



Review Article

Impact of Teenage Pregnancy on Health of Mother and Baby

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A B S T R A C T

Teenage pregnancy is a pressing issue in society. A review of the literature on teenage pregnancy is done to assess the impact of teenage pregnancy on the health of adolescent mothers and the impact on the health of babies, depending upon which some measures can be improvised in the health care delivery system in a coordinated manner with other government stakeholders to prevent teenage marriage and teenage pregnancy. A literature review is adopted as the methodology for this study. The articles are included depending on inclusion and exclusion criteria to ensure the relevance. The main findings reveal that anemia is very common in teenage pregnancy, adolescent pregnant women are more prone to PROM & higher incidence of preterm labor, pre-eclampsia & cephalopelvic disproportion, and increased rate of LUCS.

The most common adverse outcomes noted in babies of teenage pregnancy are the incidence of low birth weight, birth-asphyxia, fetal distress, neonatal hyperbilirubinemia. To prevent teenage pregnancy, there is a need to make awareness against teenage marriage in the community and promote the use of contraceptives among married adolescents and the availability of family planning methods widely at the community. Promotion for generating awareness regarding comprehensive reproductive health, available health care services, and adequate counseling may minimize the teenage pregnancy.

Keywords: Teenage Pregnancy, Anemia, Preterm Labor, Cephalopelvic Disproportion, Low Birth Weight, Birth Asphyxia



Introduction

Teenage Pregnancy is defined as 'any pregnancy from a girl who is 10-19 yrs of age'. (WHO,2004) It is estimated that approximately 21 million girls residing in developing nations and belonging to the age group of 15–19 years become pregnant every year¹. Teenage pregnancy is a burning problem of the society as a well as a bottleneck in maternal health improvement in India also. Indian survey report NFHS-5 indicates that among the women between age group 15 yrs and 19 yrs, 6.8% were already mother or pregnant.² Teenage motherhood is considered as a major public health problem responsible for various complications, social and economical consequences for the mother and babies. Women from low socio economic status are commonly affected by teenage pregnancy due to poor education, lack of awareness of contraceptives.³ In India rural areas are more affected with teenage pregnancy (9.2%) than urban areas (5%).⁴

Teenage pregnancies pose significant health risks for both young mothers and their babies. In developing nations, complications from teenage pregnancy are the leading cause of death among girls aged 15 to 19.⁵ Factors such as biological immaturity, unplanned pregnancies, insufficient prenatal care, poor nutrition, and stress negatively impact pregnancy outcomes. Adolescent mothers often face maternal complications like anemia, eclampsia, pre-eclampsia, intrauterine growth restriction (IUGR), preterm birth, the need for assisted delivery, and higher rates of cesarean sections due to cephalopelvic disproportion. In addition to medical issues, teenage mothers frequently encounter financial difficulties, social stigma, and challenges in continuing their education. Common fetal complications include low birth weight, stillbirth, birth asphyxia, respiratory problems, and birth trauma.

There are several government policies for the reduction of teenage pregnancy, like the minimum age for marriage for girls is 18yr (government order), National Family Planning Programme of GOI provides several temporary contraceptive methods at the doorstep in the community through front level health workers. There are several social schemes, like 'Kanyashree', 'Rupashree' by the state government and 'Beti Bachao Beti Padhao Abhiyan' by Hon'ble PM of India that are there to support the girls to complete their education, which can prevent the teenage marriage and thereby teenage pregnancy. But unfortunately, still the trend of teenage marriage and teenage pregnancy is in an increasing graph. Hence a reduction in teenage pregnancy is an important goal today all over the world, and more so in developing countries like India, to improve maternal health in general.

The author is trying to discuss issues to get a clear understanding under the following four headings:

Impact of teenage pregnancy on the health of adolescent mothers

Maternal complications commonly associated with teenage pregnancy are anemia, pregnancy -induced hypertension (PIH), premature rupture of membranes (PROM),IUGR, preterm labor, puerperal sepsis etc.

Impact of teenage pregnancy on the health of babies

Fetal outcomes commonly associated with teenage pregnancy are low birth weight babies, birth asphyxia, stillbirths, fetal distress, prematurity, stillborn, sepsis etc.

Health Services provided to teenage pregnancy

Good routine antenatal care by healthcare professional helps to improve the outcome of teenage pregnancy. Teenage pregnancy should be considered a high risk pregnancy, and special attention should be given to good nutrition, regular Antenatal Care (ANC) and making people aware of the danger signs of pregnancy and seeking health care services at the earliest to improve the outcome for both the adolescent mother and her babies.

Measures to be taken to prevent teenage pregnancy

As teenage marriage followed by teenage pregnancy is a social issue, strategic measures have to be planned to address the issue in a coordinated manner involving all government stakeholders like Ministry of Health and Family Welfare (MOHFW), Women and Child Development (WCD), Panchayati Raj Institutions (PRI), and General administration with interested NGOs for intensive community awareness against the demerits of teenage pregnancy.

So, a review of literature on the burning issue of teenage pregnancy is done to assess the impact of adolescent pregnancy on the health of adolescent mothers and the impact on the health of babies, depending on which some measures can be improvised in the health care delivery system in a coordinated manner with other government stakeholders to prevent teenage marriage and teenage pregnancy.

Objectives

- To evaluate the effects of teenage pregnancy on the health of the mother.
- To assess the impact of teenage pregnancy on the health of the baby.
- To find out the measures to be taken to prevent teenage pregnancy.

Methodology

A Systemic literature review is adopted as the methodology for this study.

Sources of data

The main sources of data for this study consisted of peer-reviewed academic journals and digital libraries. Important databases, including PubMed, Google Scholar, and Scopus, are used to gather pertinent literature. Furthermore, survey reports from the Government of India and the World Health Organization (WHO) are taken into account as well.

Search strategy

It incorporated targeted keywords and phrases pertaining to teenage and adolescent pregnancy and its effects on both mothers and infants, such as “teenage pregnancy,” “adolescent pregnancy,” “effects on mothers,” and “effects on infants.” Boolean operators (AND, OR) were utilized to combine these terms effectively.

Criteria for Selection of Literature

Criteria for inclusion

- Articles that had undergone peer review and were published in the English language.
- Studies focusing on adolescent pregnancy and its impact.

Exclusion Criteria

- Articles that were not peer-reviewed, including opinion pieces and editorials.
- Articles that could not be accessed due to non-availability in full text or behind paywalls.

Selection Process

The selection procedure consists of a two-step screening process. First, titles and abstracts are evaluated to determine their relevance to the topic and according to established inclusion and exclusion criteria. Next, the full texts of the screened articles are examined thoroughly for further analysis. This selection focuses on research that discusses the effects of teenage and adolescent pregnancy on both mothers and their babies. The studies that are conducted in India and South East Asia were given priorities.

Analysis

Analysis has been done by content analysis. The findings from this analysis will help to better understanding of the impact of teenage pregnancy on mother and baby.

Core concepts

The present study deals with the following issues:

Impact of teenage pregnancy on the health of adolescent mothers

Teenage pregnancy is linked to a higher occurrence of several negative maternal outcomes:

1. **Anemia and Excessive Fatigue:** According to the World Health Organization (2008)⁶, anemia in pregnant

women is characterized by a hemoglobin level of less than 110 g/L at sea level. During adolescence, the requirement for iron rises significantly due to rapid growth and development. When an adolescent is pregnant, the iron demand increases even more, raising the risk of developing anemia. This heightened need for iron can result in deficiency, which may cause both physical and cognitive impairments in pregnant adolescents and their unborn children.

In a study, Dutta I et al.(2013)³ showed the most common complication was anemia in teenagers (68.4%) compared to adults (33.32%).

In another study Sahithi et al.(2022)⁷ noted that anemia (87%) is the most common antepartum complication in teenage pregnancy.

In a study, Tejaswi C et al.(2023)⁸ showed that 60% of normal adult mothers were mildly anemic whereas in case of adolescent pregnancy it showed 72% were mildly anemic

In their study, Dev S V et al.(2023)⁹ revealed that anemia was the most prevalent complication among the teenage mothers. The percentage of anemia among the teenage mothers was 51.6% of which mild anemia was observed in 38.81%, moderate in 8.62%, severe in 3.14%, and very severe in 1.02%.

Therefore, it is evident from different studies that anemia is very common in teenage pregnancy. This may be due to poor nutrition, faulty eating habits, which are common in adolescents. Severe anemia is one of the predisposing factor for preterm labor, low birth weight, postpartum hemorrhage, and sepsis.

2. **PIH:** Pregnancy-Induced Hypertension (PIH) is defined as a condition in which a pregnant woman's systolic blood pressure (SBP) is 140 mmHg or more, and/ or her diastolic blood pressure (DBP) is 90 mmHg or more, measured on two or more occasions without the presence of protein in the urine, after the 20th week of gestation. In contrast, pre-eclampsia occurs when a pregnant woman exhibits an SBP of 140 mmHg or more and/ or a DBP of 90 mmHg or higher on two or more measurements taken within a four-hour period, along with proteinuria, appeared after 20 weeks of gestation. Eclampsia is characterized by the onset of seizures, proteinuria, and two or more signs or symptoms of severe pre-eclampsia in women who meet the criteria for PIH.¹⁰

Adolescent mothers face an increased risk of developing preeclampsia, which can manifest as a progressive hypertensive disorder during pregnancy. The underdeveloped uterus and irregular ovulatory cycles in adolescents can lead to inadequate decidualization, which affects deep placentation and disrupts the remodelling

of spiral arteries, ultimately contributing to the onset of preeclampsia.¹¹

Sahithi et al.(2022)⁷ show higher incidence of gestational hypertension (21.6%) and eclampsia (7%) among teenage pregnant women in their study.

In a study, Tejaswi C et al.(2023)⁸ stated that compared to normal adult mothers the proportion of pre-eclampsia is high among the adolescent mothers.

In a study, Dev S V et al.(2023)⁹ showed that among antepartum complications in teenage pregnancy, hypertensive disorders of pregnancy were experienced by 29.09% of the study subjects, among whom gestational hypertension was experienced by 10.96%, preeclampsia without severe form experienced by 7.16%, preeclampsia with severe form was experienced by 7.6%, chronic hypertension with superimposed preeclampsia was experienced by 1.09% and eclampsia experienced was by 3.36%.

Yasmin G et al. 2013⁵ revealed that in teenage pregnancy, 20.17%(72) teenage mothers had hypertensive disorders in pregnancy among which 34 suffered from gestational hypertension, 22 suffered from Preeclampsia and 16 suffered from eclampsia.

3. Preterm Labor: Preterm labor refers to the birth of a baby alive before the completion of 37 weeks of gestation. (WHO,2023)¹²

Tejaswi C et al. (2023)⁸ showed that the occurrence of preterm labor is more in adolescent pregnant women than in normal adult pregnant women.

Dutta I.et al. (2013)³ revealed that teenage primigravidas experienced preterm delivery 4 times more compared to adult primigravidas.

Yasmin G et al. 2013⁵ revealed that during the third trimester, teenage pregnancy is commonly associated with preterm Labor 27.45%(98).

Sahithi et al.(2022)⁷ shows a higher incidence of Preterm labor (41.9%) among teenage pregnant women in their study.

In a study Mukhopadhyay P et al.(2010)¹³ revealed that the preterm delivery rate is high in teenage mothers (27.7%) compared to the normal adult mothers (13.1%).

4. Premature rupture of membrane: Premature rupture of membranes (PROM) refers to the breaking of the gestational membranes before labor begins. The teenage girls have immature uterine and cervical blood circulation which leads to underdiagnosed or diagnosed infections during teenage pregnancy and that leads to PROM (Dev S V et al. 2023)⁹

In a study conducted by Paladugu R K et al. (2018)¹⁴, it was found that 20% of adolescent mothers experienced premature rupture of membranes (PROM), while the rate was only 4% among the control group ($p < 0.05$).

5. Cephalo-pelvic disproportion: Cephalo-pelvic disproportion (CPD) refers to a situation where the fetal head is too large in relation to the mother's pelvis, leading to challenges in the safe delivery of the foetus through the birth canal.

Dutta I et al. (2013)³ showed that adolescent pregnant girls suffer from cephalopelvic disproportion in a higher rate than that of adult women, and CPD ends up in cesarean delivery. Incidence of CPD is higher with teenage pregnancy. Incidence of CPD is significantly more associated with teenage primigravida ($p = 0.003$).

The study by Sahithi et al.(2022)⁷ reflected that among the total teenage pregnancies, the occurrence of cephalopelvic disproportion is 25.8% as intrapartum complications.

In their study, Dev S V et al.(2023)⁹ showed that the occurrence of cephalopelvic disproportion was 9.3% among teenage pregnancies.

Thus studies indicate that the occurrence of cephalopelvic disproportion in pregnancies among adolescents is much greater as compared to that in adult women.

6. Increased rate of LUCS: Ramachandra C. et al. (2017)¹⁵ showed that emergency Lower Segment Caesarean Section (LSCS) and elective LSCS rates were higher in the teenage pregnancy group compared to the adult pregnant women. Dutta I et al. (2013)³ showed that primigravida with teenage underwent LSCS significantly more (43.8%) compared to adult pregnant women (21.9%).

In their research, Dev S V et al. (2023) found that the caesarean section rate among teenage pregnancies was 25%.⁹ The primary reasons for performing caesarean sections included fetal distress (47.3%), failed induction (29.8%), cephalopelvic disproportion (9.3%), breech presentation in first-time mothers (8.1%), non-progress of labor (2%), and antepartum eclampsia (1.4%).

Yasmin et al. (2014)⁵ conducted a study on the outcomes for mothers and infants in cases of teenage pregnancy. Their research found that 11.62% (71) of deliveries were performed via Cesarean section. The primary reason for the Cesarean deliveries was fetal distress, followed by malpresentation, which accounted for 14 cases—12 of these were due to breech presentation, while one each was for face and brow presentations. Other factors contributing to the need for Cesarean sections among teenage mothers included contracted pelvis, previous Cesarean deliveries, cephalopelvic disproportion (CPD), and obstructed labour

7. IUGR: Intrauterine growth restriction (IUGR) is characterized by a fetal weight that falls below the 10th percentile for a given gestational age. The biological immaturity of young adolescents, who are still undergoing physical development, may lead to competition for nutrients between the mother and fetus as the pregnancy advances. This situation can compromise the growth, development, and survival of the fetus throughout the course of the pregnancy (Dev S V et al., 2023).⁹

Thirukumar M et al.(2020)¹⁶ showed that the percentage of IUGR babies was higher in pregnant women with teenagers (6%) than in pregnant women with average maternal age (20-35yrs) (5%); Teenage pregnant women had a 1.2 times higher chance of delivering an IUGR baby as compared to pregnant women with average maternal age (20-35yrs)

In their study, Dev S V et al.(2023)⁹ showed that among teenage pregnancies intrauterine growth retardation was present in 13.6% cases.

Ramachandra C. et al.(2016)¹⁵ showed in their study that teenage pregnant women have higher risks of intrauterine growth restriction- 8.5% in comparison to adult pregnant women- 5.5%. Teenage pregnancy is therefore linked to an increased risk of premature birth and intrauterine growth restriction in the foetus.

Impact of teenage pregnancy on baby

The most common adverse outcomes noted in babies of teenage pregnancy may be as follows:

1. Low Birth Weight (LBW): The World Health Organization categorizes a birth weight of less than 2500 grams (5.5 pounds) as low birth weight (LBW).¹⁷ Research by Thirukumar et al. (2020)¹⁶ indicated that adolescent pregnancies are often linked to the complication of delivering LBW infants. The study found that adolescent mothers exhibited a significantly higher incidence of LBW compared to those of average maternal age. Additionally, it reported that mothers in the adolescent age group had a 1.3 times greater likelihood of having a low-birth-weight baby than mothers within the average age range.

In a separate investigation, Tejaswi C et al. (2023)⁸ found that the rate of low birth weight among adolescent pregnancies was 29%, compared to 15% in pregnancies considered normal, indicating a statistically significant difference between the two groups.

In their 2013 study, Dutta et al. found that the rate of low birth weight (LBW) among teenagers was notably higher at 31.74% compared to 16.6% in adult pregnant women, with a p-value of 0.019. This indicates that infants born to teenage mothers are at a greater risk of being classified as low birth weight than those born to women in their 20s.

Paladugu RK et al.(2018)¹⁴ showed that the prevalence of low birth weight babies was numerically higher in teenage mothers compared to adult mothers.

In a study, Mukhopadhyay P et al.(2010)¹³ showed that teenage pregnancy was commonly associated with the complication of low birth weight (<2.5 kg). In the teenage-group pregnant women, the mean birth weight was 2.59 kg whereas in the control group it was 2.72 and the difference was highly significant.

In their study, Rupakala B M et al. (2016)¹⁸ showed that the most common adverse fetal outcome was Low Birth Weight babies (38 babies) among teenage pregnancies.

Devi, O.S. et al (2019)¹⁹ showed that the incidence of LBW in teenage pregnant women was 31% in respect to 26% in the control group.

2. Birth Asphyxia: In their 2013 study, Dutta et al. found that 29.2% of neonates born to teenage mothers experienced birth asphyxia and needed neonatal resuscitation, in contrast to only 7.3% of neonates from adult mothers.³

In a study Mukhopadhyay P et al.(2010)¹³ showed that the most common neonatal complication was birth-asphyxia and it was significantly higher in the primi gravida with teenage group(16.6%) compared to adult primi gravida mothers (8.9%). Deaths of newborns within 48 hours in the primi gravida with teenage group were also higher

3. Fetal distress: Fetal distress refers to a situation where the fetus experiences a decline in oxygen levels and/or an increase in acid levels due to insufficient oxygen supply. This condition is indicated by decreased fetal movements, alterations in fetal heart rate patterns, presence of meconium-stained amniotic fluid, and restricted fetal growth.²⁰

Fetal distress is more common in teenage primigravida. (Dutta I et al.2013)³

Rupakala B M et al. (2016)¹⁸ showed in their study that 57 teenage mothers delivered by Cesarean Section and fetal distress was the cause for the majority of cesarean section 22 (38.5%) in teenage pregnant women.

4. Neonatal jaundice: Dutta I et al.(2013)³ revealed in their study that 4.8% of neonates of adult mothers suffered from neonatal hyperbilirubinemia in comparison with 11.9% of neonates belonging to teenage mothers.

So, it is evident from different studies that teenage pregnancy is associated with different adverse fetal outcomes.

Health Services provided to teenage pregnancy

Adolescence represents a vital phase in life characterized by significant transformations, including swift physical,

psychosocial, sexual, and cognitive development. Pregnant teenagers, in particular, are a vulnerable demographic, as their nutritional needs for ongoing growth and development are further amplified by the requirements of a developing fetus.

Effective antenatal care provided by healthcare professionals plays a crucial role in improving outcomes for teenage pregnancies. Healthcare providers should emphasize the importance of proper nutrition and be vigilant about the potential medical disorders and complications that may arise, intervening promptly when necessary.

Teenage pregnancy should be classified as a “high-risk” situation, prompting healthcare providers to encourage pregnant adolescents to attend more frequent antenatal visits. This proactive approach enables the early detection of signs and symptoms associated with complications. Additionally, it is important to focus on the utilization of appropriate screening and diagnostic tests and to implement necessary interventions if complications occur during pregnancy or labor.

All pregnant teenage woman should attend the PMSMA clinic to have a special check up by the specialist medical officer.

During labor process, proper monitoring of the progress of labor is to be done to prevent prolonged labor. Early diagnosis and management of any complication to be done by increasing the use of skilled antenatal, childbirth and postnatal care. To protect the teenage girls from the complications of teenage pregnancy, education of female children plays an important role. Continuation of female education may reduce the teenage marriage, and by that way the teenage pregnancy.

There is a need to make people aware of the use of family planning methods amongst the married teenagers and ensure the availability of contraceptives on a major scale in the community.

Measures to be taken to prevent teenage pregnancy

As it has been taken as an established fact that teenage pregnancy is a burning problem of the society as a well as a bottleneck in maternal health indicators, measures are taken at all levels to arrest the issue. The following measures have already taken-

- Although teenage marriage is a social issue, strategies have been planned to address the issue in a coordinated manner involving all government stake holders like H&FW, WCD, PRI, general administration with interested NGO for intensive community awareness against the demerits of teenage pregnancy.
- The social schemes like ‘Kanyashree’, ‘Rupashree’, ‘Betri Bachao Betri Padhao Abhiyan’ by Hon’ble PM &

others may be restricted for the teenage married girls.

- Awareness at school for secondary & higher secondary students about the grave consequences of teenage marriage & teenage pregnancy through regular campaigns.
- Long school absences may be tracked by the teachers to get the information as a prevention of elopement.
- Detection of teenage marriage must have been done at the earliest point in time through ASHA, AWW & other grassroots level workers to reach the immediately to create awareness for delayed pregnancy through contraception.
- ‘Nayi Paheli Kit’ is a strategic intervention to reach the newly married couple to increase the use of contraception and to reduce pregnancy before the age of 20 years.
- Safe life Kits containing contraceptive methods should be available at the nearest health facilities.
- Enactment of law of age for marriage to be strictly implemented to restrict marriage before the age of 18 years at least.
- Providing access to contraceptives is essential for preventing teenage pregnancies, while availability of safe abortion services is vital for effectively managing unwanted pregnancies.
- High-quality antenatal care, intranatal services, neonatal care, family planning, and comprehensive safe abortion services can significantly reduce the various risks linked to teenage pregnancies.
- Promotion of health education regarding proper use of family planning methods and dangers of teenage pregnancy among the newly married teenage girls before they got pregnant may delay the pregnancy.

By implementing these measures, we can anticipate a global reduction in teenage pregnancy rates and associated complications.

Currently, there is a pressing need for strong measures and policies in our country to eliminate teenage marriages and the associated pregnancies. It is crucial to foster a coordinated approach among various departments to meet the diverse needs of adolescents effectively.

Conclusion

It is evident from the review of literature that teenage pregnancy is one of the prime cause that leads to severe adverse complications for both the mother and baby, which is a great contributor for MMR & IMR. From the literature review it is reflected that anemia, hypertensive disorder of pregnancy, preterm labor, premature rupture of membranes, IUGR, CPD, and increased rate of LUCS were the major maternal complications, and LBW, fetal distress, birth asphyxia, neonatal jaundice etc. were the major adverse fetal outcomes in teenage pregnancies.

To prevent teenage pregnancy, there is a need to make awareness against teenage marriage in the community, promote for female education and promote the use of contraceptives among married teenagers, and availability of family planning methods.

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