

# A Retrospective Study to Assess the Incidence of Anaemia Among Pregnant Women Admitted in a Tertiary Care Centre, Jalandhar, Punjab

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## Abstract

**Background:** Anemia during pregnancy is a common and preventable condition that contributes significantly to adverse maternal and neonatal outcomes, including preterm delivery, low birth weight, and increased maternal morbidity. Despite the implementation of various national health programs in India, the burden of anemia among pregnant women remains high, particularly in rural regions.

**Objective:** To assess the incidence and severity of anemia among pregnant women admitted to a tertiary care center in Jalandhar, Punjab, and to propose preventive strategies based on the findings. **Methods:** A retrospective observational study was conducted using hospital birth records from 1 January to 31 December 2024 at a tertiary care center in Jalandhar. Data collected included maternal age, hemoglobin (Hb) levels, parity, and area of residence. Anemia was classified according to WHO standards as mild (Hb 10–10.9 g/dl), moderate (Hb 7–9.9 g/dl), and severe (<7 g/dl). Non-probability consecutive sampling was employed, and data were analyzed using descriptive statistics. **Results:** Of the 773 pregnant women studied, 250 (32.3%) were found to be anemic. Among these, 187 (74.8%) had moderate anemia and 63 (25.2%) had mild anemia. No cases of severe anemia were reported. Anemia was more prevalent among primigravida women (62%) than multigravida women (38%). The majority of anemic women (46.8%) were aged between 23 and 28 years, and 80% were from rural areas of Punjab. **Conclusion:** Anemia, particularly in its moderate form, remains a major public health concern. Strengthening antenatal care services, ensuring early screening, timely supplementation, and community-based education are essential strategies to reduce its incidence.

**Keywords:** Anaemia in pregnancy, maternal health, antenatal care, haemoglobin levels, rural health

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## INTRODUCTION

Pregnancy is not just a matter of waiting to give birth but a joyful and a fulfilling period in a woman's life. It can also be one of the experiences of misery and suffering when complications or adverse circumstances compromise the pregnancy, causing ill health or even death [1]. Pregnancy, though a natural process, is often complicated by medical conditions that adversely impact maternal and foetal health. Among these, anaemia remains the most prevalent, particularly in developing countries. The World Health Organization (WHO) defines anaemia in pregnancy as haemoglobin (Hb) <11 g/dl, with Hb <7 g/dl classified as severe. Globally, approximately 41.8% of pregnant women are anaemic, and India continues to report some of the highest prevalence rates (58–89.6%) [2].

Anaemia during pregnancy is linked to maternal complications such as preterm delivery, postpartum haemorrhage, sepsis, and increased mortality. Neonatal consequences include low birth weight, intrauterine growth restriction, and higher perinatal mortality. Despite the availability of iron-folic acid supplementation under national programmes, anaemia remains inadequately controlled [3].

This study aimed to assess the incidence and severity of anaemia among pregnant women admitted to a tertiary care centre in Jalandhar and to highlight the need for preventive interventions [4].

## NEED FOR THE STUDY

Anaemia is one of the potentially lethal complications of pregnancy leading to large number of maternal and foetal losses but it is a preventable and curable condition. Antenatal women should equip themselves with adequate knowledge about the prevention of anaemia and dietary practices, and adhere to the prophylactic treatment to prevent the consequence of anaemia in pregnancy [5, 6].

A study conducted in 2014 at Mala Reddy Medical College, Hyderabad, involving 1,027 antenatal women assessed the prevalence, severity, associated risk factors, and outcomes of anaemia in pregnancy. The findings revealed that preterm delivery was the most common complication, particularly among severely anaemic patients, with an incidence of 15.96%. This could be due to placental insufficiency leading to intrauterine death or IUGR. Other complications were wound gaping (1.8%), sepsis (3.21%) etc. PPH occurred in 2.2% of the cases as patient could not withstand loss of blood. The incidence of PIH was noted in 14.2%. Among the complications in neonates, the incidence of low birth weight was very high, especially in moderate (51.9%) and severe (91.54%) anaemia. This again along with preterm delivery predisposes to birth asphyxia, neonatal infection and sepsis, consequently increasing neonatal morbidity and mortality [7].

As per WHO, the maternal mortality rate is 174 deaths/100,000 live births and neonatal mortality is 28 deaths/1000 live births in India. The main reason for this distressing rate of mortality is mainly due to many medical conditions complicating pregnancy among which anaemia is the commonest one [8].

Despite providing quality and standard antenatal and postnatal care through various National Programmes by Government of India, most of the mothers are struggling from low haemoglobin level [5]. This study was carried out to assess the incidence of anaemia among pregnant women admitted in Tertiary Care Centre, Jalandhar and to formulate a plan to reduce the occurrence of anaemia in pregnancy.

## OBJECTIVES

1. To assess the incidence of anaemia among pregnant women admitted in Tertiary Care Centre, Jalandhar.
2. To formulate adequate preventive measures to reduce the incidence of anaemia.

## OPERATIONAL DEFINITIONS

- *Incidence:* In this study, incidence is a measure of occurrence rate of anaemia in a group of antenatal mothers admitted and delivered within the period of 1 January to 31 December 2024.
- *Anaemia:* In this study, anaemia means circulating levels of Hb lower than normal (<11 gm%), where Hb of 10–10.9 gm% is mild, 7–9.9 gm% is moderate, <7 gm% is severe anaemia.
- *Pregnant women:* All women delivered in Tertiary Care Centre Jalandhar from 1 January to 31 December 2024.
- *Tertiary Care Centre:* A Tertiary Care Centre in this study is a hospital that provides quality health care with advanced infrastructure, modern equipment, qualified super specialists and dedicated specialised nursing care.

## MATERIALS AND METHODS

- *Design and Setting:* A retrospective observational study was conducted at tertiary care centre, Jalandhar, Punjab.

- *Population and Sample:* The study included all booked pregnant women who delivered at the hospital between 1 January and 31 December 2024 (N=773). Non-probability consecutive sampling was used.
- *Data Collection:* Data were extracted from the hospital birth register, including age, Hb%, parity, and nativity.

## Variables

- *Independent variables:* age, parity, nativity.
- *Dependent variable:* grade of anaemia (mild, moderate, severe).
- *Inclusion criteria:* All booked cases.
- *Tool:* To accomplish this objective, data was collected from the Hospital birth register during the study period, which includes age, Hb%, parity and nativity.
- *Data collection:* Data was collected from the Birth Register.
- *Data Analysis:* Descriptive Statistics were used. Sample characteristics were described in frequency and percentages.
- *Analysis:* Descriptive statistics were applied; frequencies and percentages were calculated.
- *Ethical Clearance:* Data was anonymised and institutional ethical clearance obtained.

## Limitations

1. Source of data was birth register, so various variables like dietary practices, cultural taboos, presence of worm infestation, any other infections during antenatal period, history of any blood dyscrasias were not available.
2. As this study is a retrospective study, it cannot control exposure or outcome assessment.
3. Only one point data of haemoglobin level was available. So, the duration of anaemia and history of any intervention could not be identified due to constraints in data availability.

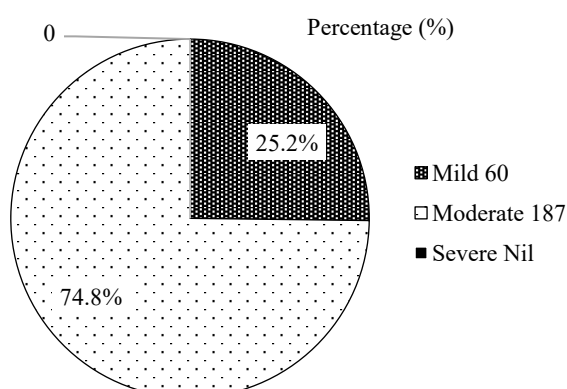
## RESULTS

Table 1 depicts that the majority of subjects i.e. 523 (67.6%) were non-anaemic whereas few subjects i.e. 250 (32.3%) were anaemic.

Severity of Anaemia (n=250): ranges as Mild: 60 (25.2%), Moderate: 187 (74.8%) and Severe: None (Figure 1). Age Distribution of subjects are: Majority of anaemic women were aged 23–28 years (46.8%), followed by 18–23 years (26.8%), 28–33 years (20.8%), and 33–38 years (5.6%).

**Table 1.** Percentage wise distribution of subjects according to Hb level (n=773).

| S.N | Variables   | Frequency (f) | Percentage (%) |
|-----|-------------|---------------|----------------|
| 1   | Non anaemic | 523           | 67.6           |
| 2   | Anaemic     | 250           | 32.3           |



**Figure 1.** Percentage wise distribution of subjects according to their Hb level.

Anaemia was more common among primigravida (62%) compared to multigravida (38%). 80% of anaemic women were from rural areas of Punjab, while 20% were from other states.

## DISCUSSION

This study found an incidence of 32.3% anaemia among pregnant women, with the majority presenting with moderate anaemia. Similar findings were reported by Rao *et al.* who observed high prevalence rates in Indian populations [8]. The predominance of moderate anaemia reflects inadequate iron intake, poor dietary diversity, and low compliance with supplementation.

Primigravida women were more commonly affected in 2014, researchers find out higher prevalence in first pregnancies. The age group most affected (23–28 years) corresponds to the peak reproductive age, further emphasizing the public health burden [9].

Unlike some studies, no cases of severe anaemia were noted, possibly due to effective antenatal screening and hospital-based population.

## Implications

The findings underline the need for:

- Strengthened antenatal counselling and health education.
- Monitoring compliance with iron-folic acid supplementation.
- Early screening and treatment of anaemia.
- Addressing socio-cultural barriers to nutrition.

## CONCLUSION

Anaemia remains a significant public health concern in maternal health, particularly among primigravida women, where moderate anaemia is most prevalent. This condition not only increases the risk of maternal morbidity and mortality but also contributes to adverse pregnancy outcomes such as preterm birth, low birth weight, and developmental delays in infants. The burden is more pronounced in low- and middle-income regions due to nutritional deficiencies, delayed antenatal care, and limited awareness.

Early antenatal registration and timely screening are critical first steps in the prevention and management of anaemia during pregnancy. Initiating antenatal care in the first trimester enables early detection of haemoglobin deficiencies and allows for timely intervention through iron and folic acid supplementation, dietary counselling, and treatment of underlying causes such as parasitic infections.

Ensuring compliance with iron supplementation is equally vital. Despite widespread distribution of iron and folic acid tablets through public health programs, adherence remains suboptimal due to side effects, misconceptions, or lack of follow-up. Strengthening compliance monitoring, through regular antenatal visits, counselling, and follow-ups by community health workers, can significantly improve outcomes.

Community-level education plays a pivotal role in addressing the socio-cultural and behavioural factors contributing to anaemia. Awareness campaigns focusing on the importance of iron-rich diets, timely antenatal check-ups, and supplement adherence can empower women and families to take proactive steps toward maternal health.

In conclusion, reducing the incidence of moderate anaemia among primigravida women requires an integrated public health approach that combines early antenatal booking, sustained compliance monitoring, and grassroots-level health education. Tailoring interventions to local needs and enhancing the capacity of primary healthcare systems can ensure more effective prevention and management, ultimately improving maternal and neonatal outcomes, and contributing to broader public health goals.

## REFERENCES

1. Judith A, et al. Prevalence Of Anaemia Among Pregnant Women. A Community Based Study in Udupi District. *Health Popul Perspect Iss*. 2008; 31(1): 31–40.
2. WHO. (2008 Dec 9). The prevalence of anaemia in pregnancy. WHO Technical Reports. 1993–2005. [Online]. Available at: <https://www.who.int/publications/i/item/9789241596657>
3. Kalaivani K. Prevalence & consequences of anaemia in pregnancy. *Indian J Med Res*. 2009 Nov; 130(5): 627–33. PMID: 20090119.
4. Suryanarayana Ravishankar, Chandrappa Muninarayana, Santhuram Anil Navale, Prathima S, Sheela SR. Prospective study on prevalence of anemia of pregnant women and its outcome: A community based study. *J Family Med Prim Care*. 2017 Oct–Dec; 6(4): 739–743. DOI: 10.4103/jfmpe.jfmpe\_33\_17
5. Kapil U, Pathak P, Tandon M, Singh C, Pradhan R, Dwivedi SN. Micronutrient deficiency disorders amongst pregnant women in three urban slum communities of Delhi. *Indian Pediatr*. 1999 Oct; 36(10): 983–9. PMID: 10745308.
6. Sharma S, Kaur SP, Lata G. Anemia in Pregnancy is Still a Public Health Problem: A Single Center Study with Review of Literature. *Indian J Hematol Blood Transfus*. 2020 Jan; 36(1): 129–134. doi: 10.1007/s12288-019-01187-6. Epub 2019 Sep 16. PMID: 32158095; PMCID: PMC7042445.
7. Kaur M, Chauhan A, Manzar MD, Rajput MM. Maternal Anaemia and Neonatal Outcome: A Prospective Study on Urban Pregnant Women. *J Clin Diagn Res*. 2015 Dec; 9(12): QC04–8. doi: 10.7860/JCDR/2015/14924.6985. Epub 2015 Dec 1. PMID: 26816949; PMCID: PMC4717682.
8. Srinivasa Rao, et al. Prevalence of Anemia in the First Trimester of Pregnancy in Rural Population of Krishna District in Andhra Pradesh. *Sch J App Med Sci*. 2013; 1(5): 570–574.
9. Allen LH. Anemia and iron deficiency: effects on pregnancy outcome. *Am J Clin Nutr*. 2000 May; 71(5 Suppl): 1280S–4S. doi: 10.1093/ajcn/71.5.1280s. PMID: 10799402.