



OUTCOMES AND RISK FACTORS OF ADOLESCENT PREGNANCY: A SINGLE CENTRE EXPERIENCES

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Abstract

Background: Adolescent pregnancy remains a significant public health concern, especially in low- and middle-income countries like Bangladesh, where it is linked to adverse maternal and neonatal outcomes.

Aim of the study: This study aimed to assess maternal and neonatal outcomes and identify key sociodemographic and clinical risk factors associated with adolescent pregnancy in Bangladesh.

Methods: A descriptive cross-sectional study was conducted over one year at a tertiary care hospital in Bangladesh, including 62 adolescent mothers aged 13–19 years. Data were collected through structured questionnaires and hospital records. Statistical analyses included descriptive statistics and logistic regression to identify predictors of adverse neonatal outcomes.

Result: The mean age of the mothers was 16.24 ± 1.62 years, with 59.68% residing in rural areas. Anemia (85.48%) and inadequate antenatal care (<7 visits in 70.97%) were the most common maternal issues. Low birth weight (30.65%), NICU admission (14.52%), and neonatal death (4.84%) were the key neonatal concerns. Logistic regression identified lack of antenatal care, younger maternal age (≤ 16 years), anemia, and low socioeconomic status as significant predictors of adverse neonatal outcomes.

Conclusion: Adolescent pregnancy in Bangladesh is associated with high rates of maternal complications and neonatal morbidity. Ensuring adequate antenatal care, improving nutritional support, and addressing socioeconomic disparities are essential to improving outcomes in this vulnerable population.

Keywords: Adolescent pregnancy, maternal outcomes, neonatal outcomes, risk factors

INTRODUCTION

Adolescent pregnancy continues to pose a critical global health and development challenge, especially in low- and middle-income countries where early childbearing often perpetuates cycles of poverty, poor health outcomes, and gender-based inequality [1]. According to the World Health Organization (WHO), adolescent pregnancy is defined as pregnancy occurring in girls aged 15 to 19 years [2]. Despite global efforts to reduce its prevalence through policy, education, and health

interventions, adolescent pregnancy remains widespread and inadequately addressed [3]. Approximately 15 million girls aged 15–19 years and girls under age of 15 give birth each year globally, with the highest rates concentrated in sub-Saharan Africa and South Asia [4]. In Bangladesh, the problem is particularly acute; the 2004 Bangladesh Demographic and Health Survey (BDHS) reports that 27% of women aged 15–19 have begun childbearing [5], while 51% of women aged 20–24 was married before the age of 18 placing Bangladesh among the countries with the highest adolescent fertility and early marriage rates in the world [6]. The causes of adolescent pregnancy are multifaceted, deeply rooted in social, cultural, economic, and structural determinants. These include early and forced marriage, limited access to adolescent-friendly reproductive health services, poor sexual health education, gender discrimination, and pervasive poverty [7]. Many adolescent girls, particularly in rural or marginalized communities, lack autonomy and the necessary knowledge to make informed reproductive choices, often resulting in unplanned or unwanted pregnancies [8]. Moreover, the early onset of menarche driven by improvements in nutrition and shifting environmental exposures has widened the biological window for fertility, further complicating the implementation of timely preventive interventions [9]. Cultural norms and family pressures often reinforce early childbearing as a social expectation rather than a choice [10]. Adolescent pregnancy is strongly associated with a wide range of adverse maternal and neonatal health outcomes [11]. Physiologically, adolescents may not be fully prepared for the physical demands of pregnancy and childbirth, increasing their vulnerability to complications such as preeclampsia, eclampsia, anemia, obstructed labor, preterm birth, low birth weight, and perinatal mortality [12]. Infants born to adolescent mothers face greater health risks due to poor maternal preparedness and limited access to care. Young mothers often miss essential antenatal services because of stigma, financial dependence, restricted mobility, and fear of judgment, which further worsens outcomes for both mother and child [13]. Beyond the physical consequences, adolescent pregnancy has profound psychological, educational, and socioeconomic ramifications. Teenage mothers are at increased risk of mental health conditions, including depression and anxiety, often stemming from social isolation, stigma, and stress [14]. They are also more likely to drop out of school, experience domestic abuse, and face reduced employment opportunities, perpetuating intergenerational cycles of disadvantage. Children born to adolescent mothers often face compromised caregiving, inadequate stimulation, and reduced access to health and education, further reinforcing systemic inequities [15]. This study aims to assess the maternal and neonatal outcomes and identify key social, behavioral, and structural risk factors associated with adolescent pregnancy in Bangladesh.

METHODOLOGY & MATERIALS

This descriptive cross-sectional study was conducted at the Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh, over a period of January 2019–December 2020. A total of 62 adolescent pregnant women, aged 13 to 19 years, who delivered at the facility during the study period were included using a purposive sampling method. All participants were enrolled after fulfilling the inclusion criteria and formed a clearly defined cohort of adolescent mothers.

Inclusion Criteria

- Pregnant women aged between 13 and 19 years.
- Singleton pregnancy.
- Delivered at the study hospital during the data collection period.

Exclusion Criteria

- Multiple pregnancies.
- Pre-existing chronic illnesses (e.g., diabetes, hypertension, renal disease).
- Incomplete hospital records or non-consent to participate.

Data collection

Data were collected using a pretested structured questionnaire and through hospital records. The collected variables included age, residence, education level, socioeconomic status, marital status, substance abuse, gravida status, history of miscarriage or abortion, gestational age at delivery, antenatal care visits, maternal complications (such as anemia, pregnancy-induced hypertension, gestational diabetes, premature rupture of membranes, antepartum hemorrhage, and obstructed labor), mode of delivery, and neonatal outcomes (birth weight, APGAR score at 7 minutes, NICU admission, perinatal complications, and neonatal death). All participants provided informed consent before inclusion in the study, and ethical approval was obtained from the institutional review board.

Statistical Analysis

Data were entered and analyzed using SPSS version 26. Descriptive statistics were used to summarize the data. Categorical variables were presented as frequencies and percentages, while continuous variables were reported as mean $\pm$ standard deviation (SD). No inferential statistical tests were applied, as the objective of the study was to describe the outcomes and associated risk factors among adolescent mothers. Associations between risk factors and outcomes were assessed using the Chi-square test, with $p < 0.05$ considered statistically significant. Logistic regression was conducted to identify independent predictors of adverse neonatal outcomes, presenting adjusted odds ratios (AORs) with 95% confidence intervals.

RESULT

The study included adolescent mothers with a mean age of 16.24 ± 1.62 years. Most participants were between 16 and 17 years old (40.32%), followed by those aged 13–15 (32.26%) and 18–19 (27.42%). A majority resided in rural areas (59.68%) and had either secondary or higher education (50%), while 45.16% had primary education. Half of the respondents belonged to low socioeconomic status, with 35.48% from middle and 14.52% from high-income groups. A small proportion reported substance abuse (9.68%) (Table 1). Among all, the majority were primigravida (79.03%). A history of abortion or miscarriage was reported by 14.52% of the participants. Most deliveries occurred at term (≥ 37 weeks) in 74.19% of cases, whereas 25.81% were preterm. Regarding antenatal care, 70.97% had fewer than seven ANC visits, indicating suboptimal prenatal monitoring, and only 29.03% met the recommended number of visits (Table 2). Vaginal delivery (59.68%) was more common than cesarean section (40.32%) (Figure 1). Anemia was the most common complication (85.48%), after pregnancy-induced hypertension (17.74%), premature rupture of membranes (12.90%), antepartum hemorrhage (9.68%), gestational diabetes (8.06%), and obstructed labour (6.45%) (Table 3). 30.65% had low birth weight (< 2500 g) and 69.35% had normal birth weight. Most had a favorable APGAR score (≥ 7) at 7 minutes (80.65%). Perinatal complications within the first 24 hours were observed in 14.52% of cases. The majority of newborns (79.03%) were cared for by their mothers and 14.52% required NICU admission, 4.84% resulted in stillbirth or neonatal death (Table 4). Logistic regression analysis revealed that lack of antenatal care was the strongest predictor of adverse neonatal outcomes (AOR = 3.42; 95% CI: 1.87–6.28; $p < 0.001$), followed by maternal age ≤ 16 years (AOR = 2.15; 95% CI: 1.18–3.92; $p = 0.011$), anemia during pregnancy (AOR = 1.90; 95% CI: 1.05–3.43; $p = 0.034$), and low socioeconomic status (AOR = 2.30; 95% CI: 1.20–4.41; $p = 0.012$). Rural residence showed a positive association but was not statistically significant (AOR = 1.67; 95% CI: 0.91–3.08; $p = 0.095$) (Table 5).

Table 1: Sociodemographic characteristics of adolescent mothers (n=62)

Characteristics	Frequency (n)	Percentage (%)
Age (years)		
13–15	20	32.26
16–17	25	40.32

18–19	17	27.42
Mean±SD	16.24±1.62	
Residence		
Rural	37	59.68
Urban	25	40.32
Education Level		
Illiterate	3	4.84
Primary	28	45.16
Secondary or higher	31	50.00
Socioeconomic Status		
Low	31	50.00
Middle	22	35.48
High	9	14.52
Substance abuse		
Yes	6	9.68
No	56	90.32

Table 2: Obstetric profile of adolescent mothers (n=62)

Variables	Frequency (n)	Percentage (%)
Gravida		
Primigravida	49	79.03
Multigravida	13	20.97
History of Abortion/Miscarriage		
Present	9	14.52
Absent	53	85.48
Gestational Age at Delivery		
<37 weeks (Preterm)	16	25.81
≥37 weeks (Term)	46	74.19
Antenatal Care (ANC) Visits		
<7 visits	44	70.97
≥7 visits	18	29.03

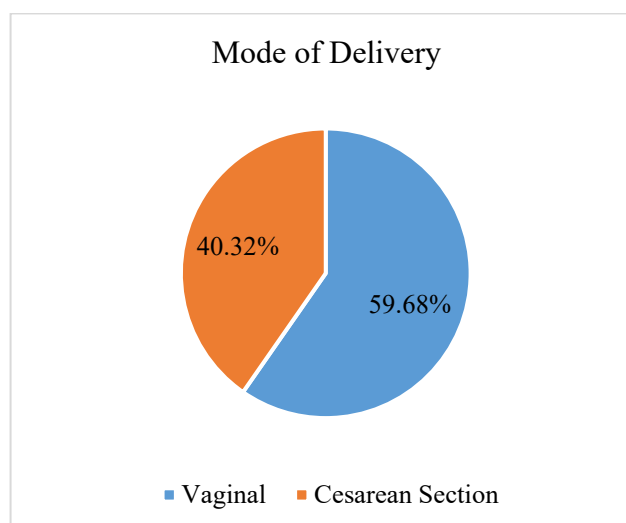
**Figure 1: Distribution of adolescent mother by mode of delivery (n=62)**

Table 3: Complications of the study population (n=170)

Complications	Frequency (n)	Percentage (%)
Anemia (Hb < 11 g/dl)	53	85.48
Pregnancy-Induced Hypertension	11	17.74
Premature Rupture of Membranes	8	12.90
Gestational diabetes	5	8.06
Antepartum hemorrhage	6	9.68
Obstructed Labour	4	6.45

Table 4: Neonatal outcomes (n=62)

Neonatal Outcome	Frequency (n)	Percentage (%)
Birth Weight		
<2500 gm (Low)	19	30.65
≥2500 gm	43	69.35
APGAR Score at 7 minutes		
<7	12	19.35
≥7	50	80.65
Perinatal complications within 24 hours		
Yes	9	14.52
No	53	85.48
Care of the newborn after delivery		
By the respondent	49	79.03
Adoption/foster care	1	1.61
NICU Admission	9	14.52
Stillbirth/Neonatal Death	3	4.84

Table 5: Logistic regression analysis for predictors of adverse neonatal outcomes

Variable	Adjusted OR (95% CI)	P-value
No antenatal care	3.42 (1.87–6.28)	<0.001
Age ≤16 years	2.15 (1.18–3.92)	0.011
Anemia during pregnancy	1.90 (1.05–3.43)	0.034
Rural residence	1.67 (0.91–3.08)	0.095
Low socioeconomic status	2.30 (1.20–4.41)	0.012

DISCUSSION

Adolescent pregnancy remains a significant public health concern, particularly in low- and middle-income countries, due to its association with increased maternal and neonatal risks. Early childbearing often results from limited access to education, reproductive health services, and social support. These pregnancies are frequently accompanied by poor health outcomes, including anemia, preterm birth, and low birth weight. Understanding the outcomes and risk factors is essential for developing targeted interventions to improve adolescent maternal and child health. The mean age of adolescent mothers was 16.24 years, with most participants aged between 16 and 17 years, consistent with findings from studies in South Asia where early teenage pregnancies are prevalent due to sociocultural norms and early marriage [16]. The majority of participants were from rural backgrounds (59.68%) and of low socioeconomic status (50.00%), which aligns with prior research indicating that adolescent pregnancies are more common in low-resource settings where access to education and healthcare is limited [17]. In the present study, 9.68% of the adolescents who became pregnant were involved with substance abuse. Previous studies with adolescent girls have also shown some high-risk behaviors to be associated with an increased likelihood of pregnancy. These

behaviors included smoking, alcohol consumption, abuse of illegal drugs, and premarital sexual activity [18,19]. A significant proportion of the adolescent mothers were primigravida (79.03%), and 25.81% had preterm deliveries. These findings reflect similar trends reported by Ganchimeg et al., who observed higher rates of preterm birth and other obstetric complications in adolescent mothers compared to adult women [20]. The high prevalence of inadequate antenatal care (70.97% had <7 visits) further underscores the lack of access to or utilization of maternal health services, which is a known contributor to poor pregnancy outcomes in this age group [21]. Our found 59.68% of adolescent mothers delivered vaginally, while 40.32% underwent cesarean section. Similarly, a study conducted in India by Mukhopadhyay et al. found that cesarean delivery occurred in 38% of adolescent pregnancies, often due to cephalopelvic disproportion and fetal distress [22]. Anemia was the most frequently observed maternal complication, affecting 85.48% of the participants. This rate is considerably higher than reported in similar studies from sub-Saharan Africa and South Asia, where anemia prevalence among pregnant adolescents ranged between 40% and 60% [23,24]. The elevated rate in our study may be attributed to nutritional deficiencies and limited health education in the study population. Pregnancy-induced hypertension (PIH) was reported in 17.74% of the cases. Gupta et al. reported PIH in 4.8% cases [25]. Premature rupture of membranes (PROM) occurred in 12.90%, and antepartum hemorrhage in 9.68% of participants. The findings of complications are similar to the observations made by Omar et al. [26]. Regarding neonatal outcomes, 30.65% of the infants had low birth weight, and 19.35% had an APGAR score below 7 at 7 minutes, suggesting compromised neonatal health. These outcomes are consistent with findings from a study by Neal et al., which highlighted increased risks of low birth weight and perinatal complications in babies born to adolescent mothers [27]. Additionally, 14.52% of neonates required NICU admission, and 4.84% experienced stillbirth or neonatal death, further emphasizing the vulnerability of infants born to adolescent mothers. The logistic regression analysis identified several significant predictors of adverse neonatal outcomes. Lack of antenatal care showed the strongest association (AOR = 3.42, $p < 0.001$), corroborating previous research that links inadequate prenatal monitoring to increased neonatal morbidity and mortality [28]. Similarly, younger maternal age (≤ 16 years), anemia, and low socioeconomic status were significantly associated with adverse outcomes. These findings are supported by a study conducted by Chen et al., which demonstrated that younger maternal age and poor maternal health status significantly elevate the risk of neonatal complications [29].

Limitations of the study:

This study had several limitations. Being a hospital-based cross-sectional study with a relatively small sample size, the findings may not be generalizable to the wider adolescent population across Bangladesh or other regions. Additionally, the use of purposive sampling may have introduced selection bias, and reliance on hospital records might have resulted in underreporting or incomplete data on certain variables.

CONCLUSION

Adolescent pregnancy continues to pose serious health risks for both mother and child, with high rates of anemia, inadequate antenatal care, and neonatal complications observed in this study. Key risk factors such as young maternal age, poor socioeconomic conditions, and lack of healthcare access significantly contribute to adverse outcomes. These findings underscore the urgent need for targeted interventions, including comprehensive reproductive health education, community outreach programs, and improved access to quality prenatal care. Addressing the broader social determinants of adolescent pregnancy is crucial for reducing its prevalence and mitigating its consequences in Bangladesh.

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