Original Research

A Cross-Sectional Study On Burden And Factors Associated With Anemia Among Pregnant Women Attending Antenatal Clinic At A Tertiary Care Hospital In Kolkata

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Abstract

Background: Anemia during pregnancy in developing countries is a major public health problem.WHO defines hemoglobin level below 11 gm% is anemia among pregnant.According to NFHS 5 the prevalence of anemia among pregnant woman in India is 52.2%. **Objective:** To find out the proportion of anemia and it's associated factors among pregnant women attending antenatal clinic in a tertiary care hospital. **Methods**: A hospital based cross-sectional study was done in antenatal clinic for 1 month and a total of 261 patients were selected by systemic random sampling based on OPD registration.Data were analyzed with SPSS version 19.0 and univariate logistic regression wascarried out to find out different factors associated with anemia among pregnant mothers. **Results:**In our study62.8% of the antenatal mothers were anemic.In univariate logistic regression with factors having risk of anemia such aseducation of mother**(OR1.790 p=.009 95%CI:1.050-3.051)** , socio economic status **(OR 2.534 p=.001 95%CI 1.406-3.940),** teenage pregnancy**(OR1.984 p=.009 95% CI:1.90-3.308)**,increasing gestational age **(OR 1.051 p=.002 95%CI 1.018-1.095),**increasing gravida (**OR 1.397 p=.019 95%CI:1.057-1.846)**, iron folic acid tablet intake (**OR 2.155,p=.007 95%CI:1.123-3.65))** intake of iron rich food**(OR 1.790 p=.032 95%CI:1.050-3.051 p=.032)**were found statistically significant association with anemia, whereas intake of tea after food and intake of extra meal had no statistically significantassociation with anemia among the study subjects.**Conclusion**: Burden of anemia among pregnant mothers should be addressed with good nutritional habits, early monitoring at antenatal clinic and rigorous implementation of Anemia Mukt Bharat program.

Keywords: Anemia, Iron supplementation, Pregnancy, Gravida

INTRODUCTION

Anemia is the commonest nutritional deficiency disorder in the world, particularly in developingcountries[(4)] Anemia during pregnancy in developing countries is a major public health problem[(10)].The World Health Organization (WHO) defines anemia as a condition in which the hemoglobin concentration of a woman during pregnancy is < 11gm/dl.Though anemia is easily

treatable and largely preventable disease if timely detected, it still continues to be significantly prevalent among pregnant mothers. In the world India ranks first in anemia among pregnant mothers[5]. Anemia is the second most common cause of maternal death in India and contributing to about 80% of the maternal deaths caused by anemia in South East Asia. Anemia during pregnancy also have been associated with increased risk of low birth weight, intra uterine growth restriction, premature delivery, postpartum hemorrhage and maternal and child mortality. [13].Government of India launched in 1973 National Nutritional Anemia Prophylaxis Program (NNAPP) aimed at iron-folic acid supplementation of 100mg elemental iron and 500 mcg of folic acid during pregnancy. In 1991[5] National Anemia Control Program (NACP) has been started to test detect and treat strategy for the management of anemia in all settings. "National Iron Plus Initiative" launched in 2013[15] is a comprehensive strategy to combat the public health challenge of iron deficiency anemia which is prevalent in India. In 2018 Anemia Mukta Bharat [1] was started with prophylactic iron and folic acid supplementation. Daily one tablet of 60 mg elemental iron and 500 mcg folic acid is given to pregnant women for 180 days.Despite of this in India anemia in pregnant women still very prevalent.This institution based observational study was undertaken to find out the proportion of anemia among pregnant mother and to find out the various factors influencing anemia in pregnant women.

Objective:

1) To assess socio demographic profile of pregnant mothers
2) To find out proportion of anemia of study subjects
3) To find out associationif any with factors having risk of anemiaamong study subjects

MATERIALS AND METHODS

Methodology:

a) **Study Type**: Institution based observational study
b) **Study Design**: Cross-sectional
c) **Study place**: Antenatal OPD of Calcutta National Medical College & Hospital
d) **Study Period**: 10/12/21 to 10/01/22
e) **Study Population**: Mothers attending antenatal clinic of Calcutta National Medical College & Hospital
f) **Inclusion criteria**: All pregnant mothers willing to participate in the study
g) **Exclusion criteria**: Mothers those who required urgent investigations as advised by OPD doctor.
h) **Sample size:** 261
i) **Sample size calculation:** Sample size of 261 was calculated by $Z^2\frac{pq}{l2}$,p=62.3% (As per National Family Health Survey 5[3]2019-20), 12% relative error, and q=(1-p)
j) **Sampling Design:** By review of previous years daily attendanceit was assumed that average 240 pregnant woman visited per day at antenatal clinic of Calcutta National Medical College & Hospital. Antenatal clinic is from 10 am to 2 pm. For interview of each pregnant mother 20 minutes was needed. So, 12 pregnant mothers were interviewed per day. With a random start, a linear systemic sampling was adopted with sampling interval 20.This was repeated for each day of interview. 22 OPD days were required for this study. If any patient refused to participate next patient was included without altering the interview sequence.
k) **Study Tool**: 1) Predesigned, pretested & semi-structured questionnaire2)Health Records: Maternal and child Protection Card
l) **Study technique**: Face to face interview
m) **Study Variable**: i) Sociodemographic variable: Age, age of marriage, education of the mother, religion, occupation, Type of family, Monthly family income, Education of the husband

ii) Obstetric Variable: Gravida, Parity, birth interval, age of the mother in 1st pregnancy.
iii) Antenatal variables: Eating habits, iron-folic acid tablet intake, Iron rich food intake, intake of extra meal
n)**Ethical Clearance**: Ethical clearance has been taken from Ethical committee of Calcutta National Medical College.
o) **Statistical analysis**: Data analysis was done by MS excel'10 and IBM SPSS version 19.

RESULT

Table 1: Socio-demographic characteristics of the study participants (n=261)

Socio demographic characteristics	Number (%)
Age	
16-20	62 (23.8%)
21-25	107 (40.9%)
26-30	61 (23.4%)
31-35	24 (9.2%)
36-40	7 (2.7%)
Age of marriage	
12-15	31(11.8%)
16-19	140 (53.6%)
20-23	67 (25.67%)
24-27	18 (6.89%)
28-31	5 (1.91%)
Religion	
Hindus	195 (75%)
Muslims	63 (24%)
Christians	3 (1%)
Education of the mother	
Illiterate	23 (8.8%)
Primary	45 (17.2%)
Middle-school	60 (23%)
Secondary	73 (28%)
Higher Secondary	36 (13.8%)
Graduate and above	24 (9.2%)
Occupation of the mother	
Works at home	255 (97.7%)
Works out of home	6 (2.3%)
Socioeconomic Status (Modified B.G. Prasad Scale 2021)	
Upper class	31 (11.8%)
Upper middle class	50 (19.2%)
Middle class	64 (24.6%)
Lower middle class	56 (21.5%)
Lower class	60 (22.9%)
Type of family	
Nuclear	110 (41.76%)
Joint	151 (58.24%)
Education of husband	
Illiterate	47 (18%)
Primary	51 (19.5%)
Middle-school	72 (27.6%)
Secondary	27 (10.4%)
Higher Secondary	34 (13%)
Graduate and above	30 (11.5%)

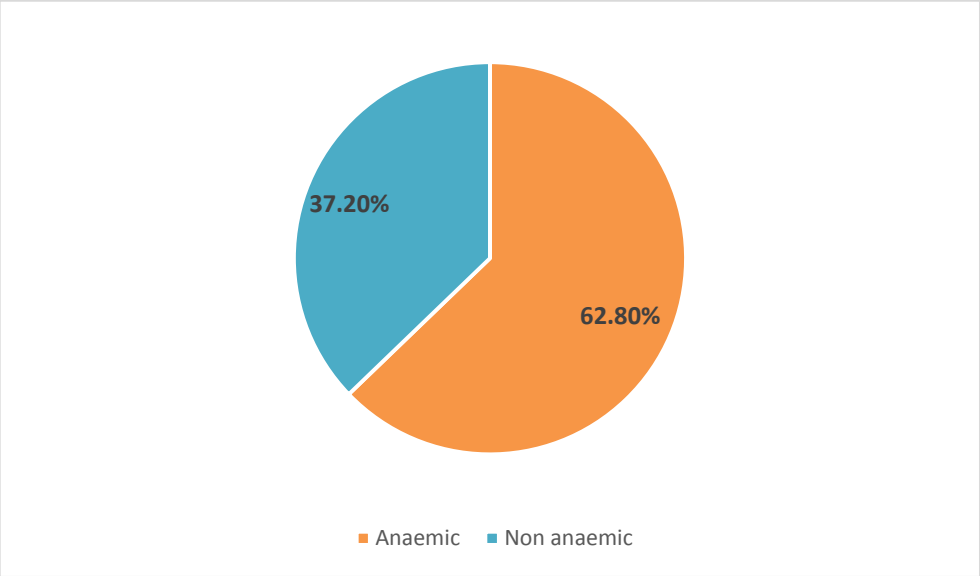

Fig 1: Shows distribution of study population according to their status of anemia (n=261)
• Anemia: Hb% < 11gm% Non- anemia: Hb% ≥ 11gm%
Inference: Most (62.8%) of the antenatal mothers were anemic

Table:3 Univariate logistic regression analysis for association of different factors with risk of anemia (n=261)

Factors		Anemia				
		Yes	No	OR	95% C. I.	P value
Teenage Pregnancy	< 19 years	92(70.76%)	38(29.24%)	1.984	1.190 – 3.308	.009
	>19 years	72(55.38%)	59(45.03%)	1		
Gravida ↑				1.397	1.057-1.846	.019
Gestational Age ↑				1.051	1.018-1.095	.002
Socio economic status	Middle &lower	110 (69.63%)	48 (30.73%)	2.354	1.406 -3.940	.001
	Upper &upper middle	50 (50%)	50(50%)	1		
Education of mother	Up to Secondary	128(67.72%)	61(32.27%)	1.790	1.050-3.051	.009
	Above Secondary	36(50%)	36(50%)	1		
Intake of iron rich food	Irregular	71(71%)	29(29%)	2.155	1.1236-3.650	.007
	Regular	93(57.76%)	8(42.23%)	1		
Iron folic acid tablet intake	Irregular	68(73.91%)	24(26.08%)	2.155	1.1236-3.650	.007
	Regular	96(56.08%)	73(43.19%)	1		
Intake of extra meal	Irregular	43(70.49%)	18(29.50%)	1.560	0.840-2.896	0.159
	Regular	121(60.5%)	79(39.5%)	1		
Tea after food	Yes	18(72%)	72(28%)	1.585	0.840-2.896	.156
	No	146(61.86%)	90(38.13%)	1		

Inference: In univariate logistic regression with factors having risk of anemia such as teenage pregnancy,iron folic acid tablet intake, increasing gravida, increasing gestational age,intake of iron rich food and education of mother were found to be statistically associated with anemia among study population.

DISCUSSION

In this study majority (40.3%) of the study subjects were in the age group 18-25 years. The age of marriage for most of the women is within 19 years (53%). The overall prevalence of anemia among pregnant women in this study is 62.8% whereas according to NFHS -5 the prevalence of anemia

among pregnant women is 62.3% in West Bengal.In this study anemia is more prevalent among multigravida mothers (92%).A study conducted at Bhatinda[2] in Punjab got similar result, anemia more in multigravida mothers (70.4%). This study shows prevalence of anemia increases with weeks of gestation, mothers of 25 weeks and above (3rd trimester) are more anemic (55.48%) compare to mothers of below 25 weeks (1st and 2nd trimester) mothers (44.72%) and there is significant association between age of gestation and anemia. Similar result was found in a study conducted at Kolar district in Karnataka[16] and in a studyatMkuranga district in Tanzania[18].In our study middle and lower socioeconomic status study subjects known to be significantly associated with anemia as revealed in another research in public sector hospital at Bangalore[4].In our study regular intake of iron-folic acid tablets is statisticallysignificantly association with anemia but in a study in rural medical college in West Bengal[12]it was found anemia among pregnant mothers didn't have any statistically significant association with regular intake of iron-folic acid tablets. Anemia is prevalent among less educated pregnant mothers in a study done in Jaipur [17] inthis study anemia more common among pregnant mothers having education upto secondary level education.Similar result of anemia among less educated pregnant mothers found in a study conducted at a medical college in Bhatinda,[2,14] Punjab.In this study intake of extra meal daily has no significant association (p = 0.6131) with anemia whereas in a study in South Ethiopia[6]significantassociation was found between anemia and intake of extra meal. In our study intake of iron rich food like green leafy vegetables, egg, fish and meat has no statistically significant association with anemia but in a study at a medical college at Bhatinda[14] in Punjab got just the opposite result. In our study middle and lower socioeconomic status study subjects known to be significantly associated with anemia as revealed in another research in public sector hospital at Bangalore[4]. In our study regular intake of iron-folic acid tablets is statisticallysignificantly association with anemia but in a study in rural medical college in West Bengal[12]it was found anemia among pregnant mothers didn't have any statistically significant association with regular intake of iron-folic acid tablets.

CONCLUSION

Anemia is still the major public health problem among pregnant mothers in India.Gravida,female literacy,teenage pregnancy and proper nutrition were important risk factors for developing anemia among pregnant mothers.Burden of anemia should be addressed by improved dietary habits, early antenatal registration[11] at antenatal clinic and rigorous implementation of Anemia Mukt Bharat program.

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Nil

CONFLICT OF INTERST

There were no conflict of interest

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