

CONTRIBUTING SOCIODEMOGRAPHIC FACTORS AND MATERNAL ANEMIA AMONG PREGNANT TEENAGERS: A COMPARATIVE CROSS-SECTIONAL STUDY

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Abstract

Background: There is a vicious relationship between the prevalence of anemia and the socioeconomic status of the individual. The objective of this investigation was to evaluate the prevalence of anemia among teenage mothers and women between 20 and 30 years who attended the Government Medical College, Manjeri (GMCM), and to identify sociodemographic characteristics related to anemia during pregnancy. **Materials and Methods:** This hospital-based cross-sectional retrospective study included 900 pregnant women who visited GMCM of North Kerala. Group A included 300 teenage girls aged 18 and 19 years. Group B consisted of 600 gestationally matched 20–30-year-old women who delivered at the same hospital. The sociodemographic factors such as sample age, maternal education, occupation, and socioeconomic level of both groups were contrasted. Statistical analysis was done with SPSS. The Student's t-test and the Chi-Square test were used at a significance level of 5%. **Result:** The mean age of group A was 18.64±0.27 years, while group B had a mean age of 24.13±2.04 years (p<0.0001). Most teenage pregnant mothers (65.3%) attended primary school. Group B had the most adult women with higher secondary education (39.2%). In Group A, 51.3% of participants were unskilled workers and 22% were unemployed. Group B comprised 266 (44.3%) professionals and 229 (38.2%) pregnant women with skilled jobs. Group A included 30.7% lower-class pregnant teenagers, whereas Group B had 34% upper-middle-class pregnant women. The socio-demographic profile such as education, occupation, and socioeconomic status was statistically highly significant (p<0.0001). Anaemia was present in 51.3% in group A and 33.8% in group B (p=0.042). **Conclusion:** This study found that, while anemia is preventable, it is still common in the Northern Kerala population. Education, higher socioeconomic status, and highly skilled employment would contribute to recognizing the negative impacts of anemia among pregnant teenagers.

INTRODUCTION

It is deemed detrimental for girls to marry before turning 18 years of age since it violates their fundamental right to the best possible general, sexual, and reproductive health standards and their right to live their lives free from abuse. Teenage marriage has been an issue of national importance in India for decades. Although marriage before 18 is illegal, a large portion of India's female population marries before 18.^[1] Pregnancy is one of the most crucial times in the life of a female, and it is characterized by major physiologic alterations that can be compared to a tsunami for the human body. According to the World Health Organization (WHO), adolescent or teenage pregnancy is characterized as a pregnancy in a woman who is between the ages of 10 and 19 years

at the time of the delivery of the child. Numerous factors might have an impact on the course of pregnancy and, as a result, the outcome of the pregnancy. Maternal age, parity, and socioeconomic status are the critical determinants.^[2] Other variables, such as bleeding during the initial months of pregnancy, maternal body mass index, and maternal problems before pregnancy, may influence pregnancy outcomes.^[3]

Around 14 million children are born to women aged 15 to 19 years yearly. There were around 2.5 million births to females under the age of 16 in low- and middle-income countries. This trend is rising in developing and developed nations. It is probably influenced by multiple factors, namely socioeconomic issues with a low level of education. Teenage pregnancy is regarded as a high-risk

situation that can result in psychological issues and poor neonatal and pregnancy outcomes. These disorders are difficult to treat since they are attributed to poor health practices and inadequate nutrition.^[4] The WHO research estimates that among pregnant women in India, the prevalence of anemia is between 41.96% and 57.19%, with an average prevalence of 50.13%.^[5]

According to National Family Health Survey (NFHS 4) statistics from the state of Kerala, the prevalence of anemia among women of all age groups accounts for 34.3%, which is less than in other Indian states.^[6] The rate of maternal mortality in Kerala was 61 in 2011, however, it has been lowered to 42 by 2019.^[7] This could be attributable to Kerala's exceptionally strong primary health care framework, which also has good infrastructure growth and social development indicators comparable to the Western world.^[8] UNICEF states that societal stigmatization and conventional beliefs could be to reason for some nations' low rates of teenage pregnancy, especially Italy and Spain, which, in 2002, had six births/1000 females between 15 to 19 years. These two nations also have lower abortion rates and teenage pregnancy rates are among the lowest in Europe.^[9] In the world's most impoverished regions, more than one in three adolescent girls become pregnant. India, Bangladesh, Brazil, the Democratic Republic of the Congo, Ethiopia, Nigeria, and the United States are those nations in which 50% of all teenage pregnancies occur.^[10]

There is a vicious relationship between the prevalence of anemia and the socioeconomic status of the individual.^[11] The outcome of anemia is determined by its severity, social group, and conditions of living. It has a negative impact on the health of mothers and children, even leading to maternal and neonatal mortality.^[12] In light of the aforementioned facts, expectant women must have access to more comprehensive information regarding anemia and associated socioeconomic characteristics. The objective of this investigation was to evaluate the prevalence of anemia among teenage mothers (18 and 19 years of age) and women of age between 20 and 30 years who attended the Government Medical College, Manjeri (GMCM), and to identify sociodemographic characteristics that are related to anemia during pregnancy.

MATERIALS AND METHODS

This hospital-based cross-sectional retrospective investigation was carried out over 10 months among 900 pregnant females who visited the Department of Obstetrics and Gynaecology at a teaching hospital offering tertiary care in GMCM of North Kerala commencing in October 2023. Group A had 300 teenage young women who were between the age of 18 and 19 years. Group B consisted of 600 gestationally matched pregnant women aged 20 to 30 who delivered at the same hospital over the same time. Thus the study involved a total of 900 pregnant

mothers. Subjects were selected using a systematic random sampling technique. The study purpose was disclosed to the subjects, and each subject provided informed consent. The sociodemographic parameters of Group A, such as sample age, maternal education, occupation, and socioeconomic level, were studied and compared to those of Group B. Anemia was characterized and classified using WHO criteria as having hemoglobin levels below 11 g%.^[8] The Institutional Ethics Review Committee approval was obtained before the beginning of collecting data [IEC/GMCM/117 dated 29/9/2023].

By presuming that teenage pregnancy is the factor of interest in 26% of the subjects, as determined by a previous study,^[13] a sample size of 296 would be needed for the study to calculate the expected proportion with 5% absolute precision and 95% confidence. As a 1:2 study design, 300 samples were allocated to group A and 600 adult pregnancies to group B. The inclusion criteria were pregnant women in the following age groups delivered at GMCM in 2023.

Group A: Pregnant mothers between the ages of 18 and 19 years.

Group B: Pregnant mothers aged 20 to 30 years.

Pregnant women declined to take part in the investigation, pregnant females with aborted pregnancies, multiple pregnancies, ectopic pregnancies, and any severe illness such as heart disease, hypertension, diabetes mellitus, and hypothyroidism other than anemia were excluded.

Consecutive visits by pregnant females who were already included in this study were excluded since females were provided with a special tag on their maternal child protection card, which was checked at each visit. All data, including sociodemographic profile and pregnant status, was collected using a predesigned and pretested format and made available through Google Forms.

Statistical Analysis

Data was initially imported into Microsoft Excel and then transferred to SPSS Statistics for Windows, Version 25.0 (SPSS Inc., Chicago). Continuous variables were reported as Mean \pm SD and categorical variables as percentages. The group analysis was validated using the Student's t-test and the Chi-Square test. A P-value of less than 0.05 was used to show a significant difference.

RESULTS

The study consisted of 300 teenage pregnancies in group A and 600 adult pregnancies in group B. Table 1 reveals that the mean age of group A was 18.64 \pm 0.27 years, while group B had a mean age of 24.13 \pm 2.04 years. A p-value of 0.0001 indicated a highly significant difference. The most of individuals in our study groups have a certain amount of formal education. However, 17% in group A and 6.5% of group B were illiterate. The majority of teenage pregnant women had at least a primary school education (65.3%). In group B, the highest proportion

of adult mothers (39.2%) had higher secondary education.

The majority of the study participants in group A were engaged in unskilled work (51.3%), followed by unemployed pregnant teenagers (22%). Out of the total number of cases in group B, 266 (44.3%) individuals were professionals, whereas 229 (38.2%) pregnant women had skilled employment. A total of 66 young pregnant females, accounting for 22% of the group A, were unemployed. Also, 37 (6.2%) individuals in group B were unemployed. The

majority of mothers in group A belonged to the lower class in terms of socioeconomic position (30.7%), while in group B upper middle-class subjects (34%) were commonly reported [Table 1].

Anemia is a significant complication in the current study, with 51.3% of pregnant teenagers in group A reporting some degree of anemia. The prevalence of anemia in group B pregnant women was 33.8%. [Table 2] shows the difference in the occurrence of anemia between the two groups was statistically significant ($p=0.042$).

Table 1: Comparison of sociodemographic profile of the study groups.

	Group A n(%)	Group B n(%)	Chi-square test	p-value
Age (years)+	18.64±0.27	24.13±2.04	-46.40	<0.0001**
Education				
Illiterate	51(17)	39 (6.5)	173.4	0.000**
Primary education	196 (65.3)	198 (33)		
Secondary education	39 (13)	117 (19.5)		
High secondary education	8 (2.7)	235 (39.2)		
Graduate and above	6 (2)	11 (1.8)		
Occupation				
Unemployed	66 (22)	37 (6.2)	277.06	0.000**
Unskilled	154 (51.3)	68 (11.3)		
Skilled	53 (17.7)	229 (38.2)		
Professional	27 (9)	266 (44.3)		
Socioeconomic status				
Upper class	17 (5.7)	106 (17.7)	143.29	0.000**
Upper middle class	43 (14.3)	204 (34)		
Middle class	81 (27)	178 (29.7)		
Lower middle class	67 (22.3)	73 (12.2)		
Lower class	92 (30.7)	39 (6.5)		

+ - t-test; * $p<0.001$ – statistically highly significant

Table 2: Comparison of frequency of anemia present between the two groups

Anemia	Group A N (%)	Group B N (%)	Chi-square test	p-value
Present	154 (51.3)	203 (33.8)	25.59	0.042*
Absent	146 (48.7)	397 (66.2)		

* $p<0.05$ – statistically significant

DISCUSSION

The majority of young pregnant women in group A (30.7%) had a lower socioeconomic background. It inhibits people from taking advantage of existing facilities. As a result, women in their teens were more likely to experience pregnancy-related problems.^[9] Several research yielded comparable findings.^[14-16] The current study shows that low maternal age is primarily caused by the socioeconomic circumstances of teenagers. According to Lavanya et al,^[17] teenage pregnancies appear to be connected with low socioeconomic position, limited education, and cultural and spiritual influences. Young women who face discrimination based on gender often have restricted decision-making authority since they are socially and economically prohibited. Low levels of schooling seemed to be associated with an increased risk of teenage pregnancy and childbirth.^[1] Education has the potential to significantly improve self-esteem, extend the age of first sexual contact, and postpone marriage.^[18] According to the findings of the present investigation, adolescent pregnant women were more inclined than adult pregnant women to have completed higher secondary

education (2.7% vs. 39.2%). The most effective method for preparing girls for delayed marriage, deliberate and deferred pregnancies, and healthier motherhood is to strengthen them, which is made attainable by obligatory sexual education.^[19] Adult females in group B were better educated than teenage mothers in group A. Teenage mothers in group A were more likely to be unemployed (22%), with only primary education (65.3%) constituting 53% of lower middle class and lower socioeconomic class. This finding was congruent with that of Naik et al.^[13] The study also found that only 9% of pregnant teenagers in group A were professionals. Gaining a job can increase confidence and decision-making abilities, allowing one to postpone marriage and childbirth.^[17] Higher education is connected with increased awareness and a desire for professional and financial autonomy, which leads to delayed marriage and pregnancy.^[20] Ismail et al,^[21] found a statistically significant relationship between better socioeconomic status and a lower risk of anemia. Teenage pregnancy is an added burden that reflects the country's perspective on literacy and women's roles in the community, their cultural norms of early marriage, sex education, knowledge and use of

contraception, the accessibility of women to various health care services and amenities, and the availability of affordable contraception options.^[9] Acharya et al. additionally found that early marriage has been culturally accepted in South Asian nations, which appears to increase the probability of pregnancies among adolescents.^[22] Early marriage, along with an engrained practice of bearing a kid within one to two years of the wedding to get the approval of their in-laws, places unwarranted stress on the married adolescent female to have a child.

Teenage pregnancy is also known as 'at-risk pregnancy' and is a serious concern. Teenage pregnancy is significantly linked to a variety of medical issues, including preterm birth, low maternal weight growth, pregnancy-induced hypertension, anemia, preeclampsia, and sexually transmitted illnesses.^[9] The current study found that young women were significantly more likely to have anemia (51.33%) than adult mothers (33.8%), most likely due to a higher likelihood of undernutrition, inappropriate antenatal care, and lack of compliance with hematinics among teenage mothers, as noticed in other investigations conducted around the world.^[4,23,24]

A study from North India found that the prevalence of anemia among adolescent mothers was high (46%), which is consistent with the results of the current study.^[25] This is because teenage mothers usually have inadequate dietary iron intake.^[17,25] To address this issue, more centered national programs such as FOGSI-12 by 12, which aims to obtain 12 g of Hb% by the young age of 12, are required.^[24] Kerala has received many accolades for having the best medical healthcare system in India and having the highest rate of literacy and lower infant and maternal death rates.^[8] In the current investigation, we found that the proportion of cases of anemia (51.3%) among the 300 study subjects of young pregnant women visiting GCMC was similar to the findings in the Trivandrum area (53.33%).^[8] According to a cross-sectional study performed in Karnataka in 2019, a large number (89%) of tribal women under investigation had anemia, with 62% and 11% having moderate and severe anemia, respectively.^[26] Correa et al.^[27] observed an extremely high anemia prevalence of 92.4% among pregnant women in the forested tribal districts of Telangana, Andhra Pradesh, India. Compared to earlier research,^[26,27] the prevalence of anemia has reduced in our study, most likely as a result of increased access to the healthcare system or other grassroots healthcare initiatives aimed at reaching the general public.

Teenage is primarily a period of maturation, during which the child is not physically or emotionally competent enough for reproduction. As a result, withdrawing the girl from school at this time and pressuring her into marriage might create significant emotional distress. In addition, because these young girls have very little knowledge of contraception, they frequently fall pregnant shortly after marriage,

exacerbating their physical and psychological distress. Teenage pregnancy is increasingly prevalent in lower socioeconomic groups, which increases the risk of obstetric complications for both the mother and the foetus. Furthermore, pregnancy and delivery in adolescent mothers are at an increased likelihood due to inadequate antenatal care adherence or may be due to substandard antenatal facilities.^[9]

A shortage of health education, taboos related surrounding child marriage, and opposition to the utilization of contraception methods contribute to a spike in teenage pregnancy, which is exacerbated by low socioeconomic status, illiteracy, unsanitary living conditions, home confinement, and a dearth of transportation in remote areas.^[9] Because of the negative perinatal and maternal outcomes associated with teenage pregnancy, practitioners are liable for closer attention to and enhance their comprehension of teenage pregnancy care. The data acquired in our study could deliver insight into the health state of the Kerala population on adolescent pregnancies and might additionally help legislative bodies in their efforts to minimize mortality and morbidity among them.

CONCLUSION

This study found that, while anemia is preventable, it is still common in Northern Kerala population and significant risk factor for higher mortality and morbidity rates. Education, a healthy lifestyle, higher socioeconomic status, and highly skilled employment would contribute to recognizing the negative impacts of anemia. Community groups and families can contribute to a healthier population by promoting deferred marriages, postponing childbearing, and spacing births further apart. Girls should be highly educated and permitted to make choices so that they can change their individual lives while remaining with dignity.

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