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**Original Research Article**

# Maternal and neonatal outcomes in teenage pregnancy: an observational study from Odisha

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## ABSTRACT

**Background:** With changing socio-demographic landscape of India, teenage pregnancy has become an important public health issue. The present study was conducted to assess the incidence of teenage pregnancy in Berhampur, Odisha and various maternal and neonatal outcomes of these pregnancies.
**Methods:** This observational study was conducted on 564 antenatal mothers aged 16 to 19 years, who from October 2018 to September 2020. Demographic information of the mothers was noted. Maternal complications during antenatal, intrapartum and postpartum period were noted. Neonatal outcomes, mode of delivery, complications and need for intensive care unit admission was noted. The data collected was described in tabulated form.
**Results:** The incidence of teenage pregnancy at our centre was 4%. Of the 564 teenage pregnancies, 214 were anaemic, pregnancy induced hypertension in 74 and 129 had preterm labour. The caesarean section rate was performed in 51.9%, and the most common indications for caesarean section were fetal distress and cephalopelvic disproportion. Of the 553 live births, 1.04% of them weighed <1.5 kg, 29.16% weighed 1.5 till 2.5 kg, 65.5% weighed between 2.5 to 3.5 kg and 5.2% weighed >3.5 kg. NICU admission was required for 26.9% of the neonates and the most common complication was neonatal jaundice, which was observed in 14.3%.
**Conclusions:** Teenage pregnancies represent a high-risk. The present study demonstrated the various maternal as well as neonatal complications in teenage pregnancies. Those who experience teenage pregnancy should be given extra attention and care.

**Keywords:** Teenage pregnancy, Maternal and fetal outcome, Neonatal intensive care unit

## INTRODUCTION

Adolescence is the transition period from childhood to adulthood. It is defined by the World Health Organization as period between 10 and 19 years of age.[1] This age represents an important stage for ensuring a successful transition to adulthood. Recently, with changing socio-demographic landscape of India, teenage pregnancy has become an important public health issue. This issue is not unique to developing countries as even developed countries are dealing with this situation. Recent data estimates that about 60 million women were married before the age of 18 years and approximately 16 million women aged 15-19 years old give birth to a child. India being a young nation, has the highest proportion of adolescents. Therefore, teenage pregnancies are going to be an important issue in years to come.

Studies conducted in Taiwan, USA, and Korea showed that teenagers were 1.58, 1.36, and 1.16 times more likely to have preterm delivery than the adults, respectively.[2] Studies conducted in Taiwan, USA, and Korea showed that teenagers were 1.58, 1.36, and 1.16 times more likely to have preterm delivery than the adults, respectively.[3] Numerous social determinants causing teenage pregnancy include lack of education in general and on sex education,

which result in poor health seeking behaviour and thus very abysmal utilization of health services like contraceptives, and abortion services.[4] Therefore, the incidence and outcomes of teenage pregnancies can vary with the geographical location. The present study was conducted to assess the incidence of teenage pregnancy in Berhampur, Odisha and various maternal and neonatal outcomes of these pregnancies.

## METHODS

This observational study was conducted on 564 antenatal mothers between the age of 16 to 19 years, who delivered at the department of obstetrics and gynaecology, from October 2018 to September 2020 at M.K.C.G. medical college, Berhampur, Odisha. We included cases aged 16 to 19 years, booked as well as un-booked pregnancies that crossed the period of viability (i.e., 28 weeks). All cases above the age of 19 years and those with a miscarriage were excluded from the final analysis. All included in the study were explained the purpose of the study. Those aged 18 years and above were included after obtaining written consent, while for those aged less than 18 years, written assent was obtained. The study was approved by the institutional ethics committee.

### *Data collection and data analysis*

Using a pre-designed semi-structured questionnaire, demographic information regarding age, educational status, occupation, marital status, age at marriage, knowledge about pregnancy and delivery, antenatal visits were obtained from medical records. All cases underwent general examination, per abdomen examination, per vaginal examination and underwent routine haematological, microbiological and biochemical investigations. Routine ultrasonography and repeat ultrasonography were done for booked cases to rule out congenital anomalies, placental maturity, amniotic fluid index, biophysical profile and complications if any. Maternal complications during antenatal, intrapartum and postpartum period were noted. They were followed until delivery to know the mode of delivery, birth weight of the fetus and neonatal outcome was also noted. Once the patient set into labour, the cases were reviewed with the help of non-stress test and pelvic assessment was done. The course of labour was monitored according to WHO partograph. The neonatologist assessed each baby soon after the delivery. APGAR scores were recorded at one minute and five minutes. After delivery of the baby, active management of third stage of labour was done with injection oxytocin 10 U intra muscular route for effective uterine contraction and retraction and controlled cord traction for the delivery of placenta.

The data were compiled in Microsoft excel and analysed in Epi info software (CDC, Atlanta). The data were described as means and standard deviation for quantitative variables and as frequency and proportions for qualitative variables.

## RESULTS

Of the total 14100 pregnancies at our institution during the study period, 564 were teen pregnancies, (incidence 4%). Table 1 describes the baseline characteristics of the study participants. It was observed that mean age was 18.7 years, 81.2% were primigravida 79% belonged to low socioeconomic status, 67.2% were from rural area and 97.7% were married. The various maternal complications are as described in Table 2. There were 214 anaemic mothers, 58 % had mild anaemia, 40 % had moderate and 2% had severe anaemia (Table 3). Pregnancy induced hypertension (PIH) was diagnosed in 74 cases, of which 40.5% had mild PIH, 37.83% had severe PIH and 21.63% had eclampsia. Of the 129 cases who had preterm labour, 79.06% had late preterm but had good neonatal outcome and 16 cases had very preterm delivery. The caesarean section rate was performed in 51.9%, 38.12 % had normal vaginal delivery, 45 of them needed instrumental delivery and 11 had assisted breech delivery. The most common indications for caesarean section were fetal distress (36.2%) and cephalopelvic disproportion (24.6%). Of the 271 vaginal deliveries, 83 delivered within 6 hrs of duration, 181 of them delivered within 6-10 hrs and 7 of them took more than 10 hrs.

**Table 1: Baseline characteristics of the study participants.**

| Variables | Number | Percentage (%) |
|---|---|---|
| **Age (years)** | | |
| 17 | 22 | 4 |
| 18 | 113 | 20 |
| 19 | 429 | 76 |
| **Parity** | | |
| Primipara | 458 | 81.20 |
| Multipara | 106 | 18.80 |
| **Registration status** | | |
| Un-booked | 360 | 63.85 |
| Booked | 204 | 36.17 |
| **Socioeconomic status** | | |
| Low | 445 | 79 |
| Middle | 119 | 21 |
| High | 0 | 0 |
| **Education status** | | |
| Illiterate | 112 | 20 |
| Primary education | 305 | 54 |
| High school | 119 | 21 |
| College | 28 | 5 |
| **Residence** | | |
| Rural | 379 | 67.20 |
| Urban | 185 | 32.80 |
| **Marital status** | | |
| Married | 551 | 97.70 |
| Unmarried | 13 | 2.30 |

Of the 575 cases, 553 were live births, of which 11 died in the perinatal period, 16 were intrauterine death, 6 babies were still born and there were no congenital

anomalies in any babies (Table 4). Of the 553 live births, 1.04% of them weighed <1.5 kg, 29.16% weighed 1.5 till 2.5 kg, 65.5% weighed between 2.5 to 3.5 kg and 5.2% weighed >3.5 kg. NICU admission was required for 26.9% of the neonates and the most common complication was neonatal jaundice, which was observed in 14.3%.

**Table 2: Maternal complications.**

| Maternal complications | Number | % |
|---|---|---|
| **Anaemia** | 214 | 38 |
| **Preterm labour** | 129 | 23 |
| **Fetal distress** | 124 | 22 |
| **Cephalopelvic disproportion** | 84 | 15 |
| **Pregnancy induced hypertension** | 74 | 13 |
| **Oligohydramnios** | 73 | 13 |
| **PROM** | 73 | 13 |
| **Post-dated pregnancy** | 40 | 7 |
| **Malpresentation** | 22 | 4 |
| **Intrauterine growth retardation** | 16 | 3 |
| **Intrauterine fetal death** | 16 | 3 |
| **Antepartum hemorrhage** | 11 | 2 |
| **Postpartum hemorrhage** | 11 | 2 |
| **Multiple gestation** | 11 | 2 |
| **Still birth** | 6 | 1 |

**Table 3: Maternal outcomes in our study population.**

| Variables | Number | % |
|---|---|---|
| **Anaemia (n=214, Hb in g/dl)** | | |
| Mild (10-10.9) | 124 | 58 |
| Moderate (9.9-7) | 86 | 40 |
| Severe (6.9-4) | 4 | 2 |
| Very severe (<4) | 0 | 0 |
| **Pregnancy induced hypertension (n=74)** | | |
| Mild | 30 | 40.54 |
| Severe | 28 | 37.83 |
| Eclampsia | 16 | 21.63 |
| **Preterm labor (n=129)** | | |
| Extremely preterm (<28 weeks) | 0 | 0 |
| Very preterm | 16 | 12.40 |
| Early preterm | 11 | 8.53 |
| Late preterm | 102 | 79.06 |
| **Mode of delivery (n=564)** | | |
| Caesarean section | 293 | 51.95 |
| Normal vaginal delivery | 215 | 38.12 |
| Forceps delivery | 23 | 4.08 |
| Ventouse delivery | 22 | 3.90 |
| Assisted breech | 11 | 1.95 |
| **Duration of labor (n=271) (hours)** | | |
| <6 | 83 | 30.80 |
| 6-10 | 181 | 66.66 |
| >10 | 7 | 2.54 |

**Table 4: Neonatal outcomes in the present study.**

| Variables | Number | % |
|---|---|---|
| **Fetal outcome (n=575)** | | |
| Total live births | 542 | 94.20 |
| Still born | 6 | 1 |
| Perinatal death | 11 | 2 |
| IUFD | 16 | 2.80 |
| Congenital anomalies | 0 | 0 |
| **Birth weight (n=553) (kg)** | | |
| <1.5 | 6 | 1.04 |
| 1.5-2.5 | 161 | 29.16 |
| 2.6-3.5 | 357 | 64.58 |
| >3.5 | 29 | 5.20 |
| **NICU admission (n=553)** | | |
| Yes | 149 | 26.95 |
| No | 404 | 73.05 |
| **Neonatal complications (n=553)** | | |
| Neonatal jaundice | 79 | 14.30 |
| Early onset sepsis | 35 | 6.30 |
| Respiratory illness - TTNB/HMD/MAS | 30 | 5.40 |
| Necrotizing enterocolitis | 10 | 1.80 |
| Hypoxic ischemic encephalopathy | 8 | 1.40 |
| Neonatal seizures | 7 | 1.20 |

## DISCUSSION

Teenage pregnancy remains major public and social health issue in India due to prevailing social preferences, old traditions and poor access to health care in remote rural areas. Lack of education deprives teenagers of the knowledge about family planning, leading to early pregnancy. We observed the incidence of teenage pregnancy to be 4% at our hospital. Majority of the study participants of our study were from low socioeconomic strata (79% belonged to low socioeconomic status and 67.2% were from rural area). Devi et al reported the incidence of teenage pregnancy to be 5.56%.[5] Rita et al reported the incidence to be 10.06%.[6] Okram et al reported the incidence to be 7%.[7] The national family health survey 4, reported the incidence of teenage pregnancy to be 13.8% in rural areas and 6.6% in urban areas.[8] It is possible to further reduce this incidence by reducing the trend of child marriage, improvement in female education, overall socioeconomic status of the family, improved health services and easier access to them, comprehensive antenatal care, institutional deliveries and postnatal care.

We observed 38% of the study participants to be anemic. Comparing with adult pregnancies, Devi et al found a higher prevalence of anemia among those with teenage pregnancies (47%). inadequate nutritionist occurs due to poor eating habits which is common in adolescents. Okram and colleagues also found anemia to be the most common complication. Generally, the cause of anaemia is not the young age of the adolescent mother. It is often

caused by the nutritional deficiencies, especially iron and folic acid, and in low-income countries by malaria and hookworm infection. In a study by Mahavarkar et al anaemia was also the most common complication seen.[9] Severe anaemia leads to preterm labour, low birthweight, and related complications, postpartum hemorrhage and sepsis, in addition to impaired physical and cognitive development, and increased risk of morbidity in children and reduced work productivity in adults.

Many studies from many countries, comparing the risk of preterm in teenage verses adult pregnant women. Most of the studies found more preterm births in adolescents and made it clear that maternal age is an important independent factor. Preterm labor was observed in 23% of the study participants. Okram et al reported the rate of preterm to be 8%, which was similar to that of Althabe et al.[10] Caesarean section rate was found to be 51.9% in our study. The most common indication for Caesarean section was fetal distress (36.2%) followed by cephalopelvic disproportion (24.6%). Similar observations were made by Rita and colleagues as well. Other indications for caesarean delivery in their study were pre-eclampsia and related complications (12%), fetal distress (9.4%), malpresentations and placental causes (3.7%) in our study. Okram and colleagues reported 31% caesarean rate

In our study, 30% of the babies born to teenagers had low birth weight. The incidence of IUGR was 3% in the present study and NICU admission was required in 27% of the babies born. Rita D et al reported the incidence of low birth weight in 12%, NICU admission rate to be 8.4%, and perinatal mortality to be 2%. Thobbi et al reported the incidence of low birth weight to be 27.3% and it was the most common cause of perinatal mortality in teenage mothers in their study, which could be either due to prematurity or small for gestational age babies.

There are a few limitations of the study. Ours was a single centre study. As teenage pregnancy has numerous social determinants involved, the results of the present study may not be generalizable to other parts of India. Secondly, we did not compare the outcomes in teenager pregnancy with those of adult pregnancy, which limits our ability to comment on whether some adverse outcomes were associated with teenager pregnancy.

## CONCLUSION

Teenage pregnancies represent a high-risk. The present study demonstrated the various maternal as well as neonatal complications in teenage pregnancies. This being a social issue, promotive and preventive measures at community level are required to help avoid teenage pregnancies. Those who experience teenage pregnancy should be given extra attention and care. Many of these complications are manageable, provided the access to services is available.

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