from adolescent pregnancies. The prevalence of placenta previa, episiotomy, cesarean sections, PROM, and preeclampsia/eclampsia did not differ significantly between teenage and adult women. Compared to the control group, teenage moms had higher rates of unemployment, single status, and lower educational attainment. Poor pregnancy outcomes have been associated with several demographic characteristics like age, gravidity, marital status, and employment status.

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