

A study of prevalence and factors associated with anaemia in pregnancy at tertiary health care centre

Alka Dani

Assistant Professor, Department of Obstetrics & Gynaecology, Dr D. Y. Patil Medical College & Research Centre Nerul, Navi Mumbai, Maharashtra, INDIA.

Email: alka.dani@gmail.com

Abstract

Background: Globally, anaemia affects 1.62 billion people (25%), among which 56 million are pregnant women. Anaemia has detrimental effects on mother and fetus. Early identification of risk factors is effective for prevention and treatment of anaemia. **Aim And objective:** to study the prevalence and factors associated with anaemia in pregnancy at tertiary health care centre. **Material and Methodology:** Present study was a cross sectional study carried out on ANC patients attending OPD of OBGY department (ANC clinic). Data collected was sociodemographic data, detailed obstetric and medical history, ANC visits and iron and folic acid supplementation, dietary habits etc. haemoglobin concentration was done. Data was analysed with appropriate statistical tests. **Results:** Prevalence of anaemia in our study was 52.63%. Mild, moderate and severe anaemia was seen in 51%, 30% and 19% patients respectively. Most commonly observed risk factor was vegetarian diet (91%). Other risk factors were birth interval less than 2 years (90%), no consumption or inadequate consumption of IFA tablets (90%), Worm infestation (72%) and H/O malaria (54%).

*Address for Correspondence:

Dr Alka Dani, Assistant Professor, Department of Obstetrics & Gynaecology, Dr D. Y. Patil Medical College & Research Centre Nerul, Navi Mumbai, Maharashtra, INDIA.

Email: alka.dani@gmail.com

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INTRODUCTION

Anaemia is one of the most common nutritional deficiency diseases observed globally and affects more than a quarter of the world's population (WHO/CDC, 2008). Globally, anaemia affects 1.62 billion people (25%), among which 56 million are pregnant women.^{1,2} It is estimated that 41.8% of pregnant women worldwide are anaemic. In developing countries, the prevalence of anaemia during pregnancy is 60.0% and about 7.0% of the women are severely anaemic.³ Anaemia during pregnancy is considered severe when haemoglobin concentration is less

than 7.0 g/dl, moderate when the haemoglobin concentration is 7.0 to 9.9 g/dl, and mild when haemoglobin concentration is 10.0 to 10.9 g/dl.^{4,5} When the prevalence of anaemia among pregnant women is 40.0% or more, it is considered as a severe public health problem. Anaemia during pregnancy is also a major risk factor for low birth weight, preterm birth and intrauterine growth restriction.^{6,7} Anaemia during pregnancy has a variety of causes and contributing factors. In developing countries, the cause of anaemia during pregnancy is multifactorial and includes nutritional deficiencies of iron, folate, and vitamin B12 and also parasitic diseases, such as malaria and hookworm. Iron deficiency is the cause of 75% of anaemia cases during pregnancy. Despite its known effect on the population, the available data regarding the determinants of anaemia during pregnancy are limited. Hence, this study was aimed at determining the prevalence and factors associated with anaemia among pregnant women.

Aim and objective: to study the prevalence and factors associated with anaemia in pregnancy at tertiary health care centre

MATERIAL AND METHODOLOGY

Present study was a cross sectional study carried out at tertiary health care centre. Study population was ANC patients attending OPD of OBGY department (ANC clinic).

Inclusion criteria: 1.ANC patients of second and third trimester 2. Those who willing to participate in the study

Exclusion criteria: 1. ANC patients in first trimester 2. Patients with sickle cell anaemia 3. Patients with hematological disorders 4. Teenager pregnancy

Study was approved by ethical committee of the institute. A valid written consent was taken from the patients after explaining study to them. We studied total 190 patients during study period of 2 months. Data was collected with pretested questionnaire. Data included sociodemographic data, detailed obstetric and medical history, ANC visits and iron and folic acid supplementation, dietary habits etc. patients underwent investigations like CBC and Haemoglobin concentration. All patients were investigated in central laboratory of the institute. According to haemoglobin concentration, Anemia was considered severe when haemoglobin concentration is less than 7.0 g/dL, moderate when haemoglobin falls between 7.0 and 9.9 g/dL, and mild when haemoglobin concentration is from 10.0 to 11 g/dL. Patients were caterogized into different groups. Type of anaemia was diagnosed by Complete blood count and peripheral smear. Data was entered in excel sheet and analysed with appropriate statistical tests.

RESULTS

In our study, out of 190 patients, 100 patients were anaemic according to haemoglobin concentration. Prevalence of

anaemia in our study was 52.63%. Mean age of the patients was 24.64± 3.2 years. Fig 1 shows distribution of patients according to severity of anaemia. Majority of the patients had mild anaemia (51%). Moderate anaemia was seen in 30% patients and severe anaemia was observed in 19% of the patients. Most commonly observed clinical feature in our study was fatigue (92%) followed by dizziness (88%). Shortness of breath was complained by 76% patients. pale skin was seen in 72% patients. Other clinical features were rapid /irregular heartbeat (61%) and chest pain (43%). (table1) Various risk factors play an important role in anaemia. Most commonly observed risk factor was vegetarian diet (91%). Obstetric factors like birth interval less than 2 years was seen in 90% patients. no consumption or inadequate consumption of IFA tablets contributed anaemia in 90% patients. Worm infestation and H/O malaria was seen in 72% and 54% patients respectively. Other risk factors observed were less consumption of fruits (43%) and lower socioeconomic status (30%). We studied type of anaemia. Most commonly observed type of anaemia was iron deficiency anaemia (92%) followed by megaloblastic anaemia (5%). Dimorphic anaemia was seen in 3% patients. (table2)

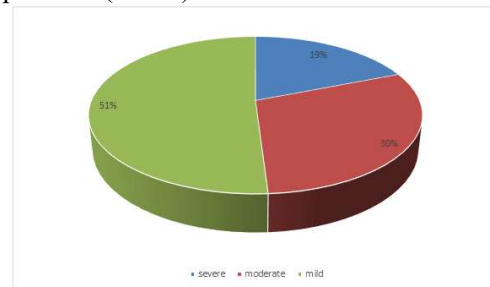


Figure 1: Distribution of patients according to severity of anaemia

Table 1: Distribution of anaemic patients according to clinical features

Sr no	Clinical features	No of patients	Percentage
1	Fatigue	92	92%
2	Dizziness	88	88%
3	Shortness of breath	76	76%
4	Rapid/ irregular heartbeat	61	61%
5	Pale skin	72	72%
6	Chest pain	43	43%

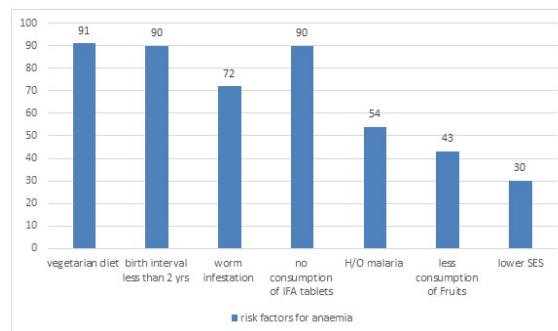


Figure 2: Distribution of anaemic patients according to risk factors**Table 2:** Distribution of anaemic patients according to type of anaemia

Sr no	Type of anaemia	No of patients	Percentage
1	Iron deficiency anaemia	92	92%
2	Megaloblastic	05	5%
3	Dimorphic	03	3%

DISCUSSION

In our study, Prevalence of anaemia was 52.63%. Mean age of the patients was 24.64± 3.2 years. McLean, E *et al.* found that worldwide, the prevalence of anaemia during pregnancy has been estimated at 41.8%.⁸ In developing countries, the prevalence of anaemia during pregnancy is 60.0% according to Agan *et al.*⁹ In Africa, study done by de Benoist *et al.* found that 57.1% of pregnant women are anaemic.¹⁰ The prevalence of anemia ranges from 33% to 89% among pregnant women and is more than women from 60% among adolescent girls with wide variations in different regions of the country.¹¹ The study shows that Pregnant women in rural Maharashtra, one of the developed states of India registered a prevalence of anemia 56.4%.^{12,13} In our study, Majority of the patients had mild anaemia (51%). Moderate anaemia was seen in 30% patients and severe anaemia was observed in 19% of the patients. In some of the studies prevalence of severe anaemia was noted as Totega (13.1%), Agarwal *et al.* (9.2%), Vivek *et al.* (7%), and Gautam *et al.* (22.8%).¹⁴⁻¹⁷ In a study by Bhargavi Vemulapalli *et al.*, 40.97% had a moderate degree of anemia and 6.28% of the population had a severe degree of anemia.¹⁸ The high prevalence of anemia can be attributed to low dietary intake of iron and folic acid, deprived bioavailability of iron or chronic blood loss due to infections.¹⁹ Most commonly observed clinical feature in our study was fatigue (92%) followed by dizziness (88%). Shortness of breath was complained by 76% patients. Pale skin was seen in 72% patients. Other clinical features were rapid /irregular heartbeat (61%) and chest pain (43%). Various risk factors play an important role in anaemia. Most commonly observed risk factor was vegetarian diet (91%). Obstetric factors like birth interval less than 2 years was seen in 90% patients. no consumption or inadequate consumption of IFA tablets contributed anaemia in 90% patients. Worm infestation and H/O malaria was seen in 72% and 54% patients respectively. Other risk factors observed were less consumption of fruits (43%) and lower socioeconomic status (30%). In a study by Kassa Git was found that primigravida women are 61% less likely than multigravida women to develop anemia during pregnancy, which could be a consequence of depletion of iron reserves owing to repeated pregnancies.²⁰ Similar to our study previous studies found that the risk of

developing anaemia was significantly more among pregnant women who did not take iron and folic acid supplements compared to those who took these supplements.²¹⁻²³ Lack of iron supplementation is among the most significant risk factors for developing anaemia during pregnancy. Growth of the foetus, the uterus, the placenta, increased RBC mass and many other changes taking place in a pregnant mother that require many nutrients, especially iron and folic acid. We studied type of anaemia. Most commonly observed type of anaemia was iron deficiency anaemia (92%) followed by megaloblastic anaemia (5%). Dimorphic anaemia was seen in 3% patients.

CONCLUSIONS

Most commonly observed risk factor for development of anaemia in pregnant patients were vegetarian, birth interval less than 2 years no consumption or inadequate consumption of IFA tablets, Worm infestation and H/O malaria.

REFERENCES

1. Balarajan, Y., Ramakrishnan, U., Ozaltin, E., Shankar, A. H., and Subramanian, S. V. (2011). "Anaemia in low-income and middle-income countries," *The Lancet*, vol. 378, no. 9809, pp. 2123–2135.
2. De Benoist, B., McLean, E., Egli, I., Cogswell, M. (2008) eds. worldwide prevalence of anaemia 1993-2005: WHO global database on anaemia. Geneva: WHO Press; 2008.
3. Agan, T., Ekabua, J. E., Udoh, A. E., Ekanem, E. I., Efiok, E. E., and Mgbekem, M. A. (2010). "Prevalence of anaemia in women with asymptomatic malaria parasitemia at first antenatal care visit at the University of Calabar Teaching Hospital, Calabar, Nigeria," *International Journal of Women's Health*, vol. 2, no. 1, pp. 229–233.
4. Salhan, S., Tripathi, V., Singh, R., and Gaikwad, H. S. (2012). "Evaluation of hematological parameters in partial exchange and packed cell transfusion in treatment of severe anaemia in pregnancy. Volume 2012, Article ID 608658, 7 pages
5. Esmat, B., Mohammad, R., and Behnam, S. (2010). Prevalence of iron deficiency anaemia among Iranian pregnant women. A Systematic Review and Meta-Analysis. *J Reprod Infertil*, 11(1):17-24.
6. 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.
7. Haggaz, A.D., Radi, E.A., and Adam, I. (2010). Anaemia and low birth weight in Western Sudan. *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 104 (3): 234-236.
8. McLean, E., Cogswell, M., Egli, I., Wojdyla, D., and Benoist, B.D. (2008). Worldwide prevalence of anaemia, WHO Vitamin and Mineral Nutrition Information System, 1993–2005.
9. Agan, T., Ekabua, J. E., Udoh, A. E., Ekanem, E. I., Efiok, E. E., and Mgbekem, M. A. (2010). "Prevalence of

- anaemia in women with asymptomatic malaria parasitemia at first antenatal care visit at the University of Calabar Teaching Hospital, Calabar, Nigeria,” *International Journal of Women’s Health*, vol. 2, no. 1, pp. 229– 233.
10. De Benoist, B., McLean, E., Egli, I., Cogswell, M. (2008) eds. *Worldwide prevalence of anaemia 1993-2005: WHO global database on anaemia*. Geneva: WHO Press; 2008.
 11. DeMaeyer EM, Dallman P, Gurney JM, Hallberg L, Sood SK, Srikantia SG. *Preventing and controlling iron deficiency anemia through primary health care: a guide for health administrators and programme managers*. Geneva, Switzerland: World Health Organization, 1989.
 12. Govt. of India. *Health information of India, 1995*, DGHS, Nirmal Bhawan, New Delhi. 10. Fred Arnold, Sulabha Parasuraman, P. Arokiasamy, Monica Kothari. 2009. *Nutrition in India. National Family Health Survey (NFHS-3), India, 2005-06*. Mumbai: International Institute for Population Sciences; Calverton, Maryland, USA: ICF Macro.
 13. Agarwal DK, Agarwal KN, Roychaudhary S. *Targets in National Anemia prophylaxis Programme for pregnant women*. *Indian Paediatr*. 1988;25:319-22.
 14. Totega GS. *Prevalence of anaemia among pregnant women and adolescent girls in 16 districts of India*. *Food Nut Bull* 2006;27:311-5.
 15. Agarwal KN, Agarwal DK, Sharma A, Sharma K, Prasad K, Kalita MC, et al. *Prevalence of anaemia in pregnant and lactating women in India*. *Indian J Med Res* 2006;124:173-84.
 16. Viveki RG, Halappanavar AB, Viveki PR, Halki SB, Maled VS. *Prevalence of anaemia and its epidemiological determinants in pregnant women*. *Al Ameen J Med Sci* 2012;5:216-23.
 17. Gautam VP, Bansal Y, Taneja DK, Saha R, Shah B, Marg Z, et al. *Prevalence of anaemia amongst pregnant women and its socio-demographic associates in a rural area of Delhi*. *IJCM* 2002;27:157-60.
 18. Vemulapalli B, Rao KK. *Prevalence of anaemia among pregnant women of rural community in Vizianagaram, North Coastal Andhra Pradesh, India*. *Asian J Med Sci* 2013;5:21-5.
 19. Kalaivani K. *Prevalence and consequences of anaemia in pregnancy*. *Indian J Med Res* 2009;130:627-33.
 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/s12878-017-0090>
 21. Nwizu, EN., Iliyasu, Z., Ibrahim, SA., and Galadanci, HS. (2011). *Socio-Demographic and Maternal Factors in Anaemia in Pregnancy at Booking in Kano, Northern Nigeria*. *African Journal of Reproductive Health*; 15(4): 41 1. Vivek, R.G., Halappanavar, A. B., Vivek, P. R., Halki, S. B., Maled, V. S., and Deshpande, P. S. (2012). “Prevalence of Anaemia and its epidemiological Determinants in Pregnant Women,” vol. 5, no.3, pp. 216–223.
 22. Khan, D.A., Fatima, S., Imran, R., and Khan, F. A. (2010). “Iron, folate and cobalamin deficiency in anaemic pregnant females in tertiary care centre at Rawalpindi,” *Journal of Ayub Medical College, Abbottabad*, vol. 22, no. 1, pp. 17–21
 23. Aikawa, R., Khan, N.C., Sasaki, S., and Binns, C. W. (2006). “Risk factors for iron-deficiency anaemia among pregnant women living in rural Vietnam,” *Public Health Nutrition*, vol. 9, no. 4, pp. 443– 448.

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