Original Research Article

Assessment of prevalence and risk factors for anaemia in pregnant women attending Karnataka institute of medical sciences, outpatient department, Hubballi, Karnataka, India

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ABSTRACT

Background: Anaemia in pregnancy is one of the major causes of maternal morbidity and mortality in India and world. Anaemia in pregnancy continues to be a problem in spite of national programs for its prevention and control. It accounts for 1/5th of maternal deaths worldwide and 16% in India and is the major factor responsible for low birth weight, abortions, premature birth, and post-partum haemorrhage. Hence determining the status and factors influencing anaemia among pregnant women is essential to treat and prevent the same. Objective of this study was to assess the prevalence and risk factors associated with anaemia among pregnant women.

Methods: A cross sectional study was conducted among 200 pregnant women attending for antenatal care at KIMS OPD from 3rd June to 4th July. A pretested, semi-structured questionnaire was applied to collect data. Haemoglobin estimation was done by Sahli's method.

Results: Prevalence of anaemia among pregnant women was found to be 81%; majority had moderate anaemia 57%. The mean age of pregnant women in the study is 24.55 years and 46.5% belong to lower socioeconomic status, 43% lived in joint families. Factors influencing anaemia were multi-parity, short inter-pregnancy interval, no history of recent deworming and iron and folic acid tablets intake.

Conclusions: In the present study, the prevalence of anaemia among pregnant women was found to be very high i.e., 81% especially among illiterates, low income groups, multiparous women, short inter-pregnancy interval, no history of recent deworming and iron and folic acid tablets intake.

Keywords: Anaemia, Antenatal care visits, Pregnant women, Risk factors

INTRODUCTION

Anaemia is the most common nutritional deficiency disorder in the world. It is a major health problem that affects 25-50% of the population of the world and approximately 50% of pregnant women.[1] WHO has estimated that prevalence of anaemia is 14% in developed countries and 51% in developing countries and 65-75% in India.[1] WHO has defined anaemia when the hemoglobin level is less than 12 g/dl in non-pregnant women, and less than 11 g/dl in pregnant women.[2] Causes for increased prevalence of anaemia are very much prevalent especially in the under-privileged sector. Pre-conceptional factors contributing for anaemia during pregnancy are faulty diet, faulty absorption mechanism because of the high prevalence of intestinal infestations, blood loss due to repeated pregnancies at short intervals along with prolonged periods of lactation, excess blood loss during menstruation, hookworm infestation, chronic malaria, chronic blood loss due to bleeding piles and dysentery.[3]

Factors responsible for developing anaemia during pregnancy are increased demands of iron due to socio-economic factors, loss of appetite and vomiting,

diminished absorption due to intake of antacids, disturbed metabolism due to presence of infection and excess demand due to multiple pregnancies.[3]

The consequences of anaemia in women are enormous as the conditions adversely affect their productive and reproductive capabilities.[4] First anaemia reduces women's energy and capacity for work and can therefore threaten household food security and income. Secondly severe anaemia in pregnancy impairs oxygen delivery to foetus and interferes in normal intra-uterine growth resulting in intra-uterine growth retardation (IUGR), still birth, low birth weight (LBW) and neo-natal deaths.[4] Hence anaemia is a major contributor to poor pregnancy and birth outcomes in developing countries as it predisposes to premature delivery, increased premature mortality and increased risk of death during delivery and post-partum.[4]

Keeping this view in mind, this study is a small attempt to assess the magnitude of anaemia and its associated risk factors among pregnant females attending KIMS OPD, Hubballi; Karnataka, India.

METHODS

A cross sectional study was conducted during 3rd June - 4th July 2019, to assess the prevalence and risk factors for anaemia among pregnant women attending KIMS OPD, Hubballi, Karnataka, India.

Permission was obtained from head of the department, of obstetrics and gynaecology, KIMS and verbal informed consent was taken from the pregnant woman.

Convenient sampling method was followed and a sample size of 200 was obtained taking prevalence of 58% according to Guidelines for control of iron deficiency anaemia: national iron plus initiative; adolescent- division ministry of health and family welfare, government of India. New Delhi and using the formula;

$$\sqrt{n} = \frac{1.96\sqrt{pq}}{l}$$
$$\sqrt{n} = \frac{1.96\sqrt{0.58 \times 0.42}}{0.07}$$
$$\sqrt{n} = \frac{1.96 \times 0.494}{0.07}$$

Where,

n = sample size
p = prevalence = 0.58
q = (1-p) = 0.42
l = permissible error =7%

n=192
Sample size was found to be 192.
Rounded off to 200.

A pre-tested, semi structured questionnaire was prepared which consisted of socio demographic data and specific history, menstrual history, obstetric history, physical examination and investigation. Gestational age of present pregnancy, iron folic acid supplementation and nutritional supplements from anganwadi centres are included. Risk factors includes age of 1st conception, multiple pregnancies, inter pregnancy interval, history of deworming use of toilets, coffee/tea consumption physical examination was done to measure height, weight, BMI, pallor. Investigation included haemoglobin estimation using Sahli's haemoglobinometer.

Statistical analysis

Data was entered in MS-excel and analysed using SPSS-21 software and Chi-square test was applied as test of significance and p value of <0.05 was considered statistically significant

RESULTS

Mean age of the antenatal mother attending KIMS OPD was 24.55 years. Mean age of menarche of the antenatal mother was found to be 13.38 years. Mean age at first conception of the antenatal mothers attending KIMS OPD was found to be 21.22 years. Mean height of this study participants was found to be 1.56 meters.

Majority of the study participants were Hindu (68.5%), literate (92%), belonging to class IV (37%) of socio-economic status according to modified BG Prasad classification coming from rural background (68%) (Table 1).

Table 1: Socio-demographic profile of the study participants.

Factor		Number (%)
Religion	Hindu	137 (68.5)
	Muslim	62 (31)
Occupation	Home maker	159 (79.5)
	Unskilled labourer	38 (19)
Residence	Rural	136 (68)
	Urban	64 (32)
Education	Illiterate	16 (8)
	Literate	184 (92)
Socio-economic status	Class IV	74 (37)
	Class III	56 (28)
	Class II	44 (22)
Type of family	Nuclear	67 (33.5)
	Joint	86 (43)
	Three generation	47 (23.5)
Type of card	BPL	184 (92)
	APL	16 (8)

Majority of the study participants were Hindu, literate, belonging to class IV of socio-economic status according

to modified BG Prasad classification coming from rural background.

The most common complication during previous pregnancy was low birth weight (8.5%) followed by pre-term delivery (2.5%) (Table 2).

Table 2: Complications in previous pregnancy.

Complications	Number (%)
Low birth weight	17 (8.5)
Pre-term delivery	5 (2.5)
Gestational hypertension	4 (2)
Gestational diabetes mellitus	3 (1.5)
Haemorrhage	3 (1.5)
Others	1 (0.5)

The most common complication during previous pregnancy was low birth weight followed by pre-term delivery.

Most common symptom among the study participants was fatigue (47%) followed by dizziness (19.5%) and headache (19.5) (Table 3).

Table 3: Symptomatology among the anaemic study participants.

Symptoms	Number (%)
Fatigue	94 (47)
Dizziness	39 (19.5)
Headache	39 (19.5)
Swelling of feet	33 (16.5)
Breathlessness	12 (6)
Palpitations	3 (1.5)

Most common symptom was fatigue followed by dizziness and headache.

Majority of anaemic mothers had moderate anaemia (57%) followed by mild anaemia (23%).

Only 1% of the study participants had severe anaemia and remaining 17 % had no anaemia (Table 4).

Table 4: Grading of anaemia among the study participants.

Type (Hb in g/dl)	Number (%)
Mild anaemia (10-10.9)	46 (23)
Moderate anaemia (7-10)	114 (57)
Severe anaemia (<7)	2 (1)
No anaemia (>11)	38 (17)

Majority of anaemic mothers had moderate anaemia.

The types of anaemia mentioned in the above table is according to WHO guidelines.

In this study 86.2% of the mothers who got married at the age of <20 years had anaemia while 76.4% of the mothers who got married at the age of 20-29 years had anaemia.

A total 78.4% of antenatal mothers whose age at first conception was between 20 and 25 years were anaemic whereas 89.75% of antenatal mothers whose age at first conception was < 20 years were anaemic.

Multigravida mothers were at more risk of anaemia when compared to primigravida mothers.

Only 35% of the antenatal mothers had taken iron and folic acid tablets.

The overall prevalence of anaemia in this study was found to be 81%.

Majority of the anaemic mothers (38.65) belong to class IV socioeconomic status of modified BG Prasad classification followed by class III (27.78%) and class II (20.9%).

A total 43.83% of the anaemic mothers resided in joint family followed by nuclear family (32.1%). 78.5% of the study participants used to take mixed diet. 10.5% of the study participants practiced open air defecation. 40.1% of the anaemic mothers had an inter-pregnancy interval of <2 years and 27.78% of the anaemic mothers had an inter-pregnancy interval of >2 years. 72% of the study participants have received the supplementary nutrition from anganwadi's (Table 5).

DISCUSSION

Anaemia in pregnancy is one of the major causes of maternal morbidity and mortality in the world including India.[2] In this study, total 200 pregnant women participated, among them 53% of the study participants were in the age group of 20-29 years, 68.5% of the study population were Hindu by religion, 43% resided in joint family, 46.5% belonged to low socio-economic class. In a similar study conducted by Lokare PO et al. 71% were in the age group of 20-29 years, 51.7% were Muslim by religion, 45.4% resided in joint family, 31% belonged to lower socio-economic class.[5]

The mean age for menarche, and first conception was 13.38%, and 21.22 years respectively. In a similar study conducted by Prashant D, mean age for menarche was 13.7 years marriage 19.71, first conception 21.17 years which was similar in comparison to this study.[1]

In the present study prevalence of anaemia was found to be 81%. The proportion of mild moderate and severe anaemia was 23%, 57%, 1% respectively. In a similar study conducted by Gopinath at JSS college Mysuru, prevalence of anaemia was found to be 51% prevalence of mild, moderate and severe anaemia was 37%, 14%,

0.33% respectively. In comparison to this the study showed higher prevalence of anaemia.[2]

In the present study only 35.57% consumed iron folic acid supplements. In similar study conducted by Prashant D, 87.5% have consumed iron folic acid supplements.[1]

In the study conducted by Jogiya PD 93% of mothers had taken more than four ANC visits as recommended. In contrast to this in this study only 61% have taken more than four ANC visits.[6]

In the study conducted by Bano F et al, anaemia was more prevalent in those 83% of pregnant women who did not have the history of taking anti-helminthic drugs within 6 months prior to conception which is similar to this study.[7]

In the same study anaemia was more prevalent among primigravida than multigravida; in contrast to above findings, in this study anaemia was prevalent among multigravida (85%) than primigravida (76.5%).[7]

Table 5: Risk factors and their relation to anaemia.

Risk factors		Anaemia	No anaemia	Chi-square value	P value
Socio-economic status	Class I	5	2	1.193	0.551
	Class II	34	10		
	Class III	45	11		
	Class IV	63	11		
	Class V	15	4		
Type of family	Nuclear	52	15	0.755	0.686
	Joint	71	15		
	Three generation	39	8		
Diet	Vegetarian	35	8	0.006	0.941
	Mixed	127	30		
Practicing open defecation	Yes	17	4	0.007	0.997
	No	145	34		
Recent history of deworming	Yes	11	5	1.696	0.193
	No	151	33		
Parity	Nulliparous	54	17	1.733	0.412
	Para 1 and 2	91	18		
	Para 3 and above	17	3		
Inter pregnancy interval	<2 years	65	10	2.627	0.269
	>2 years	45	12		
	Not applicable	52	16		
Supplementary nutrition from anganwadi	Yes	119	25	0.893	0.343
	No	43	13		
History of previous blood transfusion	Yes	53	7	2.995	0.084
	No	109	31		

P value of <0.05 was considered significant.

In study conducted by Raj PBU et al, 59.86% were multiparous and in the present study 64.5% were multiparous.[8]

In the present study 54% were in third trimester of pregnancy; while in a study conducted by Acharya et al, showed 22.96% were in third trimester.[9]

In a similar study conducted by Gopinath et al, 76% were practicing open air defecation where as in contrast in this study only 10.5% were practicing open air defecation.[2]

In present study 63.5% had pallor whereas, in similar study Gopinath 88.67% presented with pallor.[2]

Limitations of this study, since it is a hospital-based study, the results cannot be generalized to population.

Hematological correction could not be assessed due to lack of follow up and Short time period of the study.

CONCLUSION

Most of the pregnant women had anaemia, with the prevalence being 81%. Majority of the anaemic women had moderate anaemia (57%). Social factors like literacy status, socioeconomic status, type of family was contributing to the high prevalence of anaemia. Maternal factors like gestational age, parity, inter-pregnancy interval was contributing to higher prevalence of anaemia. Utilization of ANC services is poor with only 61% of mothers attending >4 ANC visits and less ANC visits was a major contributor to anaemia. Lack of intake of iron and folic acid supplements contributes for the

higher prevalence of anaemia. Women with no history of deworming had higher frequency of anaemia.

Recommendations

It needs focusing over the improvement of general health status of pregnant women not only at antenatal, intra-natal and post-natal stage but also on the adolescent health before marital life. All pregnant women should be educated to realize the importance of good dietary habits and regular intake of iron and folic acid tablets during pregnancy. Efforts should be made for motivating the mothers to utilize available ANC services and visit the ANC's regularly throughout their pregnancy and family planning services especially in under-privileged population.

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