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Original research article

Risk factors for anemia in pregnant women seeking care at a tertiary care hospital: A cross-sectional descriptive study

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Abstract

Aim and Background: Anemia is a prevalent nutritional deficiency illness observed worldwide, with a special emphasis on its prevalence in underdeveloped nations. Despite the fact that anemia is a disease that may be readily treated and mostly prevented if discovered in a timely manner, it remains highly prevalent among pregnant women. The objective of this study was to quantify the prevalence of anemia during pregnancy and evaluate the correlation between various risk variables and the occurrence of anemia.

Materials and Methods: This study is a cross-sectional descriptive investigation conducted within a hospital setting over a period of August 2022 to July 2023. A sample size of 100 pregnant women was chosen from those attending the prenatal clinic. The sampling procedure involved the selection of every fifth woman visiting the maternity clinic during a period of two months, specifically on alternate days. Additionally, hemoglobin concentrations were documented for every individual in the study.

Results: The study revealed a prevailing prevalence rate of 90% for anemia among pregnant women. The majority of individuals diagnosed with anemia fall into the category of moderate severity as per the classification established by the World Health Organization. The prevalence of anemia in pregnancy was found to be substantially linked with three factors: socioeconomic status, gravida, and time of first antenatal visit.

Conclusion: The present investigation revealed a notable frequency of anemia among pregnant women. There was a strong association between anemia in pregnancy and factors such as low socioeconomic position, multigravida, and delayed attendance to the antenatal clinic.

Keywords: Socioeconomic status, risk factors, gravida, and anemia in pregnancy

Introduction

Worldwide, but especially in underdeveloped countries like India, anemia is the most common sign of dietary deficiency. Despite the fact that anemia is a treatable and preventable condition, it is commonly associated with being pregnant [1]. Several causes may contribute to pregnant women experiencing anemia. Reduced intake and higher demand can contribute to excess demand, with the latter element being especially problematic for multigravid women. Increased vulnerability to infectious diseases like hookworm infestations has also been linked to factors like altered metabolism and specific background traits including low socioeconomic position, illiteracy, and early age of marriage. Anemia is more common in pregnant women because of these causes [2, 3].

According to the WHO, there is a wide range in the prevalence of anemia among pregnant women. The average is around 15% in the West, whereas in India it's anywhere from 65% to 75%. Researchers have shown that anemia is associated with a higher risk of dying during pregnancy and childbirth. A hemoglobin level under 11 g/dL is considered symptomatic of anemia during pregnancy by the World Health Organization (WHO). Hemoglobin levels of 10.0–10.9 g/dL are considered normal during pregnancy, while levels of 7-9.9 g/dL and fewer than 7 g/dL are considered mild, moderate, and severe anemia, respectively [4, 6].

Anemia has been linked to higher rates of maternal mortality in several studies. Anemia during pregnancy is associated with a number of complications for both mother and child, including stillbirth, low birth weight, and premature delivery. The National Nutritional Anemia Prophylaxis Program in India aims to reduce anemia in pregnant women by addressing the dietary deficiency of iron and folic acid that

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has been reported. Through the Urban Family Welfare Centers component of the program, pregnant women in urban areas receive 100 mg of ferrous iron and 500 mcg of folic acid pills [7, 8]. Those in rural areas can access these supplements through their local primary health care clinics.
Despite these steps, a sizable number of pregnant women in India suffer from anemia. Reducing maternal anemia is the most important factor in making sure mothers are healthy. Anemia risk factors are complex and varied, especially when considering the condition in the context of pregnancy. Prevention of anemia and reduction of its effects require knowledge of both the risk factors involved and the degree of compliance among respondents with regard to government programs. When it comes to diagnosing and treating anemia, primary care physicians (the doctors people typically see first) play a pivotal role as the community's first line of defense. Anemia is influenced by many factors, including diet and the number of pregnancies a woman has had, all of which can be assessed and treated in a primary care context [9, 11].

Materials and Methods
This study is a cross-sectional descriptive investigation conducted within a hospital setting over a period of August 2022 to July 2023. A sample size of 100 pregnant women was chosen from those attending the prenatal clinic. The sampling procedure involved the selection of every fifth woman visiting the maternity clinic during a period of two months, specifically on alternate days. Additionally, hemoglobin concentrations were documented for every individual in the study.

Inclusion Criteria
Pregnant women who attended antenatal care (ANC) and provided informed consent were included in the study to obtain their Hemoglobin (Hb) reports.

Exclusion Criteria
Pregnant women who were unwilling to participate and did not possess a hemoglobin report were omitted from the study.

Data collection
Data were gathered from all participants utilizing a pre-established and pretested semi-structured questionnaire. Data on socio demographic characteristics and reproductive behavior were gathered. Those with monthly incomes of less than 500 rupees were classed as low socioeconomic status according to the poverty line established by the Tendulkar committee. The inquiry report includes the recording of hemoglobin levels.

Results
Our study comprised a sample of 100 pregnant women. Table 1 displays the demographic features of the pregnant women. The age group that was most prevalent in our study consisted of individuals between the ages of 20 and 30, with a majority of participants belonging to a low socioeconomic status.

Table 1: Distribution of pregnant women by variable (n=100)

Sr. No.	Parameter(*n*=100)	Number
Age Group (Years)		
2.	<20	23
3.	20-30	50
4.	>30	27
Religion		
6.	Hindu	29
7.	Muslim Socioeconomic status	11
8.	Low	10
9.	Middle	12
10.	High	08
11.	Occupation Now age earner	10
12.	Wage earner	20

The majority of survey participants were identified as Hindu. Within the cohort of pregnant women, a significant proportion, specifically 90%, experienced the condition of anemia. The prevailing severity of anemia among this group was found to be moderate, with mild anemia being the subsequent most prevalent category. According to Table 2, only one woman showed evidence of severe anemia among those observed, while the rest showed no such symptoms.

Table 2: WHO anemia severity distribution in pregnant women

Sr. No.	Hb level	Anemia Severity	Total cases
1.	<7	Severe	2

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2.	7-9.9	Moderate	28
3.	10-10.9	Mild	18
4.	≥11	Normal	12

The study revealed a statistically significant association between anemia and low socioeconomic position, with prevalence rates of 63.93%, 51.72%, and 35% for severe and moderate, mild, and no anemia, respectively (see Table 3).

Table 3: Distribution of pregnant women by socioeconomic position and anemia severity (n=100)

Anemia	Low	Middle and High	Total
Severe + Moderate	22	18	40
Mild	20	12	32
Normal	08	20	28
Total	50	50	100

Nevertheless, the study did not find any noteworthy correlation between the degree of anemia and the educational background of pregnant women. Additionally, there is a statistically significant association between the degree of anemia and the timing of the first prenatal visit. The prevalence of anemia during pregnancy is a significant public health concern in the context of India. Several factors contribute to the occurrence of certain health issues, such as low socioeconomic position, inadequate consumption of iron and folic acid, closely spaced multiple pregnancies, heavy bleeding during labor, and illnesses including malaria and hookworm infestations.

Discussion

A major public health issue in India is the high rate of maternal anemia. These problems are exacerbated by several variables, including poverty, insufficient iron and folic acid in the diet, having multiple pregnancies close together, heavy blood loss after labor, and diseases like malaria and hookworm. National Family Health Survey 3 data showed that 62.6% of pregnant women between the ages of 15 and 49 had anemia [12, 13].

Comparing our study's results to those of similar studies conducted in the Indian setting by Lokare *et al*., Gautam *et al*., Toteja *et al*., and the ICMR Taskforce Multicenter Study, we found a lower percentage. Recent studies conducted across the African continent have found an incidence of anemia among pregnant women that is far lower than previously thought, ranging from 25.8% to 37.6%. Many different types of comorbidities and socio-demographic factors may contribute to the observed outcome gap. In addition, the majority of our study participants come from a tribal group with low socioeconomic status, which increases the likelihood that they would have a higher than average rate of anemia during pregnancy [14, 16].

In agreement with the findings of Vindhya *et al*., Mahamud *et al*., and Sarala V *et al*., we found that the majority of our individuals had moderate to mild anemia, with one case exhibiting severe anemia. While Viveki *et al*. found that the prevalence of maternal anemia was higher among those aged 26 and up, our data showed no such association between age and religion with regards to anemia. According to studies conducted in the Indian cities of Aurangabad and New Delhi, higher levels of income are associated with lower rates of anemia. This outcome agrees with the ones we got in our own research. The timing of antenatal care (ANC) visits is particularly important in reducing the risk of maternal anemia, as shown by studies [17, 18].

Our research shows that the incidence of severe anemia can be greatly reduced by following a suggested diet and taking iron and folic acid supplements during the first trimester visit. Mangla *et al*.'s findings are consistent with this one. It appears from the results that anemia is endemic in the area, with a consistently high prevalence among pregnant women regardless of age, religion, education level, or occupation. There are a number of cultural factors that may increase women's vulnerability to hookworm infestation and accompanying disorders, including vegetarianism, the habit of drinking tea after meals, and open field defecation. The high prevalence of anemia in pregnant women may be at least partially attributable to these causes. There was no statistically significant relationship between marriage age and anemia severity in this study. This suggests that cultural preferences for male infants may contribute to the high prevalence of anemia [17, 19], as may factors such as many pregnancies, substantial monthly blood loss, and frequent abortions.

It follows that gravida is significantly correlated with anemia severity. According to the results of the current study, many expectant mothers do not take their iron and folic acid supplements as suggested. This hypothesis suggests that government measures to guarantee regular supplement supplies are not as effective as they may be. Lack of enthusiasm and education about the usefulness of supplements may contribute to the high prevalence of anemia. Use of this supplement alone during pregnancy, however, may not be adequate due to the presence of other risk factors such hookworm infestations, malaria, and other disorders [20, 22].

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The study was conducted with a small sample size in a clinical setting, which increases the likelihood of error. A more thorough assessment of the connection between anemia and its risk variables would have been possible if the study had used a longitudinal design rather than a cross-sectional approach. Due to the short duration of the trial, no definitive results could be drawn about the mother's anemia status during the three trimesters of pregnancy. Infectious disorders like hookworm infection or malaria, among others, may be the root cause of anemia, however neither diagnostic tests nor reports were checked to rule them out. Red blood cell shape, which could shed light on its ancestry [23, 25], was not recorded.

Conclusion

In conclusion, this research has demonstrated a significant prevalence of anemia during pregnancy, regardless of factors such as age, religion, educational attainment, and occupation. The prevalence of anemia in this particular location is observed to be endemic, mostly attributed to a range of negative socio-demographic characteristics. As is well acknowledged, the adage "prevention is better than cure" holds true. Consequently, the aforementioned findings have the potential to inform policymakers and healthcare practitioners, enabling them to modify existing regulations, implement novel techniques, and educate the populace. This collective effort aims to mitigate the incidence of maternal anemia and its associated consequences.

Funding

None

Conflict of Interest

None

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