



Original Research Article

PREVALENCE OF ANEMIA AND ASSOCIATED FACTORS AMONG PREGNANT WOMEN RECEIVING ANTENATAL CARE AT TERTIARY HOSPITAL, VIZIANAGARAM

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ABSTRACT

Background: Even though, the prevalence of anemia is decreasing in Southern states of India and its impact on maternal morbidity and mortality is being seen less affecting, still anemia leads the overall morbidity and mortality table. Even though the community nutrition program is in place and the iron folic acid tablets are being supplied under the program, it is necessary to carry out more studies to throw light on the prevalence trends and risk factors of anemia under different settings and locations. The objective is to study the prevalence and risk factors of anemia among pregnant women at a tertiary care hospital in Vizianagaram.

Materials and Methods: Hospital based cross sectional study was carried out among 124 pregnant women. Detailed history, thorough clinical examination was carried out. For all women, hemoglobin was estimated using the Sahli's hemoglobinometer.

Results: Majority of the women (59.7%) belonged to the age group of 15-24 years of age. Majority (92.7%) were from rural area. Majority (38.7%) were home-makers. 40.3% had education level of secondary school and above. 34.7% had income level of 5001 to 10000 INR per month. 37.2% had menarche at the age of 13 years. Most of them were married at the age of 22-25 years and most of them had regular menstrual cycles. The prevalence of mild anemia was 36.3% and that of moderate anemia was 21.8%. overall prevalence of anemia was 58.1%. Among all the factors studied, no factor was found out to be significantly associated with anemia. However, the prevalence of anemia was significantly more in the third trimester. Thus, as the trimester of pregnancy increased, the prevalence of anemia increased which was statistically significant. ($p < 0.05$).

Conclusion: The prevalence of anemia is still very high in the hospital settings among the pregnant women. As the trimester of pregnancy increased, the prevalence of anemia also increased.

Keywords: Anemia, prevalence, associated factors.

INTRODUCTION

It has been estimated that about 200 crore individuals all over the world are suffering from anemia. This comes out to be more than 30% of the global population. Individuals from the developing countries are affected more compared to their

counterparts in the developed countries. Anemia affects all age groups and genders without discriminating among them. Prevalence of anemia is 43% in the developing countries compared to only 9% in the developed countries.^[1]

The most vulnerable group affected by anemia is the pregnant women. Anemia among pregnant women is

an important public health problem. This is especially true so much in the developing countries. Various social and cultural factors are responsible for this particular situation. Few important among them are lack of education, negligence, overwhelming poverty, taboos, more bleeding due to parasite infections etc. World Health Organization has estimated that the anemia prevalence among the pregnant females was at around 41.8% globally. As per World Health Organization estimates, the anemia prevalence among the pregnant females was at around 52.5% in the South East Asia.^[2,3]

Anemia during pregnancy increases the proportion of morbidity and mortality among pregnant women. It can lead to low birth weight, intra-uterine growth retardation, prematurity, sudden abortions and many more. Of all the deaths among mothers, anemia is said to be responsible for about one fifth of them.^[4,5] Even though, the prevalence of anemia is decreasing in Southern states of India and its impact on maternal morbidity and mortality is being seen less affecting, still anemia leads the overall morbidity and mortality table. Even though the community nutrition program are in place and the iron folic acid tablets are being supplied under the program, it is necessary to carry out more studies to throw light on the prevalence trends and risk factors of anemia under different settings and locations. Hence, present study was undertaken to study the prevalence and risk factors of anemia among pregnant women at a tertiary care hospital in Vizianagaram.

MATERIALS AND METHODS

All consecutive pregnant women attending for antenatal checkup in the department of Obstetrics and Gynecology OPD at Maharaja Institute of medical sciences college and Teaching Hospital were included in the study. Pregnant women with multiple pregnancies, a history of recent blood transfusion, chronic kidney disease, and other chronic medical diseases were excluded from the study. All participants were advised for Haemoglobin level check-up. At the first Antenatal Checkup (ANC) visit as routine antenatal investigations and pre-tested questionnaire was-asked and noted about socio-demographic variables and associated risk factors of

anemia. On the basis of hemoglobin level participants were classified according to World Health Organisation (WHO) classification of anemia.

Type of Study: This is a cross sectional study conducted in tertiary care hospital in Vizianagaram.

Study population: All pregnant women attending tertiary health care hospital, Vizianagaram and the pregnant women who gave consent and filled the questionnaire were taken for study.

Sample size: Prevalence of anemia in previous studies is 54% according to National family health survey-5. Considering the previous studies taking the most common value as 60%. Considering allowable error of 15% prevalence and 95% confidence interval ($\alpha=0.5$). $n=113$ Considering the 10% dropout rate total sample size equals to 124.

Inclusion and exclusion criteria:

Inclusion criteria: All pregnant woman who visited the tertiary care hospital.

Exclusion criteria:

1. Pregnant women who were severely ill and unable to respond.
2. Subjects who denied informed consent.
3. Subjects who were already suffering from hematological disorders, myeloproliferative diseases, leukaemias.

Data collection: A Semi-structured questionnaire was used for collection of data. It is divided into few parts.

1. SocioDemographic data
2. Gynecology and obstetrics data Demographic data: Age, religion, residence, Kuppuswamy scale was used to obtain the details like occupation of head of the family, monthly income and occupation of the pregnant women, Age at menarche and any related clots and any abnormalities during menstrual cycle was also collected.

Gynecology and obstetrics data: Age at first pregnancy, previous abortions, previous pregnancies and any related chronic diseases data was included.

Measurement of hemoglobin: Hemoglobin was estimated by Sahli's Method

Proportions were used to describe the data. Chi square test was used to determine the significance whenever applicable or else Fischer exact test was used. P value of less than 0.05 was taken as statistically significant.

RESULTS

Table 1: Distribution of study subjects as per socio-demographic variables

Socio-demographic variables	Number	Percentage
Age (years)	15-24	74
	25-34	47
	> 34	3
Residence	Rural	115
	Urban	9
Religion	Christian	37
	Hindu	75
	Muslim	12
Occupation	Home-maker	48
	Government employee	35
	Private employee	15

	Farmer	3	2.4
	Merchant	21	16.9
	Daily labourer	2	1.6
Educational status	Unable to read & write	7	5.6
	Read and write	31	25
	Primary education	36	29
	Secondary education & above	50	40.3
Monthly income (INR)	< 2000	24	19.4
	2001-5000	20	16.1
	5001-10000	43	34.7
	> 10000	37	29.8
Age at menarche (years)	< 11	12	14.8
	12	24	29.7
	13	30	37.2
	14	26	32.2
	15 & above	2	2.4
Age at marriage (years)	18-21	22	17.8
	22-25	72	58
	> 25	30	24.2
Menstrual history	Regular	96	77.4
	Irregular	28	22.6

Majority of the women (59.7%) belonged to the age group of 15-24 years of age. Majority (92.7%) were from rural area. Majority (38.7%) were home-makers. 40.3% had education level of secondary school and above. 34.7% had income level of 5001 to

10000 INR per month. 37.2% had menarche at the age of 13 years. Most of them were married at the age of 22-25 years and most of them had regular menstrual cycles. [Table 1]

Table 2: Prevalence of anemia among pregnant women

Anemia	Number	%
Mild	45	36.3
Moderate	27	21.8
Severe	0	0
No anemia	52	41.9

The prevalence of mild anemia was 36.3% and that of moderate anemia was 21.8%. overall prevalence of anemia was 58.1%. [Table 2]

Table 3: Association of various factors with anemia

Factors	Anemia		P value	
	Present	Absent		
Age (years)	15-24	45	29	0.569
	25 & above	27	23	
Residence	Rural	68	47	0.611
	Urban	4	5	
Religion	Christian	26	11	0.06689
	Hindu	42	33	
	Muslim	4	8	
Occupation	Working	41	34	0.3674
	Home-maker	31	17	
Literacy status	Illiterate & able to read & write	23	15	0.8635
	Primary & above	49	37	
Monthly income (INR)	Up to 5000/-	22	22	0.2470
	> 5000/-	50	30	
Eating green vegetables	In a week	29	15	0.2625
	Monthly	43	37	
Consumption of fruits	In a week	43	30	0.7434
	Monthly	26	22	
Tea consumption	Yes	55	40	0.8842
	No	17	12	
Age at menarche (years)	< 13	52	39	0.8891
	> 13	20	13	
Contraceptive use	No	25	17	0.9654
	Yes	47	35	
Vaginal bleeding	No	3	2	0.7091
	Yes	69	50	
Trimester of pregnancy	First	4	13	0.006231
	Second	46	29	
	Third	22	10	

Intake of iron and folic acid tablets	No	1	1	0.6246
	Yes	71	51	

Among all the factors studied, no factor was found out to be significantly associated with anemia. However, the prevalence of anemia was significantly more in the third trimester. Thus, as the trimester of pregnancy increased, the prevalence of anemia increased which was statistically significant. ($p < 0.05$). [Table 3]

DISCUSSION

In the present study, Majority of the women (59.7%) belonged to the age group of 15-24 years of age. Majority (92.7%) were from rural area. Majority (38.7%) were home-makers. 40.3% had education level of secondary school and above. 34.7% had income level of 5001 to 10000 INR per month. 37.2% had menarche at the age of 13 years. Most of them were married at the age of 22-25 years and most of them had regular menstrual cycles. The prevalence of mild anemia was 36.3% and that of moderate anemia was 21.8%. overall prevalence of anemia was 58.1%. Among all the factors studied, no factor was found out to be significantly associated with anemia. However, the prevalence of anemia was significantly more in the third trimester. Thus, as the trimester of pregnancy increased, the prevalence of anemia increased which was statistically significant. ($p < 0.05$).

Gebre A et al,^[6] carried out a study to determine the prevalence and risk factors of anemia among the 714 pregnant women attending the ANC clinics in 2014. The prevalence of anemia was 36.1% which is quite lower than that in the present study of 58.1%. They noted that the prevalence of mild anemia was 58.5% which is higher than that we found in the present study of 36.3%. they found that being from rural area, being illiterate, not taking supplements and lesser meal frequency were significant risk factors of anemia. However, we did not find any such significant association.

Tegegne KT et al,^[7] found that the prevalence of anemia was 24.7% which was less than half when compared to the present study prevalence of 58.1%. The mild type of anemia prevalence which the author reported was 78.1% which is very high compared to the present study. The factors like illiteracy, food deficient of iron, and malaria infection were found to be significantly associated with anemia among the pregnant women. We did not find any such kind of association.

Abdilahi MM et al,^[8] studied prevalence and risk factors of anemia in 360 pregnant women. The overall prevalence of anemia was 50.6% which is comparable to the prevalence that we found in the present study i.e. 58.1%. In their study, 33% had mild anemia, 54.9% had moderate anemia and 12.1% had severe anemia. In the present study no one was having severe anemia. The authors found that the third trimester was significantly associated with the

anemia and this finding is exactly similar to the finding of the present study. Other factors which were found to be significant by the author but not by us are less number of ANC visits, and no use of iron supplementation.

Balakrishna AM et al,^[9] carried out a study similar to the present study i.e. hospital based study on prevalence of anemia among 368 pregnant women. The authors found that majority were Hindu, homemakers and belonged to nuclear family. We also found that majority were Hindu and homemakers. Type of family was not studied by us. They reported that the prevalence of anemia was 56% which is very close to the present study figure of 58.1%. the authors found that the prevalence of mild anemia was 46.6% which is higher than our findings. 1.5% of the subjects in their study had severe anemia compared to none in the present study. They found that the religion, occupation, gestational age and history of abortion were associated with anemia, but we found that only gestational age was associated with anemia in the present study. The authors in the multivariable analysis found that women in the first trimester were more anemia compared to women in the last trimester in the present study.

Ahmed S et al,^[10] carried out a study in Bangladesh among 384 pregnant women from a hospital. They found that the prevalence of anemia was 58.9% which is exactly similar to the findings of 58.1% of the present study. In their study 36.3% had mild anemia which is again similar to the present study. But, 1.3% having severe anemia was not matching with the present study as no one in the present study had severe anemia. They found that having income of 11,000 – 20,000 Taka, joint family, third trimester, lack of appropriate birth spacing, more blood loss previously were significantly associated with anemia. We found significant association with only one factor i.e. third trimester.

Balta B et al,^[11] carried out a facility based study among 309 pregnant women. Prevalence of anemia recorded by them was only 31% compared to the 58.1% reported in the present study. Most of them (72%) had mild anemia compared to only 33% in the present study. 2.2% of the pregnant women in their study had severe anemia compared to none in the present study. The authors found that literacy and dietary diversity were significantly associated with anemia. We did not study the dietary diversity and literacy was not found to be significantly associated factor in the present study.

Siame L et al,^[12] in their retrospective study of 307 pregnant women found that the prevalence of anemia was 42.7% which is slightly lower than what we found in the present study. Mild anemia was seen in only 16.8% of the subjects compared to 33% in the present study. 5.1% of the pregnant women had severe kind of anemia compared to none in the present study. They found that the prevalence of

anemia was more among those women who were in their second or third trimester. We found that the prevalence of anemia was significantly more if the woman was in the third trimester. Other factors which they found to be significant but not by us are history of abnormal uterine bleeding, high parity, and having an underlying medical condition.

Nasir M et al,^[13] assessed the magnitude and risk factors of anemia among 391 pregnant women. The prevalence of anemia was low i.e. 30.9% compared to the present study of 58.1%.

Bansal R et al,^[14] in their cross sectional study of 500 pregnant women found that the prevalence of anemia was 81.8% which was very high when compared to the present study of 58.1% and other studies used in the discussion till now. They found that residence, educational status, monthly family income, occupation, gestational age, iron folic acid supplementation, dietary habits of not eating green leafy vegetables, meat and animal products, and drinking tea and coffee immediately after meal were statistically significantly associated with the anemia. We did not find any such association.

Issah Sumaila et al,^[15] studied 496 pregnant women in their cross sectional study. And noted that the prevalence of anemia was moderate which is comparable to the present study. Illiteracy tripled the risk of anemia. The risk of anemia became double when the birth interval of two years was not practised. Same thing was seen with primipara and multipara women and also the risk got doubled when the pregnant woman consumed the pica. These factors were either not studied by us or even if studied were not found out to be significantly associated with anemia.

Asrie F et al,^[16] conducted institution based study. Only 25.2% were found to be have anemia compared to 58.1% found in the present study. The authors also concluded that the prevalence of anemia found by them was lowest compared to other studied from the review of the literature.

CONCLUSION

The prevalence of anemia is still very high in the hospital settings among the pregnant women. As the trimester of pregnancy increased, the prevalence of anemia also increased.

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