

Brief Research

## Adolescent Pregnancy and Anemia: A Descriptive Analysis in a Tertiary Care Hospital in Kolkata, West Bengal

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Received: 15 June 2024  
Accepted: 11 July 2024  
EPub Ahead of Print: 17 August 2024  
Published:

DOI  
10.25259/JCH\_20\_2024

Quick Response Code:



### ABSTRACT

Adolescent pregnancy is a major public health problem in India due to its deleterious consequences on maternal and child health outcomes. A secondary data analysis was performed to assess the proportion of adolescent pregnancy and its association with maternal anemia among pregnant women attending a tertiary care hospital in Kolkata, West Bengal. The secondary data captured in the labor room logbook was analyzed after obtaining permission from the concerned authority. The data were anonymized and checked for completeness, and only complete responses were used for analysis. Among the women who were admitted during the study period, 11.5% were adolescents. Among them, 17.4% were multigravida during their current pregnancy. The prevalence of anemia in teenage pregnancies was higher compared to its adult counterpart (46.4% vs. 40.7%), and this difference was statistically significant. As adolescent pregnancy was found to be significantly associated with maternal anemia, this group needs special attention to prevent adverse consequences.

**Keywords:** Anemia, Pregnancy, Adolescence, Teenage

### INTRODUCTION

Adolescent pregnancy is a major public health problem in India due to its deleterious consequences on maternal and child health outcomes.<sup>1,2</sup> Adolescence is a period of fast growth; the requirement of iron becomes high, thus predisposing them to more risk of anemia than their adult counterpart.<sup>3</sup> Anemia, through its intergenerational cycle, leads to short- and long-term outcomes. Further, it is one of the preventable and treatable maternal complications.

In West Bengal, 16.4% of the adolescents between 15 and 19 years were pregnant or had already experienced childbirth, as per the latest round of the National Family Health Survey (NFHS).<sup>4</sup> In the context of a high proportion of institutional delivery (92%) in West Bengal, as found in NFHS, the hospital records on maternal and newborn indicators can provide a fair estimate of the burden of the problem. Routine data collected by the hospital in the preceding years showed a considerable proportion of adolescent pregnancy, which warranted taking stock of the problem among this vulnerable group. With this background, the present study was carried out to assess the proportion of adolescent pregnancy and its association with maternal anemia among pregnant women attending a tertiary care hospital in Kolkata, West Bengal. Associations of selected newborn parameters with adolescent pregnancy were also examined.

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## MATERIAL AND METHODS

### Study type, study design, and study settings

The present study was a secondary data analysis of cross-sectional data collected routinely during the delivery of pregnant women and recorded in the labor room registers of the College of Medicine and Sagore Dutta Hospital (CoMSDH), Kamarhati, North 24 Parganas. The institute provides preventive, promotive, and curative health services to pregnant women free of cost.

### Study population

The study population consists of all the antenatal women who were admitted to CoMSDH for delivery during the period from January 2020 to December 2020. The average number of deliveries in this setting is 4000 per year approximately. It is to be noted that although during the year 2020, the COVID-19 pandemic started, and the health services had to be modified to a great extent, antenatal, intranatal, and postnatal services were never interrupted. However, due to restrictions on movements, some reduction in the number of admissions was obvious. A total of 3307 deliveries were recorded as per the labor room register.

### Exclusion criteria

Data from antenatal women with incomplete entries, such as missing values of one or more variables, were excluded. Twin or multi-fetal pregnancy was also excluded to eliminate the probability of difficulty in interpreting the results and drawing inferences.

### Study variables

Selected maternal and newborn information are collected routinely in the labor room register. Among those, the following variables are selected for the present study – age of the mother at the time of admission for delivery, gestational age of the fetus, blood pressure (BP) of the mother at the time of admission, hemoglobin level at the time of admission, mode of delivery (Lower-segment cesarean section, normal vaginal delivery, and assisted delivery), outcome of the mother (alive, dead), outcome of the newborn (alive, stillborn), and birth weight.

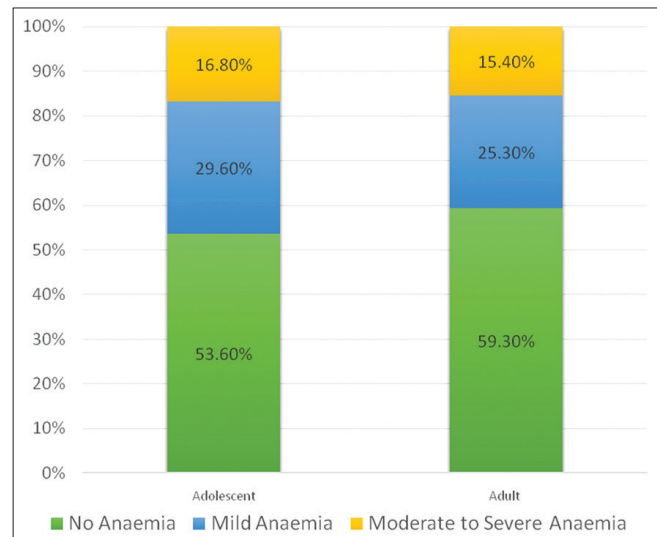
### Data analysis

Collected data from the labor room register was entered in Microsoft Excel. It was checked for data consistency. The age of the mother was categorized as <20 years of age (adolescent pregnancy) and  $\geq 20$  years (adult). The gestational age of

the pregnancy was categorized into three groups – preterm (<37 weeks of gestation), term (37–41 weeks of gestation), and post-term ( $\geq 42$  weeks of gestation). Measured BP was categorized as raised BP ( $\geq 140$  mm of Hg of systolic BP or  $\geq 90$  mm of Hg of diastolic BP) or normal. The hemoglobin percentage of the mother at the time of delivery was categorized as per the classification given by the World Health Organization as normal ( $\geq 11$  g %), mild anemia (9–11 g %), moderate anemia (7–9 g %), and severe anemia (<7 g %). The birth weight of the child was categorized as low birth weight (<2500 g), and normal birth weight ( $\geq 2500$  g). Findings were presented in tabular form with frequency and percentage. The association between the variables was tested using the Chi-square test.  $P < 0.05$  was considered as statistically significant.

## RESULTS

The final sample size for the analysis was 3039, after excluding the entries with missing values and twin pregnancies. Out of this, 351 (11.5%) were adolescents. The distribution of anemia among adolescent and adult pregnant women is depicted in figure 1. The hemoglobin level was significantly lower among adolescent pregnant women (mean [SD] 10.99 [1.32] g/dL) than that of adult pregnant women in the present analysis (mean [SD] 11.15 [1.31] g/dL).



**Figure 1:** Distribution of hemoglobin level among adolescents and adult pregnant women (n = 3039).

As many as 61 (17.4%) of adolescent pregnant women are found to be multigravida. There is no difference in gestational age among these two groups. The proportion of cesarean delivery is also high (35.1%) among adolescent women [Table 1].

**Table 1:** Maternal parameters among adolescent and adult pregnant women.

Variables	Categories	Adolescent women (n=351)	Adult women (n=2688)
Gravida	Primigravida	290 (82.6)	1178 (43.8)
	Multigravida	61 (17.4)	1510 (56.2)
Gestational age	Term	281 (80.1)	2161 (80.4)
	Pre-term	69 (19.7)	524 (19.5)
	Post-term	1 (0.3)	3 (0.1)
Blood pressure	Raised	16 (4.6)	186 (6.9)
Type of delivery	Normal delivery	196 (55.8)	1189 (44.2)
	Cesarean section	123 (35.1)	1273 (47.4)
	Forceps delivery	32 (9.1)	226 (8.4)

It was found that the proportion of stillborn babies among adolescent pregnant women (0.9%) was lower than that of their adult counterparts (2.5%). A similar finding was also observed in the case of low birth weight (20.5% compared to 21.3%).

## DISCUSSION

Adolescent pregnancy or teenage pregnancy (pregnancy at or below the age of 19 years) is an important risk factor for adverse maternal and perinatal outcomes. Maternal anemia is one such outcome stressed by this study. Important maternal and newborn variables are also included that could have a relationship with the age of the mother.

In the present analysis, 11.5% of the antenatal women were adolescents. Although this is lower than a similar study conducted in 2018, where the proportion of teenage pregnancy was 19.4%<sup>5</sup> still, the proportion is not at all negligible. A comparative study among adolescents (<20 years) and adult (20–30 years) pregnant women in Guntur revealed that the proportion of under-nutrition (36% vs. 14%) is significantly higher among the adolescent group.<sup>6</sup> Anemia is one of the nutritional indicators identified by national programs. Therefore, it can be said that the present study came out with similar results. The difference in maternal anemia (46.4% vs. 40.7%,  $P < 0.05$ ) was identified even when there were no significant differences in important factors, such as gravida and gestational age, among the two groups. The proportion of multigravida (17.4%) is found to be higher than in a study conducted in a rural teaching hospital of Telangana in 2018, where 14% of teenage mothers studied were multigravida.<sup>7</sup> In an older study in similar settings, 28.3% of the adolescent mothers had cesarean delivery compared to 36.9% among adults. However, there was no significant association between the age of mothers and the mode of delivery.<sup>8</sup> This is in congruence with the present analysis. On the other hand,

findings related to newborn parameters are dissimilar. In the present study, the proportion of low birth weight (20.5%) among adolescent women was similar to a hospital-based study in Sri Lanka (18.2%); however, in the latter, the proportion was 1.3 times higher than for adult pregnant women and was statistically significant.<sup>9</sup> Such observations might be due to the fact that the nutritional deficiency was not to such an extent that it could result in nutritional deficiency in newborns. Our study findings are aligned with a study in different settings, where the proportion of adolescent pregnancy is quite low (2.27%); however, they were significantly more anemic. Further, except for a higher proportion of preterm, no other perinatal outcomes were significantly different among the two age groups.<sup>10</sup> Although a hospital-based study could not truly reflect the picture in the community, it could provide a snapshot of the scenario. Further, socio-epidemiological research is required to gain deeper insight into the problem.

## CONCLUSION

Although the gestational age of the fetuses among adolescent and adult antenatal pregnant women is the same, the hemoglobin level is significantly lower among the former group. However, there is no significant difference in newborn parameters in the present analysis.

### Ethical approval

The Institutional Review Board has waived and exempted the study from IRB scrutiny. The IRB approval number is: CMSDH/IEC/253/11-2021 dated 13.11.2021.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

### Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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**How to cite this article:** Bandyopadhyay K, Mukhopadhyay DK. Adolescent Pregnancy and Anemia: A Descriptive Analysis in a Tertiary Care Hospital in Kolkata, West Bengal. *J Compr Health*. doi: 10.25259/JCH\_20\_2024