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# Teenage Pregnancy and Maternal Complications: A Comparative Study at a Tertiary Care Center in Nepal

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## ABSTRACT:

**Introduction**: Teenage pregnancy is a major public health problem in low- and middle-income countries like Nepal. It increases medical and social risks for both mother and child. **Methods:** This hospital-based comparative cross-sectional study was done at a tertiary care center in Nepal from July 2025 to March 2026. A total of 178 pregnant women were included. Group A had 89 teenage mothers (aged <20 years). Group B had 89 adult mothers (aged 20–34 years). Data were collected using a structured proforma. Maternal complications like anemia, hypertension, gestational diabetes mellitus, preterm labor, obstetric cholestasis, and postpartum hemorrhage were compared between groups. Chi-square test and independent t-test were used. A p-value <0.05 was considered significant. **Results:** Mean age was 18.17 ± 1.97 years in Group A and 29.66 ± 3.26 years in Group B. Anemia and hypertension were significantly higher in teenage mothers. Obstetric cholestasis was more common in teenagers but the difference was not significant. There was no significant difference in gestational diabetes, preterm labor, or postpartum hemorrhage. Cesarean section was significantly more common in adult mothers. **Conclusions:** Teenage pregnancy has higher risks of anemia and hypertension. Strengthening adolescent health programs, improving antenatal nutrition, and delaying early marriage may help reduce these complications in Nepal.


**Keywords: Anemia; Hypertension; Maternal complications; Teenage pregnancy.**

## INTRODUCTION:

Teenage pregnancy means pregnancy in a woman below 20 years of age.[1] It can have negative social and medical effects on mothers and children around the world.

Globally, about 16 million girls aged 15–19 years and two million girls under 15 give birth each year.[2] Around 11% of all births are to adolescent mothers. Pregnancy problems in adolescents account for 23% of all pregnancy problems in women. More than 90% of these occur in developing countries.[3]

In Nepal, adolescents make up 24.18% of the total population of 26.5 million.[4] The average age at first marriage is 17.9 years. The average age at first pregnancy is 16.2 years.[5,6] According to Nepal Civil Code 2074, the legal age for marriage is 20 years.[7]

The Nepal Demographic and Health Survey (NDHS) 2006 reported that about 20% of girls aged 15–19 are either mothers or pregnant with their first child. This rate is higher than in other SAARC countries. Pakistan and India both have rates of 16%.[8]

Because of these figures, women in Nepal often get pregnant soon after marriage. Teenage pregnancy is therefore common in Nepal. This has become a health concern. Adolescent pregnancies carry greater risks than adult pregnancies. These include anemia, urinary tract infection, preterm premature rupture of membranes, and hypertensive disorders.[9]

The results of teenage pregnancy remain debatable in the obstetric literature. Many studies have been published but the evidence is mixed. This conflicting evidence motivated us to do this study. Since teenage pregnancy is a leading cause of death among adolescent girls and a serious social issue, we hope our findings will help design better adolescent health programs. This may reduce the number of teenage pregnancies and their complications.

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## METHODS:

This was a hospital-based observational analytical study. It was done at a tertiary care hospital in Nepal. Data were collected from July 2025 to March 2026. Sample size was calculated using the formula–n ≥ Z21-α/2 x p(1-p)/d2, Where α (alpha) = 0.05 (significance level), Z1-α/2 = 1.96 (at 95% confidence interval), p = 0.132 (prevalence of teenage pregnancy in Nepal, from Shrestha DB et al.[10] and d = 0.05 (allowable error). The minimum sample size was 177 participants. We rounded this to 178 (89 per group) to allow for missing data.

Pregnant women aged <20 years (Group A) or 20–34 years (Group B), who were admitted for delivery at the study hospital during the study period were included. Women with multiple pregnancies (twins, triplets, etc.) were excluded.

The Institutional Review Committee (IRC) of Devdaha Medical College and Research Institute, Nepal gave ethical approval for this study (Approval No.: 17/2025). Written informed consent was taken from all participants before they joined the study. Patient information was kept strictly confidential. All procedures followed the Declaration of Helsinki.

We recruited 89 teenage pregnant women (Group A, aged <20 years) and 89 adult pregnant women (Group B, aged 20–34 years). We used a structured proforma for history taking and clinical examination. History and examination findings were recorded in the proforma. We attended deliveries when possible. For cases where we could not be present, we got details from hospital records.

We compared the following between the two groups; demographic profile (age, education, occupation, gravidity), antenatal care (ANC) booking status, anemia–hemoglobin <11.0 g/dL during pregnancy, hypertensive disorders–blood pressure ≥140/90 mmHg with or without proteinuria (gestational hypertension or pre-eclampsia), obstetric cholestasis (intrahepatic cholestasis of pregnancy)–diagnosed by pruritus and raised serum bile acids, preterm labor– labor starting before 37 completed weeks, gestational diabetes mellitus–diagnosed by standard oral glucose tolerance test, and postpartum hemorrhage–blood loss ≥500 mL for vaginal delivery or ≥1000 mL for cesarean section. All participants were followed during their hospital stay. They were discharged according to hospital policy.

Data were entered in Microsoft Excel. Analysis was done using PSPP 2.1.1 statistical software. We used frequencies, percentages, means, and standard deviations for demographic data, independent t-test for continuous variables, and Chi-square test for categorical variables (Fisher's exact test when expected cell count was <5). A p-value less than 0.05 was considered statistically significant.

## RESULTS:

We included 178 women in total. Each group had 89 women. The mean age in Group A (teenage mothers) was 18.17 ± 1.97 years. In Group B (adult mothers), it was 29.66 ± 3.26 years. This difference was significant (t=28.45, p < 0.001). Other baseline socio-demographic and obstetric characteristics of study participants is presented in Table 1. Education level was similar in both groups. There were hardly any student in the adult group. Primigravida women were significantly more common in the teenage group. Antenatal care booking was similar in both groups.

**Table 1***: Baseline socio-demographic and obstetric characteristics of study participants (N=178)*

| Variable | | Group A (n = 89) | Group B (n = 89) | Statistics |
|---|---|---|---|---|
| **Education** | Illiterate | 13 (14.61%) | 13 (14.61%) | $\chi^2$ = 0.11, p=0.945 |
| | Primary | 49 (55.06%) | 47 (52.81%) | |
| | Secondary | 27 (30.34%) | 29 (32.58%) | |
| **Occupation** | Housewife | 46 (51.69%) | 61 (68.54%) | |
| | Service | 17 (19.10%) | 26 (29.21%) | |
| | Student | 26 (29.21%) | 1 (1.12%) | |
| **Gravida** | Primigravida | 75 (84.27%) | 15 (16.85%) | $\chi^2$ = 80.91, p<0.001 |
| | Multigravida | 14 (15.73%) | 74 (83.15%) | |
| **ANC booking status** | Booked | 42 (47.19%) | 38 (42.70%) | $\chi^2$ = 0.36, p=0.547 |
| | Unbooked | 47 (52.81%) | 51 (57.30%) | |

Maternal medical conditions and pregnancy outcomes is presented in Table 2. Anemia and hypertension were significantly higher in teenage mothers than in adults. Obstetric cholestasis was seen more in the teenage group but the difference was not significant. There was no significant difference in gestational diabetes or preterm labor between two groups. Postpartum hemorrhage was slightly higher in teenagers. Pre-existing medical illness was much more common in adult mothers. Cesarean section was significantly higher in adult mothers.

**Table 2**: *Maternal medical conditions and pregnancy outcomes across groups*

| Variable | | Group A (n = 89) | Group B (n = 89) | Statistic |
|---|---|---|---|---|
| **Anemia** | Yes | 19 (21.35%) | 4 (4.94%) | $\chi^2$ = 11.23, p<0.001 |
| | No | 70 (78.65%) | 85 (95.51%) | |
| **Hypertension** | Yes | 18 (20.22%) | 8 (8.99%) | $\chi^2$ = 4.50, p=0.034 |
| | No | 71 (79.78%) | 81 (91.01%) | |
| **Gestational diabetes mellitus** | Yes | 3 (3.37%) | 4 (4.94%) | $\chi^2$ = 0.15, p=0.70 |
| | No | 86 (96.63%) | 85 (95.51%) | |
| **Preterm labor** | Yes | 22 (24.72%) | 21 (23.60%) | $\chi^2$ = 0.03, p=0.86 |
| | No | 67 (75.28%) | 68 (76.40%) | |
| **Obstetric cholestasis** | Yes | 8 (8.99%) | 2 (2.25%) | $\chi^2$ = 3.81, p=0.051 |
| | No | 81 (91.01%) | 87 (97.75%) | |
| **Medical illness** | Yes | 0 | 25 (28.09%) | P<0.001, Fisher's Exact |
| | No | 89 (100%) | 64 (71.91%) | |
| **Post-partum hemorrhage** | Yes | 10 (11.24%) | 7 (7.87%) | $\chi^2$ = 0.59, p=0.44 |
| | No | 79 (88.76%) | 82 (92.13%) | |
| **Mode of delivery** | V | 64 (71.91%) | 41 (46.07%) | $\chi^2$ = 12.28, p<0.001 |
| | CS | 25 (28.09%) | 48 (53.93%) | |

*V=Vaginal delivery; CS=Cesarean section*

## DISCUSSION:

According to the WHO World Health Report 2005, one woman dies every minute from pregnancy and childbirth problems.[11] This number is likely higher when the mother is a teenager. The rate of teenage pregnancy in Nepal is 13.2%.[10] This is lower than India's rate of 19.4%.[12] This difference may be due to different marriage laws. In India, girls can marry at 18. In Nepal, the legal age is 20 for both sexes. This may explain the lower rate in Nepal. In our study, the mean age in the teenage group was 18.17 ± 1.97 years. In the adult group, it was 29.66 ± 3.26 years. This shows that many teenage girls have their first child before age 18. Adult women usually have children in their late twenties.

Primigravida women were more common in teenage pregnancies. This is expected because of their young age. Kassa et al. reported that living in rural areas, low education, and poor access to reproductive health services increase teenage pregnancy risk.[12] But in our study, education levels were similar in both groups. This differs from Kassa et al.[12] This may be because of differences in study populations or settings between Nepal and other countries.

Teenage pregnancy raises the risk of health problems for mothers. It also raises risks for newborns. These problems come not only from biological causes. They also come from social and family factors. These include poor access to healthcare, contraception, and other resources. These conditions are common in developing countries.

Our study found that anemia (21.3%), hypertension (20.2%), postpartum hemorrhage (11.2%), and obstetric cholestasis (9.0%) were more common in teenage pregnancies. These findings match earlier research. Adolescents have higher risk of nutritional problems and high blood pressure. This is because their bodies are still growing and competing with the fetus for nutrients.[9],[10] Similar results have been reported from South Asia. Adolescent pregnancies had more complications, especially anemia and hypertension.[12] The high rate of anemia in teenage mothers needs special attention. During adolescence, girls need more nutrients for their own growth. Pregnancy adds more nutritional demands. This leads to iron and folate deficiency. Also, teenage girls often have poor diets and limited access to supplements. This makes anemia more likely.

Gestational diabetes was not different between the two groups. This fits with the fact that younger women have lower risk of metabolic problems. Age alone may not be a major risk factor for GDM in this group. The small sample size and low overall cases of GDM may also explain this finding. Preterm labor rates were similar in both groups in our study. This differs from some earlier studies. Sweta et al. found preterm labor in 34% of teenage pregnancies and 20% in adults and Khairani Omar et al. reported 22.5% in teenagers and 2.9% in adults.[13],[14] These differences may be due to different study populations, definitions of preterm labor, quality of antenatal care, or healthcare-seeking behavior.

Cesarean section was more common in adult mothers (53.93%) than in teenagers (28.09%). This was significant. This may be because adult women have more previous obstetric problems, other illnesses, or elective surgeries. Older women may also have had previous cesareans. Teenage pregnancies usually end in vaginal delivery unless there

is an emergency. More adult mothers had pre-existing illness (28.09% vs 0.00%). This likely explains the higher cesarean rate. Similar patterns have been seen in other studies from the region. Adult mothers had more operative deliveries due to complications from multiple pregnancies or previous cesareans.[9]

Our study has several strengths. First, it gives useful data on maternal complications in teenage and adult pregnancies in Nepal. Such data are limited. Second, we used standard definitions for complications. This makes our findings more reliable. Third, having a comparison group of adult mothers helps show the extra risks of teenage pregnancy. We also have some limitations. First, the study was done at one tertiary center. This may not represent all of Nepal, especially rural areas where healthcare access is different. Second, our sample size was enough for the main outcomes. But it may be too small to detect smaller differences in rare complications. Third, the cross-sectional design cannot show cause and effect or long-term outcomes. Fourth, we could not control for all possible confounders like income, diet, or quality of antenatal care. Fifth, some data came from medical records. This may have caused bias if records were incomplete. Sixth, about half the women in both groups were unbooked. This suggests poor use of antenatal care. This itself could affect pregnancy outcomes.

## CONCLUSIONS:

Teenage pregnancy has more maternal complications, especially anemia and hypertension. This shows that adolescence is a biologically vulnerable time for pregnancy. Our findings highlight the need for stronger adolescent health programs, early nutritional support during pregnancy, and strategies to delay early pregnancy in Nepal.

The high rates of anemia and hypertension in teenage mothers mean that antenatal care should focus on early detection and treatment. This includes checking hemoglobin levels, giving iron and folic acid, and monitoring blood pressure from the first trimester.

Strengthening adolescent health programs, enforcing laws to delay marriage, improving access to contraception, and raising community awareness about teenage pregnancy risks could reduce the burden of complications in Nepal.

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