



Original Research Article

Prevalence of Anemia and Associated Factors in Pregnant Women in a Teaching Hospital of Mangalore

Preeti Tiwari¹, Poonam R Naik², Abhay S Nirgude³, Soumya Shetty⁴

¹Post graduate, ²Professor, ³Professor and Head of department, ⁴Biostatistician, Yenepoya Medical College, Yenepoya University, Mangalore, India.

Corresponding Author: Preeti Tiwari

Received: 12/06/2015

Revised: 24/06/2015

Accepted: 26/06/2015

ABSTRACT

Introduction: Anemia is the most common nutritional deficiency disorder in the world. Prevalence of anemia among pregnant women in Karnataka is 50.14%.

Aim: To assess the prevalence of anemia among pregnant women and to study the factors associated with it.

Material and methods: A cross sectional study was conducted in Yenepoya Medical College and Hospital with the approval of the institutional ethical committee during the period of January 2014 to June 2014 among 386 pregnant women who attended ANC clinic. Pregnant women registered in Antenatal register were included and those having twin gestation, bleeding disorders were excluded from the study. Data was collected from ante-natal register using predesigned, pretested, validated and structured proforma and analysed with SPSS v.16.0.

Result: The prevalence of anemia in pregnant women is 41.5%. The study found higher prevalence of anemia among those pregnant women whose age at pregnancy was less than 21 year or more than 30 years, women with high parity (40.6%), women with spacing of less than or equal to 1 year between consecutive pregnancies (61.3%) , all the pregnant women who did not consume iron-folic acid tablet at all and majority of the women who consumed iron folic acid for less than 2 months.

Prevalence of anemia was statistically significant with age at pregnancy, number of children, spacing between present and previous pregnancy, past history of abortion and iron folic acid (IFA) consumption.

Conclusions: The study reported a higher prevalence of anemia in pregnant women (41.5%).

Key words: Anemia, pregnant women, prevalence.

INTRODUCTION

Anemia is the most common nutritional deficiency disorder in the world. It occurs at all stages of the life cycle, but is more prevalent in pregnant women and young children. WHO states that prevalence of anemia in pregnant women is 14 per cent in developed countries and 51 per cent in

developing countries, ^[1] prevalence of anemia among pregnant women in Karnataka is 50.14%. ^[2] Anemia in pregnancy is associated with negative consequences for neonates like foetal anemia, low birth weight (LBW), preterm birth, low APGAR score, intrauterine growth restriction, peri-natal mortality and

also associated with increased risk of maternal morbidity and mortality. In view of above, present study was put into action to find out the prevalence of anemia and factors associated with anemia in pregnancy

MATERIALS AND METHODS

A cross sectional study was conducted in Yenepoya Medical College and Hospital with the approval of institutional ethical committee during the period of January 2014 to June 2014 among 386 pregnant women who attended ANC clinic. With the population proportion 50.14% [2] and sample proportion 43% based on the pilot study conducted at Yenepoya Medical College and hospital at 5% level of significance with power 80%, the sample size was 386. Pregnant women registered in Antenatal register were included and those having twin gestation, bleeding disorders were excluded from the study. Data was collected from ante-natal register using Predesigned, pretested, validated and structured proforma. The outcome variables measured were status of anemia in pregnant women and the predictor variables were age, age at marriage, religion, parity, age at first pregnancy, number of children, type of diet, compliance for iron and folic acid tablet, haemoglobin status in gram%, grade of anemia as per WHO classification for pregnant women. [3] Data was analysed using the SPSS version 16 software. Descriptive statistics were reported as mean (SD) for continuous variables and frequency (percentage) for categorical variables. Pearson's Chi-square test was used to find association between two categorical variables. A p value < 0.05 was considered as statistically significant.

RESULT

Table 1 shows majority of the study participants were in the age group of 19-22 years at the time of marriage, 21-29 years at the time of pregnancy and studied up to primary level only. The prevalence of anemia in pregnant women in our study was observed to be 41.5 %, where 48.75% were having mild grade of anemia followed by 41.25% having moderate anemia and only 10% had severe anemia.

Table 1 Distribution of study participants according to Socio-demographic variables (N=386)

Socio-demographic characteristics	Frequency (%)
AGE AT MARRIAGE	
16-18 years	6(1.55)
19-22 years	194(50.25)
23-27 years	136(35.3)
28-32 years	50(12.9)
AGE AT PREGNANCY	
Less than 21 years	96(24.9)
21-29 years	193(50)
More than 30 years	97(25.1)
DIET	
Vegetarian	30(7.8)
Mixed diet	356(92.2)
RELIGION	
Hindu	97(25.1)
Muslim	280(72.5)
Christian	9(2.3)
EDUCATIONAL STATUS	
Illiterate	6(1.6)
Primary	208(53.9)
Secondary	113(29.3)
Higher Secondary	59(15.3)

Table 2 indicates that prevalence of anemia was significantly high in women who conceived before 21 years and also after 30 years. In the present study prevalence of anemia was directly related to number of children and inversely related to spacing between previous and present pregnancy. Statistically significant association between anemia and past history of abortion was observed which is shown in Table 3.

Table 4 shows that 100% of women who did not consume IFA tablet were found to be anaemic followed by women who consumed IFA for less than 2 months.

Table 2 Association between anemia and socio-demographic variables (N=386)

Variables		Anemia frequency (%)			Chi-square	P value
		YES	NO	TOTAL		
Age at pregnancy	Less than 21 years	74(77.1)	22(22.9)	96(100)	165.10	<0.001
	21-29 years	18(9.4)	175(90.6)	193(100)		
	More than 30 years	68(70.1)	29(29.8)	97(100)		
	TOTAL	160(41.4)	226(58.5)	386(100)		
Number of children	1 child	1(16.6)	5(83.3)	6(100)	148.84	<0.001
	2 children	35(16.8)	173(83.1)	208(100)		
	3 children	65(57.5)	48(42.4)	113(100)		
	>3 children	59(100)	0(0)	59(100)		
	TOTAL	160(41.5)	226(58.5)	386(100)		
Spacing between Previous and present pregnancy	1 year or less	98(100)	0(0)	98(100)	288.841	<0.001
	2 year	56(68.29)	26(31.7)	82(100)		
	3 year	6(2.9)	198(97.1)	204(100)		
	> 3 years	0(0)	2(100)	2(100)		
	TOTAL	160(41.5)	226(58.5)	386(100)		

Table 3 Association between anemia and history of abortion (N=386)

PAST HISTORY	ANEMIA FREQUENCY (%)			CHI- SQUARE	P VALUE
	YES	NO	TOTAL		
NO ABORTION	80(27.02)	216(72.9)	296(100)	116.202	<0.001
1 ABORTION	50(92.5)	4(7.4)	54(100)		
2 ABORTION	23(92)	2(8)	25(100)		
3 ABORTION	7(77.7)	2(22.2)	9(100)		
>3 ABORTION	0(0)	2(100)	2(100)		
TOTAL	160	226	386(100)		

Table 4 Association between anemia and IFA consumption (N=386)

IFA CONSUMPTION	ANEMIA FREQUENCY (%)			CHI-SQUARE	P VALUE
	YES	NO	TOTAL		
TAKEN(2MONTHS)	78(25.5)	223(74.5)	301(100)	136.116	P <0.001
NOT TAKEN	22(100)	0(0)	22(100)		
LESS THAN 2MONTHS	60(95.2)	3(4.76)	63(100)		
TOTAL	160(100)	226(100)	386(100)		

Table 5 Association between grades of anemia and age at pregnancy (N= 160)

AGE AT PREGNANCY	GRADES OF ANEMIA FREQUENCY (%)				CHI-SQUARE	P VALUE
	MILD	MODERATE	SEVERE	TOTAL		
LESS THAN 21 YEARS	39(52)	28(37)	7(9)	74(100)	178.045	P<0.001
21-29 YEARS	9(56)	6(37.5)	1(6.25)	16(100)		
MORE THAN 30 YEARS	30(42)	32(45.7)	8(11.4)	70(100)		
TOTAL	78(48.7)	66(41.25)	16(10)	160(100)		

Table 5 shows that among women whose age at pregnancy was below 29 years,

majority of them had mild grade of anemia which was statistically significant.

Table 6 Association between grades of anemia and number of children (N=160).

NUMBER OF CHILDREN	GRADES OF ANEMIA FREQUENCY (%)				CHI-SQUARE	P VALUE
	MILD	MODERATE	SEVERE	TOTAL		
1 CHILD	0(0)	1(100)	0(0)	1(100)	58.7921	P<0.001
2 CHILDREN	23(65.7)	9(25.8)	3(8.5)	35(100)		
3 CHILDREN	33(50.7)	26(40)	6(9.2)	65(100)		
> 3 CHILDREN	22(37.4)	30(50.8)	7(11.8)	59(100)		
TOTAL	78	66	16	160(100)		

Table 6 shows association between grade of anemia and number of children, where we found that among the women having 2 children, majority of them had mild grade of anemia and among women with more than 3 children, majority of them had

moderate grade of anemia which was found to be statistically significant.

We found that none of the women with spacing of more than 2 years between two consecutive pregnancies were found to be severely anemic which is shown below in table 7.

Table 7 Association between grades of anemia and spacing(N=160)

SPACING	GRADES OF ANEMIA FREQUENCY (%)				CHI-SQUARE	P VALUE
	MILD	MODERATE	SEVERE	TOTAL		
2YEAR AND LESS	75(48.3)	64(41.29)	16(10.3)	155(100)	332.146	P<0.001
>2 YEARS	3(60)	2(40)	0(0)	5(100)		
TOTAL	78(48.75)	66(41.25)	16(10)	160(100)		

DISCUSSION

The prevalence of anemia in pregnant women in our study was observed to be 41.5 %, 95 % CI (36.5%, 46.4%). Study conducted by Noronha JA et al [2] has almost similar prevalence among pregnant women which was 50.14% while another study conducted by R.G. Viveki et al [4] had significantly higher prevalence of anemia of 82.9% among pregnant women.

In our study the overall prevalence of severe anemia was only 10 %. The study conducted by Toteja GS et al [5] where severe anemia was found to be 13.1% while in a study conducted by Rao S P et al, [6] none had severe anemia.

The prevalence of anemia as well as severity of anemia was significantly more in those whose age at pregnancy was less than 21 years and more than 30 years. Same result was seen in the study conducted by Lokare PO et al [7] which shows that 93.7% of pregnant women suffering from anemia were in the age group of 30 years and above followed by the age group less than 20 years (88.3%) because there is high risk of anemia in younger age due to increased iron needs because of superimposition of menstrual losses and growth in menstruating teenage girls which increases the demands for absorbed iron and these requirements are very difficult to satisfy in young pregnant

women while in elderly pregnancy there is more chance to develop anemia because of heavy menstrual blood losses. [8]

Mean age of the marriage of the subjects at the time of the study was found to be 22.46 ± 3.35 years which is comparable to the study conducted by L.H. Madhavi et al. [9]

In our study the prevalence of anemia was found to be significantly high in women with high parity and women with spacing of less than or equal to 1 year between two consecutive pregnancies. Similar result was found in a study conducted by Alene KA et al [10] and Noronha. J [2] where high prevalence of anemia was seen in women with parity of two or more and spacing less than or equal to 1 year between two consecutive pregnancies. This is because multiparous women tend to have greater menstrual losses that increase with parity. [8]

In the present study there is statistically significant association between anemia and past history of abortion, similar association was also seen in study conducted by Gautam VP [11] since abortion is one of the causes for acute blood loss which depletes iron stores in body. [12]

Low prevalence of anemia was observed among women taking Iron and Folic Acid supplements than those not

consuming the tablets; same results were stated by Agarwal KN et al [13] in his study. This is because of the fact that pregnant women require additional iron and folic acid to meet their own nutritional needs, development of foetus as well as to cope up with excessive blood loss during pregnancy. [14]

We found that in our study spacing between previous and present childbirth are inversely related to grade of anemia which was statistically significant ($p < 0.01$) as birth spacing favours replenishing the iron stores among fertile-age women. [8] However studies conducted by Gautam VP [11] and Nwachi EU [15] reported that child spacing was not associated with grades of anemia.

Result showed that in this study there was no statistically significant association between prevalence of anemia and socio-demographic variables like education, religion, type of diet and age at marriage.

CONCLUSION

Based on the study findings, prevalence of anemia among pregnant women was found to be high. Risk factors like number of children, spacing between two consecutive pregnancies, age at pregnancy and age at marriage were significantly associated with anemia. Identification of risk factors for anaemia among pregnant women will facilitate formulation of community intervention programmes. IEC and counselling sessions should be conducted to promote family planning, spacing, and compliance to iron folic acid consumption and thus prevent and control anaemia.

REFERENCES

1. Demayer EM, Tegman A. Prevalence of anemia in the World. World Health Organ Qlty 1998; 38 : 302-16.

2. Noronha JA, Bhaduri A, Bhat HV. A study based on Prevalence of anemia in pregnant women: A community based study in Udupi district. Health and population- Perspectives & issues. 2008; 31(1): 31-40, 2008 .
3. World Health Organization. Nutritional anemias. Report of a WHO Scientific Group. World Health Organization, Technical Report Series 1968; 405:5-37.
4. Viveki RG, Halappanavar AB, Viveki PR, Halki SB, Maled VS, Deshpande PS. Prevalence of anemia and its epidemiological determinants in pregnant woman. Al Ameen J Med Sci. 2012; 5(3): 216-223
5. Toteja GS, Singh P, Dhillon BS et al. Prevalence of anemia among pregnant women and adolescent girls in 16 districts of India. Food and Nutrition Bulletin 2006; 27(4):311-315.
6. Rao SP, S Srikanth. 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
7. Lokare PO, Karanjekar VD, Gattani PL, Kulkarni AP. A study of prevalence of anemia and socio-demographic factors associated with anemia among pregnant women in Aurangabad city, India. Ann Nigerian Med 2012;6:30-4
8. Viteri FE. The Consequences of Iron Deficiency and Anemia in Pregnancy on Maternal Health, the Foetus and the Infant. Sci News 1994;11:14-7
9. Madhavi LH, Singh HKG. Nutritional Status of Rural Pregnant Women. People's Journal of Scientific Research. 2011; 4(2)
10. Alene KA and Dohe AM. Prevalence of Anemia and Associated Factors among Pregnant Women in an Urban Area of Eastern Ethiopia. Hindawi Publishing Corporation 2014
11. Gautam VP, Bansal Y, Taneja DK, Saha R. Prevalence of anemia amongst pregnant woman and its socio-demographic associates in a rural area of

- Delhi. Indian Journal of Community Medicine. 2002; 27(4): 157-160
12. Iron disorder institute. Iron out-of Balance in Women. Last updated on 5-11-2015. Available at <http://www.irondisorders.org> accessed on 11-05-2015
 13. Agarwal KN, Agarwal DK ,Sharma A, Sharma K, Prasad K, Kalitha MC. Prevalence of anemia in pregnant & lactating women in India. The Indian Journal of Medical Research . 2006; 124(2):173-184.
 14. Daily iron and folic acid supplementation during pregnancy. Available at http://www.who.int/elena/titles/daily_iron_pregnancy/en . Last accessed on 12-05-2015
 15. Nwachi EU, Odekunle A, Jacinto S, Burnett M, Clapperton M, David Y et al. Anemia in pregnancy: associations with parity, abortions and child spacing in primary healthcare clinic attendees in Trinidad and Tobago. Afr Health Sci. 2010 ; 10(1): 66–70

How to cite this article: Tiwari P, Naik PR, Nirgude AS et. al. Prevalence of anemia and associated factors in pregnant women in a teaching hospital of Mangalore. Int J Health Sci Res. 2015; 5(7):32-37.

International Journal of Health Sciences & Research (IJHSR)

Publish your work in this journal

The International Journal of Health Sciences & Research is a multidisciplinary indexed open access double-blind peer-reviewed international journal that publishes original research articles from all areas of health sciences and allied branches. This monthly journal is characterised by rapid publication of reviews, original research and case reports across all the fields of health sciences. The details of journal are available on its official website (www.ijhsr.org).

Submit your manuscript by email: editor.ijhsr@gmail.com OR editor.ijhsr@yahoo.com