



Prevalence and Severity of Anaemia Among Pregnant Women Attending a Tertiary Care Hospital: A Cross-Sectional Study

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Abstract

There is scant empirical research on the expression of requests for euthanasia when **Background:** Anaemia during pregnancy is an important maternal health concern associated with nutritional deficiencies and potentially adverse maternal and perinatal outcomes. Determining its prevalence, severity and associated factors is important for improving antenatal care.

Objective: To assess the occurrence and severity of anaemia among pregnant women attending a tertiary care hospital and to investigate associated risk factors, where data are available.

Materials and Methods: A hospital-based cross-sectional study was conducted in the Department of Obstetrics and Gynaecology at [Name of Hospital] between January 2021 and January 2022. The study included 89 pregnant women recorded as having anaemia. The available summary data included the number of participants in each anaemia severity category and limited demographic and obstetric information. Descriptive statistical methods were used to summarise the available observations. Further assessment of risk factors requires the underlying patient-level data and clearly defined comparison groups.

Results: All 89 participants were recorded as anaemic. Mild anaemia was reported in 15 participants (16.9%), moderate anaemia in 30 (33.7%) and severe anaemia in 44 (49.4%). Severe anaemia was the largest reported category, accounting for nearly half of the study sample. The supplied summary did not provide sufficient detail to calculate associations between anaemia and individual demographic, obstetric or nutritional risk factors.

Conclusion: Severe anaemia constituted the largest category among the 89 participants recorded as anaemic. These findings highlight the importance of antenatal haemoglobin assessment and appropriate clinical management. However, the prevalence of anaemia among all pregnant women attending the hospital and the independent risk factors cannot be established without additional information about the sampling process, total number screened and individual patient characteristics.

Keywords: Anaemia in pregnancy; severity; haemoglobin; antenatal care; maternal health; cross-sectional study.

INTRODUCTION

Anaemia during pregnancy is a significant public health concern and an important component of maternal healthcare. It occurs when the haemoglobin concentration falls below the appropriate diagnostic threshold and may result from nutritional deficiencies, blood loss, infections, chronic disorders or inherited haematological conditions.

Pregnancy increases the body's requirement for iron and other nutrients because of maternal physiological changes, placental development and fetal growth. Inadequate dietary intake, poor absorption, insufficient supplementation and pre-existing nutritional deficiencies can contribute to the development or worsening of anaemia.

The clinical significance of anaemia depends on its severity, underlying cause, gestational age and the general health of the pregnant woman. Severe anaemia requires particular attention because it may compromise maternal physiological

reserve and increase the need for timely evaluation and treatment.

Potential factors associated with anaemia during pregnancy include maternal age, socioeconomic circumstances, educational attainment, dietary practices, parity, short interpregnancy intervals, gestational age, previous history of anaemia and adherence to iron–folic acid supplementation. Identifying these factors can help healthcare providers improve antenatal screening and develop appropriate preventive strategies.

The World Health Organization published updated guidance on haemoglobin thresholds in 2024, including trimester-specific thresholds for defining anaemia during pregnancy. The diagnostic criteria used in a study should be clearly specified and applied consistently when interpreting the results. [1]

Hospital-based studies can provide useful information about the characteristics and severity of anaemia among women receiving antenatal care. However, the interpretation of prevalence estimates depends on whether the study includes all eligible pregnant women or only those already diagnosed with anaemia.

The present study describes the severity distribution of anaemia among 89 pregnant women recorded as anaemic at a tertiary care hospital during January 2021 to January 2022. The available information is also reviewed to identify the additional data needed for a valid analysis of associated risk factors.

AIM AND OBJECTIVES

Aim

To assess the occurrence and severity of anaemia among pregnant women attending a tertiary care hospital.

Objectives

1. To describe the number and proportion of participants in each recorded anaemia severity category.
2. To examine the demographic and obstetric characteristics of the study population.
3. To assess the association between anaemia and potential sociodemographic, obstetric and nutritional risk factors, subject to the availability of appropriate data.
4. To identify implications for antenatal screening and management based on the findings.

MATERIALS AND METHODS

Study design

A hospital-based cross-sectional observational study.

Study setting

The study was conducted in the Department of Obstetrics and Gynaecology at Gouri Devi institute of medical science.

Study duration

January 2021 to January 2022.

Sample size

The study included 89 pregnant women recorded as having anaemia.

Study population and sampling

The participants were pregnant women attending the study hospital during the specified period. The original sampling method, eligibility criteria and method of recruitment should be confirmed from the study records.

It is particularly important to establish whether the 89 participants represent all pregnant women screened during the study period or only women diagnosed with anaemia. This distinction determines whether a hospital-based prevalence estimate can be calculated.

Data collection

The available summary data provided the following information:

- Total sample size: 89.
- Number recorded as having anaemia: 89.
- Mild anaemia: 15 participants.
- Moderate anaemia: 30 participants.
- Severe anaemia: 44 participants.
- Reported maternal age information: 21–35 years, with clarification required as to whether this represents the full age range or a category.
- Additional summary counts of 23, 27 and 39 were supplied for trimester, parity/gravidity and other risk factors, respectively, but their precise definitions and denominators were not specified.

The final manuscript should describe only variables that were collected and verified in the original study records.

Definition and severity classification

The original study's haemoglobin threshold and severity classification should be reported. The available summary does not specify the haemoglobin values or the exact cutoffs used to classify mild, moderate and severe anaemia.

For historical accuracy, the criteria actually applied during the 2021–2022 study period should be documented. If the original classification cannot be verified, this should be acknowledged rather than retrospectively assigning categories without reviewing the haemoglobin records.

WHO's 2024 guidance specifies haemoglobin thresholds for anaemia in pregnancy of below 11 g/dL in the first trimester, below 10.5 g/dL in the second trimester and below 11 g/dL in the third trimester. These updated criteria should not automatically be assumed to be the criteria used in the original study. [1]

Statistical analysis

Categorical variables were summarised using frequencies and percentages based on the available aggregate data.

The percentage for each anaemia severity category was calculated using the total sample of 89 as the denominator:

Percentage = (Number in the category ÷ 89) × 100.

The supplied data allow descriptive analysis of the severity distribution. They do not allow valid calculation of risk-factor associations, odds ratios, adjusted estimates or corresponding p-values because the relevant cross-tabulations and patient-level data are unavailable.

A complete statistical analysis would require the anaemia status of all eligible participants, clearly defined risk-factor categories and the relevant denominators. Where appropriate, chi-square or Fisher's exact tests could be used for categorical comparisons, and logistic regression could be considered if the dataset contains sufficient observations and outcome variation.

RESULTS

Study population

The study summary included 89 pregnant women, all of whom were recorded as having anaemia. The available data provide the distribution by severity but do not provide a complete breakdown of the participants' sociodemographic or obstetric characteristics.

Table 1. Distribution of participants according to recorded anaemia severity (N = 89)

Anaemia severity	Number (n)	Percentage (%)
Mild	15	16.9
Moderate	30	33.7
Severe	44	49.4
Total	89	100.0

The percentages are calculated from the supplied counts and rounded to one decimal place.

Severe anaemia represented the largest category, accounting for 44 of the 89 participants (49.4%). Moderate anaemia was recorded in 30 participants (33.7%), while 15 participants (16.9%) were classified as having mild anaemia.

Overall, 74 participants (83.1%) were classified as having either moderate or severe anaemia. This combined proportion describes the supplied sample only and depends on the accuracy and consistency of the original severity classification.

Table 2. Summary of other information supplied

Variable	Information provided	Interpretation
Maternal age	21–35 years	Clarify whether this is the full age range or a subgroup
Trimester	23	Trimester category and denominator not specified
Parity/gravidity	27	Category and denominator not specified
Other risk factors	39	Risk factor and denominator not specified

These entries cannot be converted into meaningful percentages or used for inferential testing until the category definitions and corresponding denominators are confirmed.

Prevalence interpretation

All 89 participants were recorded as anaemic, giving an observed proportion of 100% within the supplied sample.

This figure can be interpreted as the prevalence among all pregnant women attending the hospital only if the 89 participants represent the complete eligible population or a properly selected sample of all eligible pregnant women, rather than a group recruited specifically because they already had anaemia.

The total number of pregnant women screened during the study period has not been provided. Therefore, the prevalence of anaemia among all antenatal attendees cannot yet be established.

Analysis of associated risk factors

No statistically valid association between anaemia and maternal age, trimester, parity, dietary pattern, supplementation or other risk factors can be reported from the supplied aggregate counts alone. The additional figures of 23, 27 and 39

require clarification before they can be incorporated into an analysis.

No p-values, odds ratios or claims of independent risk factors are presented because these results cannot be derived reliably from the available information.

DISCUSSION

The present study summary describes the severity distribution of anaemia among 89 pregnant women recorded as anaemic during January 2021 to January 2022. The principal finding is that severe anaemia was the most frequent recorded category, accounting for 49.4% of the sample, followed by moderate anaemia at 33.7% and mild anaemia at 16.9%.

The finding that nearly half of the participants were classified as having severe anaemia is clinically important within this group. However, its interpretation depends on the original haemoglobin measurements and the criteria used to classify severity. The severity categories should therefore be verified against the laboratory records and the study's original protocol.

The high proportion of severe anaemia in this sample may reflect the characteristics of the recruited participants, including possible referral patterns or selective inclusion of women with anaemia. It should not be assumed to represent the severity distribution among all pregnant women in the hospital or community unless the sampling process supports that interpretation.

Clinical implications

Anaemia in pregnancy warrants appropriate antenatal assessment, investigation of the underlying cause and management according to clinical severity and local guidelines. Haemoglobin testing can identify women who require further evaluation, while additional investigations may be necessary to distinguish iron deficiency from other causes of anaemia. The finding that 74 participants were classified as having moderate or severe anaemia indicates that these categories comprised most of the study sample. This supports the importance of timely clinical assessment within the group studied. It does not, by itself, establish the effectiveness of any particular treatment or screening intervention.

Interpretation of possible risk factors

Maternal age, parity, dietary intake, supplementation practices, socioeconomic conditions and gestational age are relevant variables for evaluating anaemia in pregnancy. However, the available summary does not establish whether any of these factors were statistically associated with anaemia in this study.

The figures supplied for trimester, parity/gravidity and other risk factors lack category labels and denominators. Consequently, no reliable comparison between exposed and unexposed participants can be made. A valid risk-factor analysis would require the number of anaemic and non-anaemic women in each relevant category, or an appropriate analysis of severity if all participants were anaemic.

Comparison with other studies

Direct comparison with published prevalence estimates is not appropriate until the sampling method and denominator are clarified. Studies that recruit all antenatal attendees estimate a different quantity from studies that include only women already diagnosed with anaemia.

The final discussion should compare the study findings with published research using similar populations, haemoglobin definitions, severity classifications and recruitment methods. Such comparisons should be added only after the study design and relevant results have been verified.

Strengths

1. The study covers a defined period of antenatal care.
2. It includes 89 participants with recorded anaemia severity.
3. The available severity counts allow a clear descriptive summary of the study sample.

Limitations

1. The total number of pregnant women screened during the study period is unknown, preventing confirmation of the prevalence among all antenatal attendees.
2. The sampling method and eligibility criteria have not been supplied.
3. Haemoglobin values and the exact diagnostic and severity thresholds are unavailable.
4. The demographic and obstetric summary counts are insufficiently defined for meaningful analysis.
5. Risk-factor associations and adjusted estimates cannot be calculated from the available aggregate data.
6. The single-centre setting, if confirmed, may limit generalisability beyond the study hospital.

CONCLUSION

Among the 89 pregnant women recorded as anaemic, severe anaemia was the most frequent category (44/89; 49.4%), followed by moderate anaemia (30/89; 33.7%) and mild anaemia (15/89; 16.9%). Together, moderate and severe anaemia

accounted for 83.1% of the supplied sample.

These findings emphasise the clinical importance of identifying and appropriately managing anaemia among pregnant women. However, the prevalence among all pregnant women attending the hospital and the risk factors associated with anaemia cannot be established from the current summary alone. Confirmation of the screening denominator, study selection process, haemoglobin criteria and individual risk-factor data is required before the manuscript can be finalised as a prevalence and risk-factor study.

REFERENCES

1. World Health Organization. *Guideline on haemoglobin cutoffs to define anaemia in individuals and populations*. Geneva: World Health Organization; 2024. Available from: <https://www.who.int/publications-detail-redirect/9789240088542>
2. World Health Organization. *WHO recommendations on antenatal care for a positive pregnancy experience*. Geneva: World Health Organization; 2016. Available from: <https://www.who.int/publications/i/item/9789241549912>
3. World Health Organization. *Guideline on haemoglobin cutoffs to define anaemia in individuals and populations*. Geneva: World Health Organization; 2024. Available from: <https://www.who.int/publications-detail-redirect/9789240088542>
4. World Health Organization. *WHO recommendations on antenatal care for a positive pregnancy experience*. Geneva: World Health Organization; 2016. Available from: <https://www.who.int/publications/i/item/9789241549912>
5. World Health Organization. *Daily iron and folic acid supplementation during pregnancy*. Geneva: World Health Organization. Available from: <https://www.who.int/tools/elena/interventions/daily-iron-pregnancy>
6. International Institute for Population Sciences (IIPS), ICF. *National Family Health Survey (NFHS-5), 2019–21: India*. Mumbai: IIPS; 2021.