

Fetomaternal Outcome of Teenage Pregnancy in Bangladesh

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Abstract

Introduction: Teenage pregnancy remains an important public health problem because it is associated with adverse maternal and neonatal outcomes, especially in resource-limited settings.

Methods: This cross-sectional study was conducted from January 2019 to November 2022 in the Department of Obstetrics and Gynaecology, Dinajpur Medical College Hospital, Bangladesh, among 104 primigravid teenage mothers aged 15–19 years with singleton pregnancies admitted for termination or delivery.

Results: The mean age was 18.3 years; 56.0% were from rural areas. Irregular antenatal check-ups (62.0%), anemia (74.0%), spontaneous vaginal delivery (58.0%), and LUCS (32.0%) were common. Preterm labour was the leading antepartum complication (20.0%), while birth asphyxia and prematurity each affected 34.8% of neonates.

Conclusion: Teenage pregnancy was associated with substantial maternal morbidity and adverse neonatal outcomes, highlighting the need for improved antenatal surveillance and preventive public health strategies.

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Introduction

Teenage pregnancy, also termed adolescent pregnancy, refers to pregnancy occurring in girls aged 10-19 years and remains a major global public health concern because of its medical, social, and economic consequences.¹ The World Health Organization has emphasized that adolescent pregnancy is more common in settings marked by poverty, gender inequity, limited educational opportunity, and restricted access to sexual and reproductive health services.¹

Globally, adolescent childbearing continues to contribute substantially to maternal and neonatal morbidity, especially in low- and middle-income countries, where early marriage and early first pregnancy remain common.¹ Adolescent mothers are biologically and socially vulnerable, and many studies have linked teenage pregnancy with higher risks of anemia, pre-eclampsia, preterm labour, operative delivery, low birth weight, birth asphyxia, fetal growth restriction, stillbirth, and early neonatal death.^{2,3,4}

Bangladesh continues to have a high burden of adolescent childbearing in South Asia. Analysis of Bangladesh Demographic and Health Survey data has shown that nearly one-third of married adolescent girls had begun childbearing in 2014, and the burden was strongly associated with low education, poverty, and early marriage.^{5,6} Adolescent motherhood in Bangladesh is also more common among girls from poorer households and among those with limited schooling, indicating that teenage pregnancy is not only a clinical problem but also a marker of social disadvantage.^{5,6}

In Bangladesh, the persistence of child marriage remains one of the most important drivers of teenage pregnancy. National analyses have shown that girls marrying at

very early ages are significantly more likely to begin childbearing during adolescence, while higher education is consistently associated with lower odds of adolescent motherhood.^{5,6} Rural residence, lower household wealth, and reduced access to health information and reproductive care further intensify this risk.^{5,6}

Teenage pregnancy is associated with adverse fetomaternal outcomes through multiple pathways, including biological immaturity, poor maternal nutritional reserve, inadequate antenatal care, delayed recognition of complications, and restricted decision-making power within families.¹⁻⁴ These factors may contribute to preterm birth, low birth weight, obstructed labour, cephalopelvic disproportion, postpartum morbidity, and compromised neonatal adaptation after birth.^{2,3,4}

Hospital-based studies from South Asia and other low-resource settings have repeatedly documented poorer obstetric and neonatal outcomes among teenage mothers than among adult women, although the magnitude of risk varies by study setting and access to care.²⁻⁴ Even where some outcomes are not uniformly worse, adolescent pregnancy is still widely regarded as a high-risk condition because preventable complications and social vulnerabilities often coexist in this age group.¹⁻⁴

Dinajpur Medical College Hospital is a major tertiary care center in northern Bangladesh and receives a substantial number of adolescent mothers, many of whom present with limited antenatal supervision and labour-related complications. However, locally generated data on the clinical profile, delivery pattern, and neonatal outcome of teenage pregnancy in this setting remain limited. Assessment of these outcomes is important for identifying common risk patterns,

improving antenatal surveillance, strengthening intrapartum care, and guiding preventive adolescent health strategies.

Therefore, the present study was undertaken to determine the fetomaternal outcomes of teenage pregnancy in Dinajpur Medical College Hospital.

Methods

This cross-sectional study was conducted in the Department of Obstetrics and Gynaecology, Dinajpur Medical College Hospital, Dinajpur, Bangladesh, over a 3 year 8 months period from January 2019 to November 2022. The study was designed and reported in line with key principles recommended for observational research, including clear description of setting, participant selection, variables, and outcome measures.

The study population comprised primigravid teenage mothers aged 15-19 years with singleton pregnancies who were admitted for termination of pregnancy or delivery during the study period. Women with multiple pregnancy and those with major coexisting medical disorders such as diabetes mellitus, heart disease, pregnancy-induced hypertension, pre-eclampsia, or eclampsia were excluded to reduce confounding from conditions independently associated with adverse fetomaternal outcomes.

Although the calculated sample size was 384 using the standard formula for prevalence studies, only 104 participants were finally included because of the limited study duration and feasibility constraints. Participants were recruited purposively from eligible teenage mothers admitted to the hospital during the study period.

Data were collected using a predesigned case record form through face-to-face interview,

clinical examination, and relevant laboratory investigations. The questionnaire captured sociodemographic information, antenatal care status, obstetric history, complications during the current pregnancy, mode of delivery, postpartum complications, neonatal condition, and perinatal outcome. Maternal clinical assessment included general examination, blood pressure measurement, assessment for anemia and edema, and obstetric examination including symphysiofundal height.

The main independent variables were age, socioeconomic status, gestational age, past history, contraceptive use, and nutritional status, while the dependent variables included mode of delivery, birth weight, APGAR score, maternal complications, and fetal or neonatal complications. Maternal outcome measures included anemia, preterm labour, pre-eclampsia, prolonged labour, obstructed labour, postpartum haemorrhage, urinary tract infection, lactation failure, and postpartum eclampsia. Neonatal outcome measures included survival status, need for resuscitation, birth weight, sex, APGAR score, prematurity, birth asphyxia, intrauterine growth restriction, jaundice, stillbirth, and neonatal death.

Standard operational definitions were used for the major obstetric and neonatal variables. Teenage pregnancy was defined as pregnancy in a woman younger than 20 years, preterm birth as birth before 37 completed weeks of gestation, and low birth weight as birth weight below 2500 g. Other variables, including intrauterine growth restriction, postpartum haemorrhage, and hypertensive disorders of pregnancy, were defined according to accepted obstetric criteria to maintain uniformity in data recording and interpretation.

Ethical approval for the study was obtained from the Institutional Review Board of

Dinajpur Medical College Hospital. Written informed consent was obtained from all participants before enrolment. Participation was voluntary, confidentiality and anonymity were maintained, and participants were free to withdraw from the study at any stage without prejudice.

Data were processed and analyzed using SPSS version 20.0 for Windows. Continuous variables were summarized as mean and standard deviation, while categorical variables were presented as frequency and percentage.

Table II: Sociodemographic and antenatal characteristics of the study participants (n = 104)

Variable	Category	Number of Patients (n)	Percentage (%)
Age (years)	15	6	6
	17	9	9
	18	37	36
	19	52	50
Occupation of husband	Farmer	42	40
	Worker	23	22
	Driver	21	20
	Teacher	10	10
	Electrician	4	4
	Businessman	4	4
Occupation of wife	Housewife	102	98
	Other	2	2
Monthly family income	Upper income (> Tk. 5,000/month)	29	28
	Middle income (Tk. 3,000-5,000/month)	52	50
	Lower income (< Tk. 3,000/month)	23	22
Education of husband	Illiterate	21	20
	Can sign only	6	6
	Primary	44	42
	Secondary	29	28
	Master's degree	4	4
Education of wife	Illiterate	17	16
	Can sign only	12	12
	Primary	60	58
	Secondary	10	10
	Graduation degree	4	4
Residence	Rural	58	56
	Urban	46	44
Antenatal care	Regular	37	36
	Irregular	64	62
	None	2	2
Pregnancy status	Planned	75	72
	Unplanned	29	28

Most participants were housewives (98.0%). Regarding socioeconomic background, 50.0% belonged to middle-income families, 28.0% to upper-income families, and 22.0% to lower-income families. Most participants came from rural areas (56.0%), and irregular antenatal care was common (62.0%), whereas 36.0% had regular antenatal check-ups and 2.0% had none.

The chi-square test with Yates correction was used for categorical variables and Student's t-test for continuous variables, with a p value below 0.05 considered statistically significant.

Results

A total of 104 primigravid teenage mothers with singleton pregnancies were included in the study. The mean age of the participants was 18.3 ± 1.1 years, ranging from 15 to 19 years; half of the participants were aged 19 years.

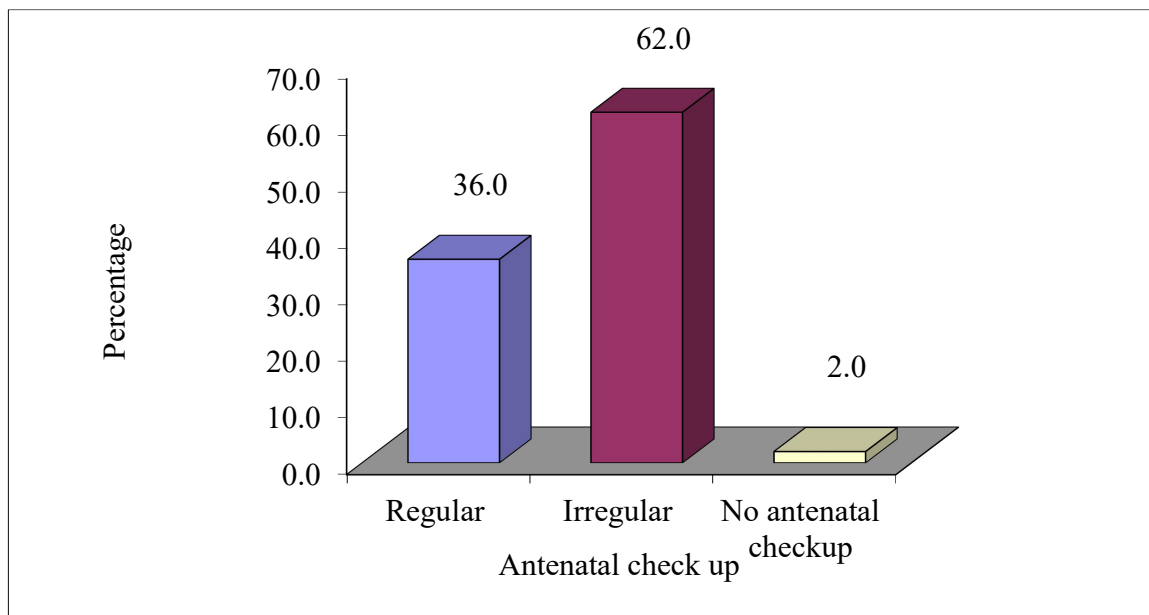


Figure 1. Distribution of antenatal care status
Primary-level education was the most frequent educational category for both husbands (42.0%) and wives (58.0%). Planned pregnancy was reported by 72.0% of participants, while 28.0% had unplanned pregnancy. Preterm labour was the most common complication during the index pregnancy, affecting 20.0% of participants, followed by pre-eclampsia in 12.0% and prolonged labour

in 4.0%. Polyhydramnios, intrauterine death, and obstructed labour were each observed in 2.0% of cases.

The mean maternal height was 155.4 ± 3.6 cm and the mean weight was 60.2 ± 10.4 kg. Anemia was present in 74.0% of participants and edema in 32.0%; the mean systolic and diastolic blood pressures were 115.2 ± 15.7 mmHg and 77.8 ± 13.9 mmHg, respectively.

Table II: Maternal complications and clinical findings of the study participants (n = 104)

Variable	Category / Summary	Number of Patients (n)	Percentage (%)
Complications in present pregnancy	Preterm labour	21	20
	Pre-eclampsia	12	12
	Prolonged labour	4	4
	Polyhydramnios	2	2
	Intrauterine death	2	2
	Obstructed labour	2	2
Height (cm)	Mean $\pm$ SD	155.4 ± 3.6	-
	Range	152.4-164.6	-
Weight (kg)	Mean $\pm$ SD	60.2 ± 10.43	-
	Range	45-85	-
General examination	Anemia	77	74
	Edema	33	32
Systolic blood pressure (mmHg)	Mean $\pm$ SD	115.2 ± 15.7	-
Diastolic blood pressure (mmHg)	Mean $\pm$ SD	77.8 ± 13.9	-
Symphysio fundal height (cm)	Mean $\pm$ SD	34.3 ± 2.07	-

Spontaneous vaginal delivery was the commonest mode of delivery, occurring in 58.0% of cases, followed by lower uterine caesarean section (LUCS) in 32.0% and assisted vaginal delivery in 10.0%.

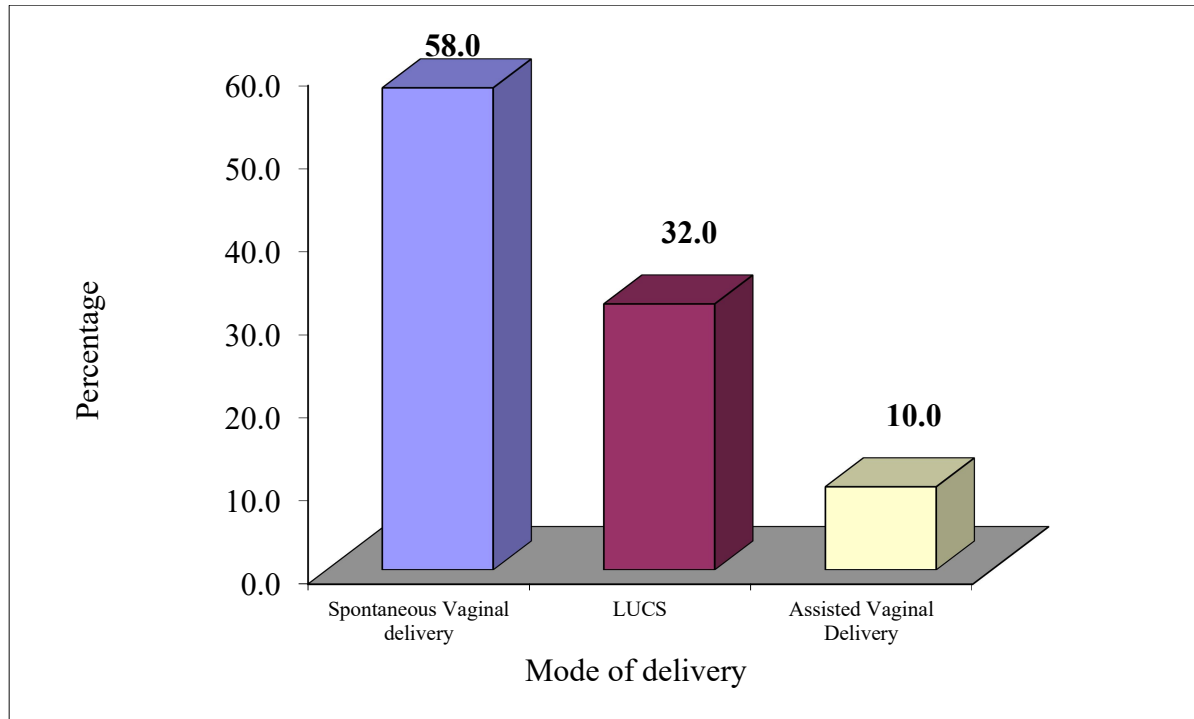


Figure 5. Bar diagram showing mode of delivery of the study patients

Among the 33 women who underwent LUCS, cephalopelvic disproportion (including combined indications) was the most frequent indication (18.8%), while PROM with fetal distress, fetal distress alone, and prolonged labour with fetal distress each accounted for 12.5% of LUCS cases

Table III: Mode of delivery and indications for LUCS

Variable	Category	Number of Patients (n)	Percentage (%)
Mode of delivery (n = 104)	Spontaneous vaginal delivery	61	58.7
	LUCS	33	31.7
	Assisted vaginal delivery	10	9.6
Indications for LUCS (n = 33)	Cephalopelvic disproportion (CPD)	6	18.8
	PROM with fetal distress	4	12.5
	Fetal distress	4	12.5
	Prolonged labour with fetal distress	4	12.5
	CPD with face presentation	2	6.3
	Twin pregnancy with pre-eclampsia and previous caesarean section	2	6.3
	Labour pain with previous caesarean section	2	6.3
	CPD with breech presentation	2	6.3
	Fetal distress with previous caesarean section	2	6.3
	CPD with fetal distress	2	6.3
	IUGR with fetal distress	2	6.3

Postpartum complications within 7 days included lactation failure in 18.0% of mothers, postpartum haemorrhage in 10.0%, urinary tract infection in 6.0%, spinal headache in 6.0%, and postpartum eclampsia in 2.0%.

Table IV: Postpartum complications within 7 days

Postpartum complication	Number of Patients (n)	Percentage (%)
Lactation failure	19	18
Postpartum haemorrhage (PPH)	10	10
Urinary tract infection (UTI)	6	6
Spinal headache	6	6
Postpartum eclampsia	2	2

Among the babies, 92.0% were born alive and 8.0% were stillborn or died around delivery, according to the original tabulation. Of the liveborn or assessed neonates, 37% required resuscitation and 63% did not. Birth weight analysis was reported for 96 newborns; among them, 54.3% weighed at least 2.5 kg and 45.7% weighed less than 2.5 kg, with a mean birth weight of 2.62 ± 1.39 kg.

Female neonates constituted 58.7% and male neonates 41.3% of assessed births. At birth, the APGAR score was 7 or more in 58.3% of neonates, 4–6 in 35.4%, and 0–3 in 6.3%; the mean APGAR score at birth was 6.53 ± 2.10 , increasing to 9.16 ± 1.19 at 5 minutes.

Table V: Neonatal characteristics and immediate outcomes

Variable	Category / Summary	Number of Patients (n)	Percentage (%)
Neonatal outcome (n = 104)	Live birth	96	92
	Stillbirth & Neonatal death	8	8
Need for resuscitation among live births (n = 96)	Required resuscitation	36	37
	Did not require resuscitation	60	63
Birth weight among live births (kg) (n = 96)	< 2.5 kg	52	54.3
	≥ 2.5 kg	44	45.7
	Mean $\pm$ SD	2.62 ± 1.39	—
	Range	1.4-4.2	—
Sex of live-born neonates (n = 96)	Male	40	41.3
	Female	56	58.7
APGAR score at birth (n = 96)	0-3	6	6.3
	4 to 6	34	35.4
	7 or more	56	58.3
	Mean $\pm$ SD	6.53 ± 2.10	—
	Range	0-9	—
APGAR score at 5 minutes (n = 96)	4 to 6	7	7
	7 or more	89	93
	Mean $\pm$ SD	9.16 ± 1.19	—
	Range	6 to 10	—

Regarding neonatal morbidity, 54.3% of neonates had no recorded morbidity. Birth asphyxia and prematurity were each observed in 34.8% of neonates, whereas intrauterine growth restriction and jaundice were each reported in 13.0%.

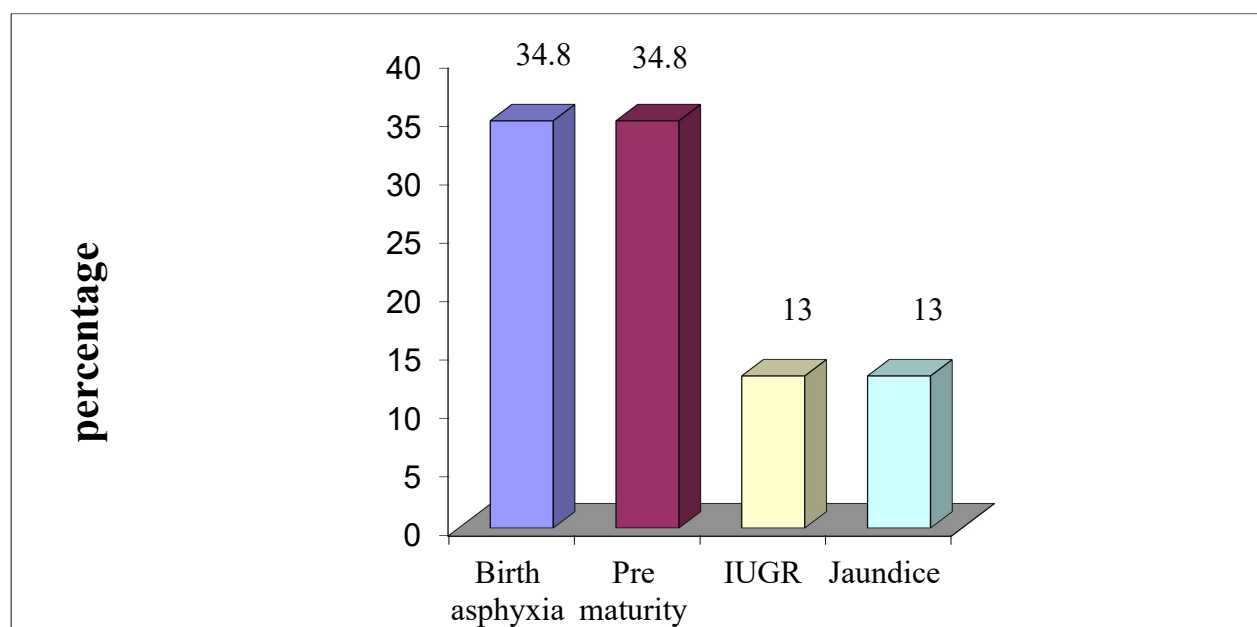


Figure 3. Neonatal morbidity pattern

Among 104 pregnancy outcomes, there were 96 live births, 4 stillbirths and 4 neonatal deaths, giving a perinatal mortality of 8.0%.

Table VI: Perinatal mortality among the study neonates

Perinatal outcome	No. of Patients	%
Live birth	96	92
Stillbirth	4	4
Neonatal death	4	4
Perinatal mortality (Total)	8	8

Discussion

Teenage pregnancy remains an important public health problem because it is associated with increased maternal and neonatal risks.^{7,8} In the present study, most participants were from a low socioeconomic background and had irregular antenatal care, which likely contributed to the observed adverse outcomes.^{9,14}

The maternal complications in this study were dominated by preterm labour and pre-eclampsia, followed by prolonged labour. This is consistent with previous reports showing that teenage mothers have higher

rates of hypertensive disorders and preterm birth compared with adult women.^{7,9} The biological immaturity of adolescents, together with poor antenatal surveillance, may explain the higher frequency of these complications.^{15,16} In addition, obstructed or prolonged labour may be more likely in younger mothers because of pelvic immaturity and delayed recognition of labour complications.^{10,15}

The mode of delivery in this study showed a high proportion of spontaneous vaginal delivery, but caesarean section was still required in a substantial number of patients,

mainly for cephalopelvic disproportion and fetal distress. Similar findings have been described in previous research, where teenage pregnancy was associated with increased operative delivery and obstetric complications such as fetal distress and CPD.^{8,10} This suggests that although many teenage pregnancies end in vaginal birth, the risk of intrapartum intervention remains significant.¹³

Postpartum complications within 7 days were mainly lactation failure and postpartum hemorrhage. Lactation failure is likely related to poor maternal confidence, inadequate counseling, and early postpartum difficulty in mother–infant bonding, while PPH reflects the continued obstetric vulnerability of this group.^{12,18} Prior studies have also reported increased postpartum morbidity in teenage mothers, including puerperal sepsis and hemorrhage.^{14,19} These findings support the need for close postpartum monitoring and counseling in adolescent mothers.¹⁴

Neonatal outcome in the present study was generally favorable in terms of survival, but neonatal morbidity was still common. A notable proportion of babies required resuscitation at birth, and low birth weight was frequent. This is in agreement with earlier studies showing that teenage pregnancy is associated with higher rates of low birth weight, prematurity, birth asphyxia, and neonatal morbidity.^{7,8} The observed neonatal morbidity pattern of birth asphyxia, prematurity, IUGR, and jaundice reflects the combined effect of prematurity and suboptimal intrauterine growth.^{10,13}

Perinatal mortality was also an important finding in this study. Although the majority of babies survived, the presence of stillbirths and neonatal deaths confirms that adolescent pregnancy carries a measurable perinatal risk.^{7,13} Similar elevated fetal and neonatal mortality has been documented in teenage

pregnancy cohorts, especially where antenatal care is inadequate and delivery complications are common.^{8,10} This emphasizes the importance of early risk identification, skilled intrapartum care, and neonatal support services.^{14,15}

Overall, the findings of this study support the view that teenage pregnancy should be regarded as high risk for both mother and baby.^{7,8,13} The results are comparable with earlier studies showing increased maternal morbidity, more frequent neonatal complications, and higher perinatal loss among adolescents.^{9,10,14,17} Prevention of early marriage, improved reproductive health education, and better antenatal and postnatal care are essential to reduce these adverse outcomes.^{3,16}

Conclusion

Teenage pregnancy in this hospital-based series was associated with substantial maternal and neonatal complications, including anemia, preterm labour, pre-eclampsia, operative delivery, low birth weight, and perinatal loss. These findings support classifying teenage pregnancy as a high-risk condition that requires strengthened adolescent reproductive health education, delayed marriage and childbearing, and improved access to quality antenatal, intrapartum, and postpartum care, particularly for rural and low-income girls.

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