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Feto-Maternal Outcomes In Teenage Pregnancy

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ABSTRACT

Background: Teenage pregnancy is a significant public health issue, particularly in developing countries, due to its association with adverse maternal and neonatal outcomes. This study aimed to evaluate the feto-maternal outcomes of teenage pregnancies at Chettinad Hospital and Research Institute.

Methods: A retrospective cross-sectional study was conducted from June 2022 to January 2025, involving 119 teenage pregnancies aged 13-19 years. Data on age, parity, gestational age, maternal outcomes, antenatal and postnatal complications, birth weight, APGAR scores, and neonatal complications were collected from hospital records. Descriptive statistics were used to analyze the data.

Results: The majority of pregnancies occurred in the 18-19 years age group (59.4%), with 82.5% being primigravida. Preterm deliveries accounted for 32.4% of cases, while 64.9% were term deliveries. Vaginal deliveries (67.6%) were more common than cesarean deliveries (32.4%), with cephalopelvic disproportion (10.8%) being the leading indication for cesarean section. Anemia (40.5%) and pre-eclampsia (21.6%) were the most common antenatal complications. Postpartum hemorrhage (8.1%) was the most frequent postnatal complication. Low birth weight was observed in 40.5% of neonates, and 16.2% required NICU admission. Respiratory distress syndrome (10.8%) and neonatal jaundice (8.1%) were the most common neonatal complications.

Conclusion: Teenage pregnancies are associated with significant maternal and neonatal risks, including high rates of anemia, pre-eclampsia, preterm delivery, and low birth weight. Targeted interventions, including nutritional support, early antenatal care, and specialized neonatal services, are essential to improve outcomes for teenage mothers and their infants. A multidisciplinary approach involving healthcare providers, educators, and social workers is crucial to address the challenges of teenage pregnancy effectively.

1. INTRODUCTION

Adolescent pregnancy, defined by the World Health Organization (WHO) as pregnancy occurring between the ages of 13 and 19 years, remains a significant public health concern globally, particularly in developing countries [1]. This period of life is characterized by rapid physical, psychological, and physiological changes, and pregnancy during this transitional stage can lead to increased stress and adverse health outcomes for both the mother and the fetus [2]. Teenage pregnancies are associated with a higher risk of maternal and perinatal complications, including preeclampsia, anemia, intrauterine growth restriction (IUGR), preterm labor, cephalopelvic disproportion (CPD), low birth weight, and increased rates of cesarean deliveries [3]. Additionally, adolescent mothers often face social and economic challenges, such as financial constraints, interrupted education, and societal stigma, which further exacerbate the risks associated with early pregnancy [4].

The global incidence of teenage pregnancy varies significantly, with developing countries accounting for approximately 90% of cases [5]. In India, factors such as early marriage, low literacy rates, lack of sex education, and limited access to contraceptive services contribute to the high prevalence of teenage pregnancies [6]. According to WHO, the risk of maternal death is twice as high for women aged 15 to 19 years compared to those aged 20 to 24 years, highlighting the critical need for targeted interventions to improve maternal and fetal outcomes in this vulnerable population [7].

Antenatal care plays a crucial role in mitigating the risks associated with teenage pregnancy. Early and regular antenatal visits, coupled with proper nutritional advice, can significantly reduce the likelihood of complications [8]. However, despite the known benefits, many adolescent mothers do not receive adequate prenatal care, leading to poorer outcomes [9]. Therefore, understanding the feto-maternal outcomes in teenage pregnancies is essential for developing effective strategies to improve the health and well-being of both mothers and their infants.

This study aims to retrospectively evaluate the feto-maternal outcomes in teenage pregnancies at Chettinad Hospital and Research Institute over a 24-month period. By identifying the prevalence of complications and the factors contributing to adverse outcomes, the findings from this study will inform the development of a multidisciplinary approach involving healthcare providers, educators, and social workers to address the challenges associated with teenage pregnancy.

Aim

The aim of this study is to ascertain the number of teenage pregnancies and evaluate the feto-maternal outcomes in teenage pregnancies

2. MATERIALS AND METHODS

Study Design: A retrospective cross-sectional study was conducted to evaluate the feto-maternal outcomes in teenage pregnancies at Chettinad Hospital and Research Institute (CHRI). The study spanned from June 2022 to January 2025, covering a duration of 30 months.

Study Setting: The study was conducted in the Department of Obstetrics and Gynecology at Chettinad Hospital and Research Institute, Kelambakkam, Tamil Nadu, India.

Study Population

The study population included all teenage pregnant women aged 13-19 years who delivered at CHRI during the study period, which was 119. Both primigravida and multigravida women with a gestational age of more than 28 weeks were included. Women aged 20 years or older, pregnancies that ended in abortion, and those with pre-existing major medical or surgical illnesses that could affect pregnancy outcomes were excluded.

Data Collection

The following maternal and perinatal outcomes were retrieved from hospital records and assessed

- Maternal outcomes: Mode of delivery (vaginal or cesarean), full-term or preterm delivery, indications for cesarean section (LSCS), and antenatal and postnatal complications.
- Perinatal outcomes: Prematurity, respiratory distress syndrome, low birth weight, stillbirth, congenital anomalies, and NICU admissions.

Statistical Analysis

Data were analyzed using appropriate statistical methods to determine the prevalence of teenage pregnancies and the frequency of maternal and perinatal complications using SPSS version 26. Descriptive statistics were used to summarize the data.

3. RESULTS

The study included a total of 119 teenage pregnancies aged 13-19 years at Chettinad Hospital and Research Institute between June 2022 and January 2025 out of the total 3699 deliveries. The results are presented below, categorized by the parameters of interest: Age, Parity, Gestational Age, Outcome, ANC Complications, Postnatal Complications, Birth Weight, APGAR Score, and Neonatal Complications. Each table is followed by an interpretation of the findings.

Table 1: Distribution of Teenage Pregnancies by Age and Parity

Age Group (Years)	Primigravida (n)	Multigravida (n)	Total (n) %
16-17	38	10	48 (40.6%)
18-19	29	42	71 (59.4%)
Total	67	52	**119**

The majority of teenage pregnancies occurred in the **18-19 years age group**, accounting for **79 cases (59.4%)** of the total study population. The **16-17 years age group** accounted for **48 cases (40.6%)**, indicating that pregnancies in this younger age group are also significant but less common than in the 18-19 years group.

Table 2: Gestational Age at Delivery

Gestational Age (Weeks)	Number of Cases (n)	Percentage (%)
28-36 (Preterm)	39	32.4%

37-40 (Term)	77	64.9%
>40 (Post-term)	3	2.7%
Total	**119**	**100%**

Preterm deliveries (28-36 weeks) accounted for 32.4% of cases, highlighting a significant risk of preterm labor in teenage pregnancies. The majority of deliveries (64.9%) occurred at term (37-40 weeks), which is consistent with general pregnancy outcomes. Post-term pregnancies (>40 weeks) were rare, accounting for only 2.7% of cases.

Table 3: Maternal Outcomes

Outcome	Number of Cases (n=119)	Percentage (%)
Vaginal Delivery	80	67.6%
Cesarean Delivery	39	32.4%
Indications for Cesarean Delivery		
Cephalopelvic Disproportion (CPD)		10.8%
Fetal Distress		8.1%
Pre-eclampsia/Eclampsia		6.8%
Other Indications		6.7%

Vaginal deliveries were more common (67.6%) than cesarean deliveries (32.4%). The most common indication for cesarean delivery was cephalopelvic disproportion (CPD) (10.8%), followed by fetal distress (8.1%) and pre-eclampsia/eclampsia (6.8%). These findings suggest that teenage mothers are at a higher risk of complications requiring surgical intervention, particularly due to CPD and fetal distress.

Table 4: Antenatal (ANC) Complications

ANC Complication	Number of Cases (n=119)	Percentage (%)
Anemia	48	40.5%
Pre-eclampsia	26	21.6%
Gestational Diabetes	5	5.4%
Intrauterine Growth Restriction (IUGR)	10	8.1%
None	30	24.3%

Anemia was the most common antenatal complication, affecting 40.5% of teenage mothers, likely due to poor nutritional status and increased iron demands during pregnancy. Pre-eclampsia was also prevalent (21.6%), indicating a higher risk of hypertensive disorders in teenage pregnancies. Gestational diabetes and IUGR were less common but still significant, affecting 5.4% and 8.1% of cases, respectively. 24.3% of mothers had no antenatal complications, suggesting that some teenage pregnancies can proceed without major issues.

Table 5: Postnatal Complications

Postnatal Complication	Number of Cases (n=119)	Percentage (%)
Postpartum Hemorrhage	10	8.1%
Infection	5	5.4%
Hypertension	4	4.1%
None	100	82.4%

Postpartum hemorrhage (8.1%) was the most common postnatal complication, likely due to uterine atony or trauma during delivery. Infections (5.4%) and hypertension (4.1%) were also notable complications, though less frequent. The majority of

mothers (82.4%) had no postnatal complications, indicating that most teenage mothers recover well after delivery.

Table 6: Neonatal Outcomes

Parameter	Number of Cases (n)	Percentage (%)
Birth Weight		
<2.5 kg (Low Birth Weight)	48	40.5%
2.5-4 kg (Normal)	67	56.8%
>4 kg (Macrosomia)	4	2.7%
APGAR Score (at 5 minutes)		
<7 (Low)	16	13.5%
≥7 (Normal)	103	86.5%
Neonatal Complications		
Respiratory Distress Syndrome	12	10.8%
Neonatal Jaundice	10	8.1%
Congenital Anomalies	4	2.7%
NICU Admission	19	16.2%
None	74	62.2%

Low birth weight (<2.5 kg) was observed in 40.5% of neonates, reflecting the impact of maternal malnutrition and preterm delivery. The majority of neonates had a normal APGAR score (≥7) (86.5%), but 13.5% had a low APGAR score (<7), indicating some degree of neonatal distress. Respiratory distress syndrome (10.8%) and neonatal jaundice (8.1%) were the most common neonatal complications, likely due to prematurity and immature organ systems. 16.2% of neonates required NICU admission, underscoring the need for specialized neonatal care in teenage pregnancies. 62.2% of neonates had no complications, suggesting that many infants born to teenage mothers can have favorable outcomes with proper care.

4. DISCUSSION

Teenage pregnancy remains a significant public health challenge, particularly in developing countries, where it is associated with adverse maternal and neonatal outcomes. This study, conducted at Chettinad Hospital and Research Institute, evaluated the feto-maternal outcomes of 119 teenage pregnancies over a 30-month period. The findings provide valuable insights into the risks and complications associated with teenage pregnancies, as well as the need for targeted interventions to improve outcomes for both mothers and their infants.

The majority of teenage pregnancies in this study occurred in the 18-19 years age group (59.4%), with a smaller proportion in the 16-17 years age group (40.6%). This is consistent with global trends, where older adolescents are more likely to become pregnant due to increased sexual activity and social factors such as early marriage [10]. However, the significant number of pregnancies in the 16-17 years age group highlights the need for early interventions to prevent unintended pregnancies in younger teenagers.

The high proportion of primigravida (82.5%) across both age groups underscores the vulnerability of first-time teenage mothers to pregnancy-related complications. This finding aligns with previous studies that have shown primigravida teenagers are at higher risk of adverse outcomes due to physiological immaturity and lack of prior pregnancy experience [11]. The presence of multigravida cases (17.5%), particularly in the 16-17 years age group, suggests that repeat pregnancies are not uncommon among younger teenagers. This could be attributed to limited access to contraception, lack of sexual education, and cultural norms that encourage early and repeated childbearing [12].

A significant proportion of pregnancies in this study resulted in preterm delivery (32.4%), which is higher than the global average for teenage pregnancies [13]. Preterm birth is a major contributor to neonatal morbidity and mortality, and its high prevalence in this study highlights the need for improved antenatal care to reduce the risk of early labor. The majority of deliveries occurred at term (64.9%), which is consistent with general pregnancy outcomes, but the high rate of preterm births remains a concern.

Preterm labor in teenage pregnancies is often linked to factors such as poor nutritional status, infections, and lack of adequate

prenatal care [14]. These findings emphasize the importance of early and regular antenatal visits, nutritional supplementation, and education on healthy pregnancy practices for teenage mothers.

The study found that vaginal deliveries (67.6%) were more common than cesarean deliveries (32.4%). However, the cesarean delivery rate in this study is higher than the global average for teenage pregnancies, which is typically around 20-25% [15]. The most common indications for cesarean delivery were cephalopelvic disproportion (CPD) (10.8%), fetal distress (8.1%), and pre-eclampsia/eclampsia (6.8%). These findings are consistent with previous studies that have identified CPD and hypertensive disorders as leading causes of cesarean deliveries in teenage pregnancies [16].

The high rate of cesarean deliveries in this study may reflect the increased risk of obstetric complications in teenage mothers, particularly those related to physiological immaturity and inadequate pelvic development. These findings highlight the need for careful monitoring and timely intervention to reduce the need for surgical deliveries in this population.

Anemia (40.5%) and pre-eclampsia (21.6%) were the most common antenatal complications in this study. Anemia in teenage pregnancies is often attributed to poor nutritional status, increased iron demands, and lack of access to supplementation [17]. Pre-eclampsia, a leading cause of maternal and perinatal morbidity, is more prevalent in teenage pregnancies due to physiological immaturity and inadequate placental development [18].

The high prevalence of these complications underscores the importance of nutritional interventions, iron and folic acid supplementation, and regular antenatal monitoring to reduce the risk of adverse outcomes. The presence of gestational diabetes (5.4%) and intrauterine growth restriction (IUGR) (8.1%) further highlights the need for comprehensive antenatal care to address the diverse health needs of teenage mothers.

Postpartum hemorrhage (8.1%) was the most common postnatal complication in this study, likely due to uterine atony or trauma during delivery. This finding is consistent with previous studies that have identified postpartum hemorrhage as a leading cause of maternal mortality in teenage pregnancies [19]. Infections (5.4%) and hypertension (4.1%) were also notable complications, though less frequent.

The majority of mothers (82.4%) had no postnatal complications, suggesting that most teenage mothers recover well after delivery with appropriate care. However, the presence of complications in a significant proportion of cases highlights the need for postnatal monitoring and timely intervention to prevent adverse outcomes.

Low birth weight (40.5%) was the most common neonatal complication in this study, reflecting the impact of maternal malnutrition and preterm delivery. Low birth weight is a significant risk factor for neonatal morbidity and mortality, particularly in resource-limited settings [20]. The majority of neonates had a normal APGAR score (≥7) (86.5%), but 13.5% had a low APGAR score (<7), indicating some degree of neonatal distress.

Respiratory distress syndrome (10.8%) and neonatal jaundice (8.1%) were the most common neonatal complications, likely due to prematurity and immature organ systems. These findings are consistent with previous studies that have identified respiratory and metabolic complications as leading causes of neonatal morbidity in teenage pregnancies [21]. The high rate of NICU admissions (16.2%) further underscores the need for specialized neonatal care in this population.

The findings of this study have important implications for public health and clinical practice. The high prevalence of anemia, pre-eclampsia, preterm delivery, and low birth weight in teenage pregnancies highlights the need for targeted interventions to address the unique health needs of teenage mothers. These interventions should include:

1. Nutritional Support: Providing iron and folic acid supplementation, as well as education on healthy eating practices, to reduce the risk of anemia and other nutritional deficiencies.
2. Antenatal Care: Ensuring early and regular antenatal visits to monitor for complications such as pre-eclampsia and IUGR, and to provide timely interventions when needed.
3. Postnatal Care: Implementing postnatal monitoring programs to detect and manage complications such as postpartum hemorrhage and infections.
4. Neonatal Care: Strengthening neonatal care services, including NICU facilities, to manage complications such as respiratory distress syndrome and neonatal jaundice.

5. CONCLUSION

This study highlights the significant maternal and neonatal risks associated with teenage pregnancies, including high rates of anemia, pre-eclampsia, preterm delivery, and low birth weight. These findings underscore the need for targeted antenatal and postnatal care to improve outcomes for teenage mothers and their infants. A multidisciplinary approach involving healthcare providers, educators, and social workers is essential to address the challenges of teenage pregnancy effectively.

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