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# INCIDENCE AND FACTORS ASSOCIATED WITH ANEMIA AMONG WOMEN ATTENDING ANTENATAL CLINIC IN TERTIARY LEVEL HOSPITAL

Obstetrics & Gynaecology

**Dr. Samta Bali Rathore** Professor & Unit Head, Dept. of Obs & Gyne, Mahatma Gandhi Medical College & Hospitals, MGUMST, Jaipur

**Dr. Naina Yadav** Senior resident at Jain Fertility & Mothercare Hospital, Jaipur

**Dr. Priyanka Goel*** Assistant Professor, Dept. of Obs & Gyne, Mahatma Gandhi Medical College & Hospitals, MGUMST, Jaipur *Corresponding Author

## ABSTRACT

Anaemia during pregnancy has a variety of causes and contributing factors including socioeconomic status, multiple pregnancies, teenage pregnancies, malnutrition, maternal illiteracy, unemployment, short pregnancy intervals, primigravida and multigravida, loss of appetite and excessive vomiting in pregnancy. Low socio-economic status is main factor associated with anaemia in pregnancy. Knowledge of anemia is important because it is essential to encourage women to take iron supplements during pregnancy and after childbirth, affecting the iron status of both the mother and the child. The aim of this paper was to determine incidence of anemia in pregnant women and to assess factors associated with anemia among pregnant women on first visit at antenatal clinic at tertiary care hospital. The present study was a prospective observational study taken up in the department of obstetrics and gynecology out patient at Mahatma Gandhi hospital, Jaipur. Total 1100 women with anemia were included and the study duration was 18 months. A questionnaire was prepared to study the various factors associated with anemia and accordingly the data was collected based on the findings. The incidence of anemia in our study was 63.77%. The various factors were studied which has association with anemia. Out of many factors associated, the significant factors associated with anemia were low socio-economic status, multiparity, rural background. Delivery interval less than 2 years was not significantly associated with anemia. To conclude, it is very important for the attending physician to counsel antenatal patient about proper diet with iron folic acid supplementations regularly. Antenatal visits should not be missed. Health education should be given regularly to create awareness about the importance of early booking for antenatal care.

## KEYWORDS

anemia, pregnancy, iron deficiency, maternal

## INTRODUCTION

Anemia in pregnancy is defined as a condition in which the haemoglobin concentration of a woman during pregnancy is less than 11 g/dl. (WHO)[1]. WHO estimates that among the South-East-Asian countries, prevalence is highest in India. The most important fact is that, South-East-Asian countries contributes to half of the maternal deaths in the world and India contributes to eighty percent of them[2]. During pregnancy, iron deficiency anemia is most common.

Studies confirmed that anemia in pregnancy remains one of the most unresolved public health problems in developing countries because of various issues like illiteracy, poverty, lack of awareness, cultural and religious factors, ill dietary habits, and high prevalence of parasitic infestation. Biological risk factors such as dietary deficiency, parasitic infestations, and chronic diseases are well-known risk factors, it is important for the treating physicians to understand the ecological or structural risk factors that could be of regional interest. These factors are not manipulated by clinical management with iron supplementation but can be resolved at the level of primary care [3,4,5].

In this study, several parameters were investigated including the level of education, husband's education, detailed obstetric history and dietary habits, number of antenatal visits, iron folic acid intake and pregnancy interval. All these parameters will help in better assessment, prevention and treatment of anaemia. Infections which are chronic and recurrent may impair haematopoiesis and cause anaemia.

### Maternal complications:

Anaemia can cause fatigue, poor work capacity, weak immune system, increased risk of cardiac diseases, puerperal infection, thromboembolic disorders, postpartum hemorrhage, pregnancy induced hypertension, cardiac failure.

### Fetal consequences:

Premature births, low birth weight, fetal cognitive impairment, and death [6,7,8].

Knowledge of anemia is important because it is essential to encourage women to take iron supplements during pregnancy and after childbirth, affecting the iron status of both the mother and the child [9].

## AIMS AND OBJECTIVES

1. To determine incidence of anemia in pregnant women.
2. To assess factors associated with anemia among pregnant women on first visit at antenatal clinic at tertiary care hospital.

## MATERIALS AND METHODS

Prior approval was taken from the ethical committee of the Mahatma Gandhi Medical College and Hospital, Jaipur. Subjects were informed about the objective of the study and verbal and written consent was taken with the right not to participate in the study.

This was a hospital based observational study of 1100 women over a period of 18 months from January 2020 to June 2021 at first antenatal visit in obstetrics and gynecology out-patient department of Mahatma Gandhi hospital, Jaipur.

Data was collected through a questionnaire including various factors like demographic factors (marital status, parity, occupation, education, monthly income, religion), Obstetric history (age of conception, number of pregnancies, number of abortions), nutritional habits of the pregnant woman and data on oral supplementation during pregnancy. A complete history including history of presenting complaint, obstetric history, menstrual history, past medical & surgical history, family history was taken. Information regarding her age, address, socioeconomic status and dietary habits were noted. Special enquiry was made regarding smoking and drug use, history regarding her previous antenatal check-ups elsewhere was noted.

Obstetric examination and general physical examination was done for all the patients. Final assessment of anemia was done after analysis of investigations like complete blood count (CBC), peripheral blood film (PBF) and other iron studies. Gestation age was calculated in weeks from the last menstrual period.

### Inclusion criteria:

All pregnant women attending antenatal care (ANC) out patient department for the first time at Mahatma Gandhi Medical College, Jaipur

### Exclusion criteria:

Seriously ill patients due to other medical condition, unable to respond, mentally ill pregnant women and pregnant women with prior visits were excluded during study time. Previously diagnosed anemia patients were excluded.

## OBSERVATION & RESULTS:

Incidence of anemia in our study was 63.77%. The various factors studied and their results were observed and compiled in the form of

tables. The significance of factors was studied and calculated in the form of p value where p value < 0.05 was statistically significant and had an association with anemia.

**Table 1: Distribution of anemia according to severity**

| Anemia | Number of participants | Percent % |
|---|---|---|
| No anemia | 263 | 36.2 |
| Mild | 80 | 11.0 |
| Moderate | 350 | 48.2 |
| Severe | 33 | 4.5 |

**Table 2: Distribution of anemia according to socioeconomic status**

| Socio-economic status | Anemia | | Total |
|---|---|---|---|
| | No anemia | Anemia | |
| Lower | 27 (8.7%) | 284 (91.3%) | 311 |
| Middle | 124 (42.9%) | 165 (57.1%) | 289 |
| Upper | 112 (88.9%) | 14 (11.1%) | 126 |
| Total | 263 (36.2%) | 463 (63.8%) | 726 |

Table 2 depicts that 91.3% women belonging to lower socioeconomic class were anemic while 57.1% were from middle class and only 11% were from upper class. P value is 0.0005 which is significant.

**Table 3: Distribution of anemia according to parity**

| Parity | Anemia | | Total |
|---|---|---|---|
| | No anemia | Anemia | |
| Multi | 159 (33.6%) | 314 (66.4%) | 473 |
| Primi | 104 (41.1%) | 149 (58.9%) | 253 |

Table 3 depicts multiparity is more commonly associated with anemia, 66.4% parous women were anemic and 58.9% primi patients had anemia. P value is 0.045 which is significant.

**Table 4: Distribution of anemia according to residence**

| Residence | Anemia | | Total |
|---|---|---|---|
| | No anemia | Anemia | |
| Rural | 86 (23%) | 288 (77%) | 374 |
| Urban | 177 (50.3%) | 175 (49.7%) | 352 |

Table 4 depicts that 77% anemic patients were from rural background and 49.7% anemic patients were from urban background. Results were statistically significant. P value 0.0005

**Table 5: Distribution of anemia in relation to last delivery**

| Last delivery | Anemia | | Total |
|---|---|---|---|
| | No anemia | Anemia | |
| <=2 yrs | 61 (29.8%) | 144 (70.2%) | 205 |
| >2yrs | 49 (32%) | 104 (68%) | 153 |

Table 5 depicts that 70% anemic patients had delivery less than 2 years back and 68% had delivery more than 2 years back. P value is 0.645 which is not statistically significant.

## DISCUSSION

Incidence of anemia in our study was 63.77%. Global prevalence of anemia among pregnant women is 55.9% (WHO) and higher in developing countries (5-90%). In India prevalence of anemia has been reported to be in the range of 33%-89%. [10]

Prevalence of anemia was much lower in a study done at a public-sector hospital in Bangalore, South India that was only 33%[11]. This can be due to the fact that patients included in this study were mostly from urban background. Studies done in rural Karnataka show similar burden of anemia with a prevalence of 64% in Kolar[12], 72.5% in Belagavi[13], and 62.3% in Kolar as seen in our study[14]. In our study 91.3% patients who were anemic, belonged to lower socioeconomic status which was statistically significant as the p value was 0.0005. Chalmeda Anand Rao et al reported similar results of socioeconomic status with anemia[15,16,17,18].

Women with low socioeconomic status tend to consume diets that are low in micronutrients, animal proteins and vitamins but high in carbohydrate and phytates which interfere with intestinal uptake of iron and other trace minerals such as zinc and calcium.

In this study 66% anaemic patients were multiparous, and 58% were primigravida having anemia. Multiparity was found to be significantly associated with anaemia (p<0.05). A similar study showed higher prevalence of anaemia (43.9%) in second gravida[19]. J. Vindhta et al in 2020 reported similar results [20]. But study done by Singh et al reported no association with gravidity[21].

In our study, significant association was found between residence and anaemia. 77% anaemic patients were from rural background whereas only 49 % were from urban background. (p<0.0005). Similarly Brhane et al in 2019 quoted that women in rural areas were 6 times more likely to have anaemia than urban groups [22].

This geographical rural–urban disparity could be due to variety of factors such as variation in the socio-demographic characteristics, pattern of obstetric variables, medical morbidities, access and lack of health care services, dietary factors, and method of estimation of haemoglobin.

## CONCLUSION

The present study revealed that incidence of anemia among women antenatal clinic at tertiary care centre is 63.77%, which is a major health problem although iron folic acid supplementation is available under the national health program to deal with such issue still there is such high incidence of anemia. It is very important for the attending physician to counsel antenatal patient about benefits of consuming proper diet along with iron folic acid supplementations regularly. Antenatal visits should not be missed. Health education should be given regularly to create awareness about the importance of early booking for antenatal care. For primary care young girls should also be counselled regarding prevention of anaemia. Emphasis should be given over family planning methods.

## REFERENCES


1. Hemoglobin concentrations for the diagnosis of anemia and assessment of severity. Vitamin and Mineral Nutrition Information System. Geneva: World Health Organization, 2011(WHO/NMH/NHD/MNM/11.1) Available from: http:// www.who.int/ vmnis/indicators/haemoglobin.
2. Ezzati M, Lopus AD, Dogers A, Vander HS, Murray C. Selected major risk factors and global and regional burden of disease. Lancet 2002; 360: 1347-60
3. WHO. Hemoglobin concentrations for the diagnosis of anemia and assessment of severity. Vitamin and Mineral Nutrition Information System. Geneva: World Health Organization, 2011(WHO/NMH/NHD/MNM/11.1) Available from: http:// www.who.int/ vmnis/indicators/haemoglobin.
4. Stevens G, Finucane M, De-Regil L, Paciorek C, Flaxman S, Branca F, et al. Global, regional, and national trends in hemoglobin concentration and prevalence of total and severe anemia in children and pregnant and non-pregnant women for 1995–2011: A systematic analysis of population-representative data. The Lancet Global Health 2013; e16-e25. Available from: https:// www.sciencedirect.com/ science/article/ pii/ S2214109x 13700019.
5. Balarajan Y, Ramakrishnan U, Özaltin E, Shankar A, Subramanian S. Anemia in low-income and middle-income countries. The Lancet 201; 378:2123-2135. Available from: http://environmentportal.in/files/file/Anaemia.
6. Adam, I., Khamis, A. H., and Elbashir, M. I. (2005). "Prevalence and risk factors for anaemia in pregnant women of eastern Sudan," Transactions of the Royal Society of Tropical Medicine and Hygiene, vol. 99, no. 10, pp. 739–743.
7. Banhidy, F., Puho, E.H., and Czeizel, A.E. (2011). Iron deficiency anaemia: Pregnancy outcomes with or without iron supplementation. Nutrition, 27(1): 65–72.
8. Kalaivani, K. (2009). Prevalence & consequences of anaemia in pregnancy. Indian J Med Res, 130:627–633.
9. Bilenko N, Yehiel M, Inbar Y, et al. The association between anemia in infants, and maternal knowledge and adherence to iron supplementation in Southern Israel. Isr Med Assoc J. 2007;9: 521–524.
10. Rajamouli J, Ravinder A, SCK Reddy, Sujatha Pambi. Study on prevalence of anemia among pregnant women attending antenatal clinic at rural health training centre (RHTC) and chalmeda anand rao institute of medical sciences teaching hospital, karimnagar, Telangana, India. International Journal of Contemporary Medical Research 2016;3(8):2388-2391.
11. Mulugeta Melku, Zelalem Addis, Meseret Alem, and Bamlaku Enawgaw. (2014), Prevalence and Predictors of Maternal Anaemia during Pregnancy in Gondar, Northwest Ethiopia: An Institutional Based Cross-Sectional Study. Volume 2014, Article ID 108593, 9 pages http://dx.doi.org/10.1155/2014/108593
12. Prevalence of iron deficiency anaemia among pregnant women attending antenatal clinics at Al-Hada Hospital," Canadian Journal on Medicine, vol. 3, no. 1, pp. 10–14
13. Samuel T, Thomas T, Finkelstein J, Bosch R, Rajendran R, Virtanen S, et al. Correlates of anemia in pregnant urban South Indian women: A possible role of dietary intake of nutrients that inhibit iron absorption. Public Health Nutrition 2012; 16: 316-324.
14. Suryanarayana R, Chandrappa M, Santhuram A, Prathima S, Sheela S. Prospective study on prevalence of anemia of pregnant women and its outcome: A community-based study. J Family Med Primary Care 2017; 6: 739. Available from: https:// www.ncbi.nlm.nih.gov/pmc/articles/ PMC5848390.
15. Pushpa O Lokare, Vinod D Karajekar, Prakash L Gattani, Ashok P Kulakarni. A study of prevalance of anemia and socio demographic factors associated with anaemia among pregnant women in Aurangabad city, India. 2012; 6: 30-34
16. Lokare P, Gattani P, Karanjekar V, Kulkarni A. A study of prevalence of anemia and sociodemographic factors associated with anemia among pregnant women in Aurangabad city, India. Ann Nigerian Med 2012; 6: 30.
17. Siddalingappa H, Narayana Murthy MR, Ashok NC. Prevalence and factors associated with anemia among pregnant women in rural Mysore, Karnataka, India. Int J Community Med Public Health 2016;2532-2537. Available from: https://pdfs.semanticscholar.org/d282/da5194f1eca0d3f53a8f4ea00c0f5f9c0946.pdf
18. Balarajan Y, Ramakrishnan U, Özaltin E, Shankar A, Subramanian S. Anemia in low-income and middle-income countries. The Lancet 2011; 378: 2123-2135. Available from: http://environmentportal.in/files/file/Anaemia.pdf.
19. World Health Organization. The prevalence of anemia in women; a tabulation of available information; second edition Geneva WHO; 1992(WHO/MCH/MSM/92.2)
20. Kassa G, Muche A, Berhe A, Fekadu G. Prevalence and determinants of anemia among pregnant women in Ethiopia: A systematic review and meta-analysis. BMC Hematol 2017; 17: 17. Available from: https:// bmchematol. biomedcentral.com/ articles/

10.1186/ s12878017-0090-z
21. Singh R, Singh AK, Gupta SC, Singh HK. Correlates of anemia in pregnant women. Indian J Community Health 2015; 27: 351-355.
22. Bereka SG, Gudeta AN, Reta MA, Ayana LA. Prevalence and associated risk factors of anemia among pregnant women in rural part of JigJiga City, Eastern Ethiopia: a cross sectional study. J Preg Child Health. 2017; 4: 337.