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

Sanjay Pundlik Pawar[1], Prashant Chhagan Patil[2*]

[1,2]Assistant Professor, Department of Obstetrics and Gynaecology, Dr.Ulhas Patil Medical College, Jalgaon, Maharashtra, INDIA.
Email: dr.sanjaypawar40@yahoo.com

Abstract
Background: Anaemia describes a situation in which there is a reduction of haemoglobin concentration in the blood of pregnant women to a level below 11g/dl. Anaemia during pregnancy contributes to 20% of all maternal deaths and it increases the risks of foetal and infant mortality. **Aim and Objective:** To study the prevalence and factors associated with anaemia in pregnancy at tertiary health care centre **Methodology:** A cross sectional study was carried out in 400 ANC patients attending ANC OPD. A pre tested, pre validated questionnaire was used to collect data which includes sociodemographic data, detailed obstetric and medical history and iron and folic acid supplementation, dietary habits and Haemoglobin concentration. **Results and Discussion:** Out of total 400 patients attending ANC OPD 230 (57.5%) patients were anaemic. Among anaemic patients 142 (61.73%) were mild anaemic, 69 (30%) were moderate anaemic and 19(8.24%) were severe anaemic. Increased maternal age and lack of iron and folic acid tablets in pregnancy (p<0.05) were significant factors in development of anaemia in pregnant women.
Key Words: anaemia in pregnancy.

*Address for Correspondence:
Dr. Prashant Chhagan Patil, Assistant Professor, Department of Obstetrics & Gynaecology, Dr.Ulhas Patil Medical College, Jalgaon, Maharashtra, INDIA.
Email: prashant.shital2009@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 B12and 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.

MATERIAL AND METHODOLOGY

A cross sectional study was carried out in ANC patients attending ANC OPD. ANC patients attended ANC OPD during the study period were 400, so 400 patients were

studied. Study was approved by ethical committee of tertiary care institute. Study was explained in detail to the participants and valid written consent was taken.

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

Exclusion Criteria
3. ANC patients in first trimester
4. Not willing to participate in the study

A pre tested, pre validated questionnaire was used to collect data. Data includes sociodemographic data, detailed obstetric and medical history and iron and folic acid supplementation, dietary habits. Haemoglobin concentration was measured. Patients were categorized into different groups. 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 Statistical analysis was done with appropriate statistical test to see association between various risk factors and anaemia in pregnancy.
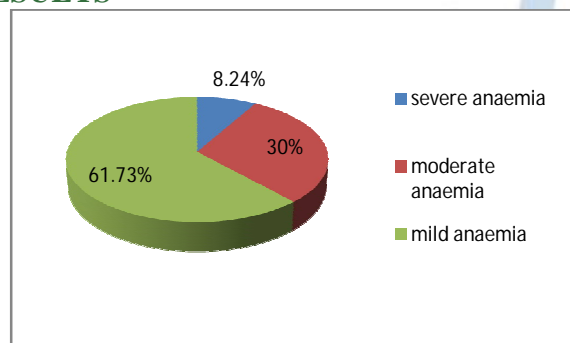
RESULTS

Figure 1: Prevalence of anaemia in pregnant women

Out of total 400 patients attending ANC OPD 230 (57.5%) patients were anaemic. Among anaemic patients 142(61.73%) were mild anaemic, 69(30%)were moderate anaemic and 19(8.24%) were severe anaemic. (Fig 1) The mean age of the women was 27.4 ±3.7 years. Out of the 400 participants, 160 (40%) and 160(40%) were in the age group of 18-24 years and 25-30 years respectively. The remaining 80 (20%) were 31 years and above. Regarding educational level of the participants, 08 were illetrate, 80 attended primary school and 312 were above primary school. The mean gestational age was 28.2 ±6.3 weeks. The majority, 260(65%) were in third trimester of pregnancy and 140(35%) were in second trimester of pregnancy. 232(58%) of the women were multigravida while 168 (42%) were primigravida. Almost 69.5% (278)of the women were taking IFAS while (31.5%)122 were not taking or not started taking IFAS. The majority, 368(92%), of the women said they drink beverages (tea,

cocoa or coffee) and 68.0% of them drink these beverages in less than 20 minutes before/after meals. More than half,(58%) of the women ate meals three times per day. One third of the women avoided certain foods such as red meat and green vegetables due to vomiting and heart burn. The mean Hb concentration was 10.45 ± 1.72 g/dl. The relationship between socio-demographic characteristics of the pregnant women and anaemia is shown in Table 1. Pregnant women aged 31 years and above were significantly more anaemic 56(70%) compared to those women aged below 31 years old 174 (54.37%) (p value 0.01) The proportion of anaemia was more among housewives women 75 (58.59) than to those who were employed 155(56.99%). This difference was statistically not significant. The proportion of anaemia was slightly more in women educated up to primary school and illetrate {51(63.75%) and 05 (62.5%) respectively} than those educated above primary education174 (55.77%). This difference was statistically not significant. Although the association was not significant at (P<0.05), difference was observed between obstetric history of the women and occurrence of anaemia. The occurrence of anaemia was higher among women with two or more children compared to primigravida and women with only one child. Anaemia was also slightly higher during the second trimester 84 (60%) than during the third trimester 146(56.15%) of pregnancies. There was no significant association observed between taking tea, cocoa, or coffee (beverages) and occurrence of anaemia. Pregnant women who did not take IFAS during the current pregnancy were more significantly had anaemia 82(67.21%) compared to those who had taken IFAS 148(53.24%) (p value 0.001 highly significant).

DISCUSSION

Out of total 400 patients attending ANC OPD 230 (57.5%) patients were anaemic. The result was relatively comparable to other studies like Olatunbosun, O.A *et al* 54.5%[8] and Alene, K.A *et al* 56.8%[9]. The prevalence of anemia ranges from 33% to 89% among pregnant women with wide variations in different regions of the country.[10] The study shows that Pregnant women in rural Maharashtra registered a prevalence of anemia 56.4%.[11,12] The in our study pregnant women aged 31 years and above were significantly more anaemic 56 (70%) compared to those women aged below 31 years old 174 (54.37%) (p value 0.01) This result is in agreement with the previous studies[13,14,15] which found that late pregnancy has significantly increased risk of developing anaemia. It is generally believed that anaemia in pregnancy increases with rising parity and maternal age.

Table 1: Comparison of anaemic and non anaemic patients according to variables

Sr no	Variables	Anaemic(230)	Non anaemic(170)	P value
1	Age group			
2	18-24	85(53.12%)	75(46.88)	0.01 significant
3	25-30	89(55.62%)	71(44.38%)	
4	≥31	56(70%)	24(30%)	
5	Occupation			
6	Employed	155(56.99%)	117(43.01%)	0.7
7	House wife	75(58.59)	53(41.41%)	
8	Education			
9	Illitrate	05(62.5%)	03(37.5%)	
10	Primary	51(63.75%)	29(36.25%)	o.24
11	Above primary	174(55.77%)	138(44.23%)	
12	No of pregnancy			
13	*First*	108(60%)	72(40%)	
14	*Second*	60(50%)	60(50%)	0.5
15	*Third and above*	62(62%)	38(38%)	
16	Gestational age			
17	Second	84(60%)	56(40%)	0.4
18	Third	146(56.15%)	114(43.84%)	
19	Taking tea, coffee bevarages			
20	Yes	210(57.07%)	158(42.93%)	0.5
21	No	20(62.5%)	12(37.5%)	
22	Taking iron folic acid tablets			
23	Yes	148(53.24%)	130(46.76%)	0.001
24	No	82(67.21%)	40(32.78%)	Highly significant

Besides the general body weakness with advanced maternal age, older women are expected to be multigravida. Multigravida may induce anaemia by reducing maternal iron reserves at every pregnancy and by causing blood loss at each delivery. The proportion of anaemia was more among housewives women 75(58.59%) than to those who were employed 155(56.99%). This difference was statistically not significant. The proportion of anaemia was slightly more in women educated upto primary school and illetrate {51(63.75%) and 05 (62.5%) respectively} than those educated above primary education 174 (55.77%). This difference was statistically not significant. Although the association was not significant at (P<0.05), difference was observed between obstetric history of the women and occurrence of anaemia. Anaemia was also slightly higher during the second trimester 84 (60%) than during the third trimester 146 (56.15%) of pregnancies. This finding is in agreement with a Smaila Oue´draogo *et al*[16] In contrast to this study, a cross-sectional study done in Turkey revealed that anaemia was more frequent at the third trimester than at the second trimester (Leyla Karaogl *et al*[17] The higher prevalence of anaemia in second trimester coincides with the period when haemodilution is at its peak. There was no significant association observed between taking tea, cocoa, or coffee (beverages) and occurrence of anaemia. Pregnant women who did not take IFAS during the current pregnancy were more significantly had anaemia 82 (67.21%) compared to those who had taken IFAS 148(53.24%) (p value 0.001) This finding is in line with other previous studies such as Sam *et al*[18], Khan *et al*.[19] and Aikawa *et al*[20]. Which indicated that lack of iron supplementation is among the most significant risk factors for developing anaemia during pregnancy.

CONCLUSION
Overall prevalence of anaemia was 57% in study population. Increased maternal age and lack of iron and folic acid tablets in pregnancy were significant factors in development of anaemia in pregnant women.

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 ReprodInfertil, 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. Olatunbosun, O.A., Abasiattai, A.M., Bassey, E.A., James, R.S., Ibanga, G. and Morgan, A. (2014) Prevalence of Anaemia among Pregnant Women at Booking in the University of Uyo Teaching Hospital, Uyo, Nigeria. BioMed Research International, 2014, Article ID: 849080.

9. Alene, K.A. and Dohe, A.M. (2014) Prevalence of Anaemia and Associated Factors among Pregnant Women in an Urban Area of Eastern Ethiopia. Anemia, 2014, Article ID: 561567

10. 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.

11. 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.

12. Agarwal DK, Agarwal KN, Roychaudhary S. Targets in National Anemia prophylaxis Programme for pregnant women. Indian Paediatr. 1988;25:319-22

13. Ondimu, K.N. (2000) Severe Anaemia during Pregnancy in Kisumu District of Kenya: Prevalence and Risk Factors. International Journal of Health Care Quality Assurance, 13, 230-235.

14. Gebremedhin, S., Enquselassie, F. and Umeta, M. (2014) Prevalence and Correlates of Maternal Anemia in Rural Sidama,Southern Ethiopia. African Journal of Reproductive Health, 18, 44-53.

15. Hinderaker, S.G., Olsen, B.E., Bergsjø, P., Lie, R.T., Gasheka, P. and Kvåle, G. (2001) Anaemia in Pregnancy in the Highlands of Tanzania. Acta Obstetricia et Gynecologica Scandinavica, 80, 18-26.

16. Smaila Oue´draogo, Ghislain K. Koura, Manfred M. K. Accrombessi, Florence Bodeau-Livinec, Achille Massougbodji, and Michel Cot. (2012). Maternal Anaemia at First Antenatal Visit: Prevalence and Risk Factors in a Malaria-Endemic Area in Benin. Am. J. Trop. Med. Hyg., 87(3), pp. 418–424

17. Leyla Karaogl, Erkan Pehlivan, Mucahit Egri, Cihan Deprem, Gulsen Gunes, Metin F Genc and Ismail Temel. (2010).The prevalence of nutritional anaemia in pregnancy in an east Anatolian province, Malatya, Turkey

18. Sam Ononge, Oona Campbell and Florence Mirembe.(2014).Haemoglobin status and predictors of anaemia among pregnant women in Mpigi, Uganda. BMC Research Notes, 7:712

19. 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.

20. 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