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Understanding the burden of teenage pregnancy: A five-year analysis at a tertiary care center of northern Karnataka in India

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ABSTRACT

Objectives: The present study was planned to comprehensively investigate the epidemiological aspects and clinical feto-maternal outcomes associated with teenage pregnancy, to provide a holistic understanding of teenage pregnancy and the possible solutions.

Materials and Methods: This is retrospective record-based research conducted over a five-year period, spanning from January 2018 to December 2022, in the department of Obstetrics and Gynaecology of a tertiary care centre in northern part of Karnataka, India. The teenage pregnancy was considered as all pregnancies that occurred in women aged between 13 to 19 years who visited the institute for delivery during the study period. A comprehensive analysis was conducted, encompassing various facets of their antenatal experiences, delivery methods, postpartum complications, as well as the well-being of the new-borns.

Results: A total of deliveries 52,715 deliveries had been recorded in our institute during the study period. Among these deliveries, 1,754 were among teenagers, resulting in a prevalence rate of 3.33%. Nearly one-fifth (19.16%) of teenage mothers were short stature whereas only 7.02% of adult mothers were short stature. The relatively higher proportion of teenage mothers were underweight. Maternal and fetal complication were comparatively higher among teenage mothers whereas caesarean sections were relatively more among adult mothers.

Conclusion: The present study emphasizes the importance of targeted healthcare interventions, including improved prenatal care, nutritional support, and education for teenage mothers, to mitigate these risks and improve the overall health and well-being of both mothers and their infants.

1. Introduction

Teenage pregnancy and motherhood are a vital medical and social concerns worldwide since many years.[1] Teenage pregnancies are also associated with greater chances of pregnancy related complications especially pregnancy induced hypertension, systemic infections, endometritis and so is the associated mortality. Complications among babies born to teen mothers are also found to be at a greater rate.[2,3]

United Nations Fund for Population Activities (UNFPA) revealed that 55% of the global total of adolescents lived in Asia Pacific Region and maternal, neonatal deaths are the most powerful health care indicators in a given country. It is also observed higher rate of deaths in adolescent mothers and the babies born to them. Hence, this group can be considered as the reference population for the establishment of effective health care policies.[2] In underdeveloped and developing countries, complications from pregnancy and

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childbirth are leading causes of death among girls aged between 15–19 years.[4]

The incidence of teenage pregnancies varies dramatically between the different countries and India contributes to nearly 11% of world teenage pregnancies.[5] In India teenage pregnancy constitutes 8-14% of total pregnancies with a fertility rate of 43 births per 1000 women in the age-group of 15-19 years.[6] Teenage pregnancy is primarily caused by early marriage owing to societal pressure, illiteracy, poverty, unmet sexual needs, lack of knowledge about reproductive health and contraception. Among 15-19 years old females, pregnancy related problems are the top five causes of mortality as well as disability-affected life years.[3] Teenage pregnancy not only causes maternal and foetal health problems but also has a significant negative impact on their education, employment and other opportunities. Social rejection, stigmatization, and violence by close family further adds on to their social, physical and mental problems.[7] The present study was planned to comprehensively investigate the epidemiological aspects and clinical feto-maternal outcomes associated with teenage pregnancy, and to provide a holistic understanding of teenage pregnancy and the possible solutions.

2. Materials and Methods

2.1. Study design

Retrospective record-based research.

2.2. Study site

Department of Obstetrics and Gynecology of a tertiary care centre in northern part of Karnataka, India.

2.3. Study duration

Conducted over a five-year period, spanning from January 2018 to December 2022.

2.4. Study population

The study encompassed all individuals who underwent childbirth in Department of Obstetrics and Gynecology during 2018 to 2022.

2.5. Sample size

Universal sampling was followed in the present study, all cases admitted in the institute during the study period and fulfilling the inclusion criteria were included in the study.

2.6. Inclusion criteria

All the pregnancies that occurred in women aged between 13 to 19 years, who visited the institute for delivery during the study period were considered as teenage pregnancies. All deliveries that occurred in our institute of women aged 20 years and above were considered as deliveries in the adult population. Both teenage and adult populations were included in the study.

2.7. Exclusion criteria

None of the subject were excluded from the study.

2.8. Data collection

For all teenage pregnancies, a comprehensive analysis was conducted, encompassing various facets of their antenatal experiences, delivery methods, postpartum complications, as well as the well-being of the newborns. Case records were checked for completeness of data and then included in the study. For each case, an array of factors was scrutinized, including age, educational attainment, occupation, socioeconomic status, anthropometric measurements, marital status, age at marriage, obstetric score, gestational age, mode of delivery, and maternal complications (such as anemia, pre-eclampsia, eclampsia, abruptio-placentae, antepartum hemorrhage, preterm labor, premature rupture of membranes, gestational diabetes mellitus, postpartum hemorrhage, and other underlying medical conditions). Additionally, neonatal outcomes, including birth weight, prematurity, low birth weights, APGAR scores, and perinatal mortality, were meticulously recorded.

2.9. Statistical analysis

The data collected was entered in MS excel master chart and analyzed using SPSS version 22. Data have been presented as numbers and percentages (%) and analyzed using Pearson's chi-square test and Fisher exact tests (when the expected count of 20% of cells is less than 5). A p value of <0.05 has been considered as statistically significant.

2.10. Informed consent

All the included subjects were explained about the objective and process of study in regional language and written informed consent was taken before conducting the study.

2.11. Ethical consideration

Ethical approval was obtained from the Institutional Health Research Ethics Review Committee of the institute before the commencement of data collection [KIMS/IEC/23/2017/Hubli].

3. Results

A total of deliveries 52,715 deliveries had been recorded in our institute during the study period, among these deliveries, there were 1,754 instances among teenagers, resulting in a prevalence rate of 3.33%.

Notably, the largest proportion of teenage mothers were 19 years old (1606 cases), comprising 91.56% of the study subjects, followed by 18-year-olds (130 cases), who constituted 7.41% of the study subjects. There were fewer cases in the younger age groups, with eight patients at 17 years of age, six at 16 years, and four at 15 years of age at the time of delivery. These findings offer valuable insights into the distribution of teenage pregnancies across different age brackets within our study population.

Most of the study subjects were educated up to primary (1198 cases, 68.30%) followed by secondary education (365 cases, 20.80%). 89 cases (5.07%) did not receive any formal education and 102 cases (5.82%) had intermediate education. Majority of the teenage mothers (1138 cases, 64.88%) were daily wage workers and the remaining 616 cases (35.11%) were home-makers.

On comparison of height, it was observed that nearly one-fifth (336 cases, 19.16%) of teenage mothers were short stature (height of less than 145 cm) whereas only 7.02% (3578 out of 50961 cases) of adult mothers were short stature and the difference was found to be statistically significant with a p value of less than 0.01.

Around 652 (37.17%) teenage mothers were underweight. Approximately, 949 (54.10%) subjects had normal BMI, and 153 (8.7%) subjects were obese. Among adult mothers, 29.87% were underweight, 55.60% were normal weight, 12.77% were overweight and 1.76% were obese. The relatively higher proportion of underweight among teenage mothers was found to be statistically significant (p value <0.01).

Majority of the teenage mothers (95.89%) were primigravida, whereas in adult pregnancies 42.92% cases were primigravida. Nearly one-fourth (25.66%) of teenage deliveries were pre-term whereas the same for adult deliveries were relatively lower (22.38%). More than three-fourth of teenage deliveries (1371 cases, 78.16%) were vaginal deliveries and the remaining 21.84% were caesarean section deliveries whereas less than three-fifth (59.84%) adult pregnancies were vaginal deliveries and the remaining 40.16% were caesarean section deliveries. The above difference was observed to be statistically significant (p value <0.01).

In the present study the most common reason for performing a cesarean section (C-section) in teenage pregnancies was fetal distress, accounting for 30.52% of cases, followed by cephalo-pelvic disproportion at 20.26%. Other notable indications included breech presentations (11.84%), fetal growth retardation accompanied by oligohydramnios (7.63%), malpresentations (6.57%), and non-progression of labor (5.78%). In contrast, among adult deliveries previous C-section was the most common reason (50.64%) for caesarean section.

In teenage mothers, the most prevalent complications included anemia (38.03%), followed by premature rupture of membranes (PROM) at 18.30%, and pre-eclampsia with severe symptoms at 16.76%. Other complications among teenage as well as adult mothers are shown in Table 1.

Among teenage mothers, 6.50% of newborns had a birth weight of less than 1.5 kg, and 29.36% fell within the 1.5 to 2.5 kg range, indicating a higher prevalence of low-birth-weight infants in this group. In contrast, among adult mothers, 13.48% of newborns had a birth weight of less than 1.5 kg, and 8.67% were in the 1.5 to 2.5 kg range. Majority of newborns in both groups weighed between 2.5 to 3.5 kg, with 63.28% in the teenage mother group and 64.13% in the adult mother group. Percentage of newborns in both groups had birth weights exceeding 3.5 kg was relatively higher in newborn children of adult mothers (13.71%) then teenage mothers (0.86%). The difference was found to be statistically significant with a p value of less than 0.01 (Figure 1).

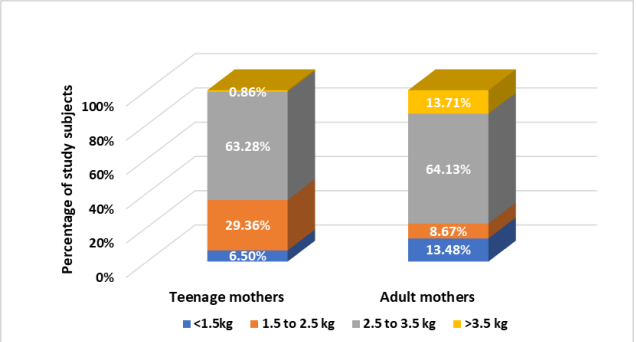

Figure 1: Comparison of birth weight of newborn among study participants

Among teenage mothers, 24.46% of newborns had APGAR scores below 7 at birth whereas among adult mothers, 11.69% of newborns had APGAR scores below 7. This relatively higher percentage of children born to teenage mothers with low APGAR score was found to be statistically significant (p value of less than 0.01) (Figure 2).

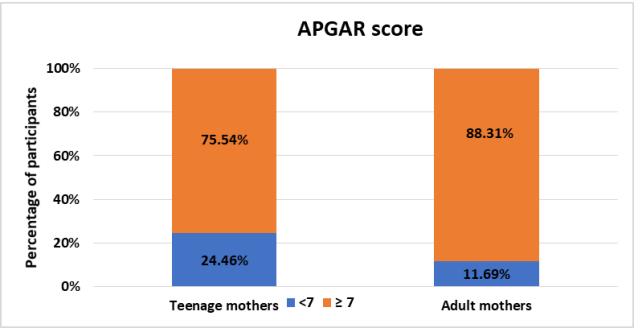

Figure 2: Distribution of newborn children based on APGAR score at birth

Among teenage mothers, birth asphyxia was of significant concern, affecting 11.57% of infants, followed

Table 1: Maternal complications among study participants

Complications	Teenage mothers (n=1754) n (%)	Adult mothers (n=50961) n (%)
Anemia	667 (38.03)	10701 (21)
PROM	321(18.30)	9877 (19.38)
Pre-eclampsia with severe symptoms	294 (16.76)	4536 (8.90)
Pre-eclampsia without severe symptoms	123 (7.01)	3620 (7.10)
Eclampsia	63 (3.59)	645 (1.27)
Post-partum haemorrhage	106 (6.04)	2268 (4.45)
Gestational hypertension	91 (5.19)	2111 (4.14)
Abruptio placentae	15 (0.86)	1564 (3.07)
Gestational diabetes mellitus	5 (0.29)	1245 (2.44)
Medical disorders	56 (3.19)	1245 (2.44)
Maternal death	2 (0.11)	326 (0.64)
Cardiac diseases	11 (0.63)	158 (0.31)

Table 2: Comparison of neonatal complications among newborn children of study participants

Complications	Teenage mothers (n=1754) n (%)	Adult mothers (n=50961) n (%)
Birth asphyxia	203 (11.57)	1422 (2.79)
Meconium Aspiration Syndrome (MAS)	102 (5.81)	1989 (3.9)
Respiratory distress syndrome (RDS)	65 (3.70)	544 (1.06)
Sepsis	56 (3.19)	951 (1.86)
Hypoxic-Ischemic Encephalopathy (HIE)	54 (3.07)	1523 (2.98)
Intrauterine Death (IUD)	41 (2.33)	655 (1.28)
Still birth	14 (0.80)	199 (0.39)

by Meconium Aspiration Syndrome (MAS) in 5.81% of newborn. Table 2 shows the comparison between complications of newborns born to teenage and adult mothers.

4. Discussion

Our study was a retrospective analysis of the patients admitted in our institute from January 2018 till December 2022. Adolescence is a transitional period from childhood to adulthood characterized by significant physiological, psychological and social changes. However, adolescent girls suffer from a disproportionate share of teenage pregnancy which is a universal public health problem that affects maternal and child health.[8,9] In the present study teenage deliveries constituted 3.33% of the total deliveries that occurred during the study period. As per National Family Health Survey (NFHS) 5, the prevalence of teenage pregnancies in India and Karnataka is 6.8% and 5.4% respectively.[6,10] Devi et al. in their retrospective study, teenage pregnancy was observed to be 7%.[11] Another retrospective study conducted by Mandala et al observed that 11.3% of deliveries were among women aged less than 20 years.[12] The prevalence in the present study is slightly lower than the NFHS data which may be due to the fact that the later consider both present and previous pregnancy at the time of survey and studies by Devi et al and Mandala et al. are of relatively shorter duration and lesser sample than the present study.

In the present study, 38.03% of teenage mothers were found to have anemia, while 21% of adult mothers were anemic. In the study by Rita et al, a remarkably high with 79.2% of teenage mothers were reported to have anemia.[13] Rashmi et al., reported an anemia prevalence of 22.11% among teenage mothers, which is lower than the present study's findings for teenage mothers.[14] In the study by Dutta et al., anemia was reported in 68.75% of teenage mothers and 33.75% of adult mothers.[15] Though the prevalence of anemia were lower in our study in comparison to Dutta et al. study, but the overall trend was similar wherein teenage mothers had a significantly high prevalence of anemia, the variations in anemia prevalence between studies might be due to differences in study populations.

In the present study, 23.77% of teenage mothers were diagnosed with pre-eclampsia, whereas 16% of adult mothers experienced the condition. Rita et al., reported a significantly higher incidence of pre-eclampsia among teenage mothers at 37.6%.[13] Yasmin Gazala et al, documented a pre-eclampsia rate of 20.17% in teenage mothers, Rashmi et al., reported a pre-eclampsia incidence of 15.38% among teenage mothers and Dutta et al, reported a incidence of 18.75% among teenage mothers and 6.8% among adult mothers which are comparable with the present study and all reflect a higher risk among teenage mothers.[14–16] In the present study, eclampsia was

found in 3.59% of teenage mothers and 1.27% of adult mothers and similar to study by Dutta et al., (eclampsia in teenage mothers - 2.5%) whereas Rita et al, reported a higher incidence of eclampsia among teenage mothers (13.6%).[13,15] Nobis et al. observed overall prevalence of eclampsia in India to be 1.5% which is very similar to the findings in present study.[17]

In the study by Rashmi et al., PPH was reported in 3.5% of teenage mothers, whereas in the present PPH was found to be higher among teenage mothers (6.04%).[14] Incidence of PPH was found to be relatively lower among adult mothers (4.45%) when compared to teenage mothers and is slightly higher than the findings of Ghosh et al, where the authors noted that 2% of pregnancies were complicated by PPH.[18] In the present study, the preterm birth rate among teenage mothers was 25.66%, and among adult mothers, it was 22.38%. In the study by Rita et al., 16% of teenage mothers experienced preterm delivery, Rashmi et al, reported a relatively high preterm birth rate of 26.9% among teenage mothers.[13,14] Similar were the findings of Yasmin Gazala et al, with an incidence of 27.4%.[16] Jamal et al, observed preterm deliveries among teenage group to be 27% and the overall preterm deliveries in their study was 17%.[19] In a study by Dutta et al though the preterm deliveries in teenage pregnancies was comparable (25%) but the same in adult population was much lower (5%).[15] Overall, the preterm birth is a critical concern in both teenage and adult pregnancies, with variations in prevalence rates across studies, with teenage mothers exhibiting a slightly higher risk of preterm delivery.

In the present study, over three-fourths of teenage women underwent vaginal deliveries, while the remaining required a cesarean section which is comparable to the study conducted by Yasmin et al.[16] In our study, fetal distress was the most common indication for C-section (30.52%) followed by cephalo-pelvic disproportion 20.26%. These results were comparable to Yasmin et al and Dutta et al, studies which also observed fetal distress and CPD to be the common reasons for C-sections.[15] In the study by Rita et al, 16.01% of teenage mothers had LBW infants, Rashmi et al, reported a slightly higher LBW rate of 26.9%.[13,14] In the study by Dutta et al, 25% of teenage mothers experienced LBW births, while 5% of adult mothers had LBW infants.[15] Similarly, Mukhopadhyay documented a higher LBW rate of 27.7% in teenage mothers and 13.1% in adult mothers.[20] In the present study, the LBW rate among teenage mothers was 35.85%, and among adult mothers, it was 28.03%. LBW is a significant concern in both teenage and adult pregnancies, with variations in prevalence rates across studies. The present study's results align with the general trend of a higher LBW rate among teenage mothers. According to Dutta et al., birth asphyxia and rate of sepsis in teenage pregnancies was 29.2% and 3.19%, and the same in our study was 11.57% and 3.19% respectively.[15] It was comparable to study by Ashok Kumar et al., wherein 11.7% suffered birth asphyxia but they reported a lower incidence of sepsis in their study (1.9%).[21] The group had a substantially higher incidence of RDS (3.70%) and sepsis (3.19%) Perinatal mortality in our study (3.13%) was also comparable to study by Ashok et al. (3.85%).

5. Conclusion

This study highlights the complex and multifaceted nature of teenage pregnancies, with higher risks of adverse maternal and neonatal outcomes compared to adult pregnancies. It emphasizes the importance of targeted healthcare interventions, including improved prenatal care, nutritional support, and education for teenage mothers, to mitigate these risks and improve the overall health and well-being of both mothers and their infants. Additionally, the findings emphasize the need for further research to better understand the underlying factors contributing to these disparities and to develop tailored strategies for addressing the unique challenges associated with teenage pregnancies.

6. Source of Funding

Nil.

7. Authors Contributions

Special thanks to all the authors having made significant contributions in writing, reviewing and submitting the manuscript.

8. Conflicts of Interests

Declared none.

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