Original Article

Prevalence and sociodemographic factors responsible for anaemia in pregnancy: experience in a military hospital in Bangladesh

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ABSTRACT

Background: *Anemia during pregnancy is associated with adverse outcomes. Prevalence of anemia is thought to be high in developing countries. This study was aimed at determining the prevalence and socio-demographic and reproductive factors associated with anemia among a group of pregnant mother.*

Methods: *This cross-sectional observational study was conducted on pregnant women who visited the antenatal clinic of Combined Military Hospital (CMH), Savar, Dhaka from January 2017 to December 2019. Hemoglobin level was measured in all these women to assess the presence of anemia and was categorized according to the World Health Organization (WHO) criteria. Demographic data and information on maternal age, gestational age, educational and income level, and socioeconomic status were collected from anemic pregnant women and were analyzed.*

Results: *Out of 1500 pregnant women 525 (35%) were found to be anemic (Hemoglobin <11.0 g/dl). Among the 525 anemic women, 347 (66.1%) had mild anemia, 157 (29.9%) had moderate anemia and 21 (4.0%) women had severe anemia. Majority (48%) of the anemic women were less than 25 years old and majority (47%) had body mass index (BMI) <18.5 kg/m^2. Most of the women (58%) presented in their second trimester of pregnancy. More than two thirds pregnant women were multigravida. More than 50% women had history of abortion and around one third had 2 or more abortions. Most of the women (56%) reported another pregnancy within 24 months of current pregnancy. Sixty four percent of the patients completed secondary education, 75% were homemaker and 56% lived in rural area. Most of the patients (80%) had a family income per month less than 20000 taka. Majority (58.4%) of the women did not receive any iron supplementation during this pregnancy.*

Conclusions: *This study results show that more than one third of the pregnant women suffer from anemia irrespective of gestational week, but is more common in those presenting in second trimester of pregnancy, those who are younger, lean and thin, having history of previous pregnancy and bad obstetric history.*

Key Words: *Anemia in pregnancy, prevalence, sociodemographic factors.*

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INTRODUCTION

Anemia during pregnancy is a public health problem especially in developing countries and is associated with adverse outcomes in pregnancy.[1] Prevalence of anemia in pregnancy in developed countries is 14%, in developing countries 51% and in Bangladesh, two different surveys had estimated the anemia prevalence among pregnant women to be 40% and 59%.[2,3]

Iron deficiency is the most common nutritional deficiency worldwide, particularly among pregnant women. Because of the increased iron requirements during pregnancy, pregnant women are recognized as the most vulnerable to iron deficiency anemia.[4,5] In developing countries pregnant women start pregnancy

with already depleted body stores of iron and other vitamins. This is mainly due to poor nutritional intake, repeated infections, menstrual blood loss and frequent pregnancies. It is associated with socioeconomic conditions, lifestyles, and health seeking behavior across different cultures.[5]

The consequences of anemia during pregnancy are often serious and long lasting for both the mother and fetus. In the developing countries around 80% of maternal deaths are somehow related to anemia.[6-8] Furthermore, severe anemia is related to an increased risk of premature delivery with subsequent low birth weight, small for gestational age babies, and spontaneous abortion.[5,9,10] Thus for a successful pregnancy outcome, it is necessary to identify and treat anemia in pregnancy as early as possible. This study was performed to evaluate the prevalence of anemia in pregnancy as well as the sociodemographic factors associated with this.

METHODS

This cross-sectional observational study was conducted at the Combined Military Hospital (CMH), Savar, Dhaka from January 2017 to December 2019. A total of 1500 adult pregnant women who visited the obstetric outdoor for routine antenatal check-up were evaluated for presence of anemia. Pregnant women with other medical illness like diabetes mellitus, hypertension, and any preexisting hematological disorders were excluded from the study.

Blood sample was collected from the participants at the first presentation to antenatal clinic for measurement of hemoglobin level. The reference values of hemoglobin were categorized according to the WHO criteria as: normal (11 g/dL or higher), mild anemia (10–10.9 g/dL), moderate anemia (7–9.9 g/dL) and severe anemia (<7.0 g/dl).[11] Women with hemoglobin level less than 11.0 g/dl were considered to be anemic and were finally taken in the study. These women were further evaluated with a pretested semi-structured questionnaire for collecting information on socio-demographic characteristics, reproductive, and drug history including history of taking iron supplementation.

RESULTS

Out of 1500 pregnant women, 525 women (35%) had Hemoglobin levels below 11.0 g/dL and thus were considered anemic. Out of them 347 (66.1%) had mild anemia, 157 (29.9%) had moderate anemia, and 21(4.0%) women had severe anemia. Among the 525 (100%) anemic pregnant women, 48% were less than 25 years old (Table I) and 46.48% had BMI <18.5 kg/m^2 (Table II).

Table I Distribution of patients according to age (N=525)

Age range	Number of patients	Percentage
18-25	252	48.0
26-35	152	28.95
>35	121	23.05

Table II Distribution of patients according to BMI (N=525)

BMI (in Kg/m^2)	Number of patients	Percentage
<18.5	244	46.48
18.5-22.9	216	41.14
23.0-26.9	60	11.43
≥27.0	5	0.95

Obstetric history revealed that most of the women (304, 57.9%) presented to the antenatal clinic first time in their second trimester of pregnancy (Table III). More than two thirds (413, 78.67%) of the pregnant anemic women were multigravida. More than half (284, 54.1%) women had history of abortion and around one third (172, 32.8%) had 2 or more abortions. In most of the women (55.93%) the inter-pregnancy interval was less than or equal to 24 months. (Table IV).

Table III Distribution of patients according to gestational age (N=525)

Gestational age	Number of patients	Percentage
First trimester	136	25.9
Second trimester	304	57.9
Third trimester	85	16.2

Table IV Reproductive factors associated with anemia in pregnancy (N=525)

Variable		Number of patients	Percentage
Gravida	First	112	21.33
	Second	182	34.67
	Third or more	231	44.0
No of abortion(n=284)	Nil	241	45.9
	1	112	21.33
	2	92	17.52
	>2	80	15.24
Inter-pregnancy interval (n=413)	d"24 months	231	55.93
	>24months	182	44.07

Table V Social factors in the pregnant women with anemia (N=525)

Variable	Number of patients	Percentage	
Level of education	Illiterate	0	0
	Primary education	116	22.09
	Secondary education	336	64.0
	Above secondary education	73	13.91
Occupation	Home maker	395	75.24
	Service	130	24.76
Monthly family Income (in taka)	Income <10,000	112	21.33
	Income10,000-20,000	308	58.67
	Income>20,000	105	20.0
Living area	Cantonment or urban area	227	43.24
	Rural area	298	56.76

Table VI Nutritional history of the study population (N=525)

Variable		Number of patients	Percentage
Iron supplementation in current pregnancy	Received	218	41.52
	Did not receive	307	58.47

Social characteristics of the pregnant women showed that majority (64%) of the patients completed secondary education, majority (75%) were homemaker and majority (56%) lived in rural area. Most of the patients (80%) had a family income per month less than 20000 taka (Table V). Nutritional history of the study population revealed that majority (58.4%) of the women did not receive any iron supplementation during their presentation to antenatal clinic (Table VI).

DISCUSSION
In this study the prevalence of anemia in pregnant women was found to be 35%. This is almost similar to another study in Bangladesh that reported 40% of pregnant women were anemic.[2] Researchers from various developing countries of the world have reported that 19-50% of women had anemia during pregnancy.[12] The prevalence of anemia in pregnancy in South Asia has been reported to be 59% in Bhutan, 65% in Nepal and 60% in Sri Lanka.[13] A study in Ethiopia showed that the overall prevalence of anemia was 41.9%.[14] Therefore there is a large variation in anemia prevalence between countries and possibly within a country. This may be due to differing healthcare facilities and availability of regular antenatal care.

In this study 66% patients had mild anemia, 30% had moderate anemia, and 4% women had severe anemia. An Indian study reported that among 66 pregnant women, 55 % had mild, 40 % moderate, and 4.54 % severe anemia.[12] Results of another study showed that, of 51 pregnant anemic women, 9 (18%) were mildly, 30 (58%) moderately, 9 (18%) severely, and 3 (6%) were very severely anemic.[15]

The results of this study showed that maternal anemia occurred mostly in young as well as lean and thin patients. These findings are similar to a study in India where they also found high prevalence of anemia among adolescent pregnancy and low BMI.[15]

In this study majority of the women completed secondary education and belonged to middle income group. These findings are somehow different from findings in other studies in different parts of the world where most women were from lower socioeconomic group.[16,17] This may be due to the fact that participants in this study belonged to military family with a stable income and education facility.

In the present study, 57.9% of the pregnant women presented with anemia in 2nd trimester of pregnancy which is similar to another study in Saudi Arabia.[18] This is probably due to increasing requirement of iron as the pregnancy progresses coupled with the exhaustion of iron stores in most women in the second and third trimesters.

In this study 78.4% patients were multigravida and 56.14% had <24 months of inter pregnancy interval. A study from rural areas of Jordan found significant association between parity and interval in between pregnancy and prevalence of anemia in pregnancy.[19]

Although the sample-size and the study population are the two major limitations for the external validation of the findings of our study, it should be mentioned that most of population in this study are military affiliated family; their food and health facility are ensured by the government. So actual prevalence of anemia in pregnancy and socio demographic factors responsible for anemia in country may not be shown by this study.

Conclusion

This study results show that more than one third of the pregnant women suffer from anemia, particularly in the second trimester of pregnancy. It is more common in young, lean and thin women, having rural living background. Moreover, level of education, socioeconomic condition, nutrition, multiparity and bad obstetric history are related to development of anemia in pregnancy. Therefore, more emphasis should be laid on girl education, balanced diet intake, regular antenatal checkups, iron supplementation with the motto of healthy mother and healthy baby.

Authors' contribution: FA and SK had concept of the study, collected and analyzed data, drafted the manuscript. FA and SK contributed equally to the work. IJ collected data and drafted the manuscript. JUA analyzed and interpreted the data, drafted and revised the manuscript and supervised the overall work. All authors read and approved the final manuscript for submission.

Conflict of interest: Nothing to declare.

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