

Prevalence of Anaemia in Hospitalized Reproductive Age Group Women in A Peripheral Hospital of Bangladesh

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ABSTRACT

Background: Anaemia is a serious public health concern all over the world. It is a huge health burden for low and middle-income countries. Reproductive-age women, especially pregnant women, suffer a lot due to this condition and its consequences.

Objective: The objective of the study is to investigate the prevalence of anaemia among hospitalized reproductive-aged women in a peripheral hospital of Bangladesh.

Materials and Methods: This is a retrospective, cross-sectional study done in Shaheed Akhter Hossain BGB Hospital, Satkania, Chattogram, from June 2024 to November 2024. A total of 131 reproductive age group women (age 12-45 years) were admitted due to various problems and included in this study. Complete blood count was done and evaluated by both an automated analyzer and manual peripheral blood film examination.

Results: A total of 131 reproductive-age group women were admitted to the hospital. Among them, 56 (42.74%) were found anaemic, and the 21-30 years age group patients suffered most. Women who are married (87.5%), pregnant (51.78%), and >3rd gravida (55.17%) suffer most from anaemia. Most patients 32, 57.1%) were suffering from moderate severity of anaemia, and (58.9%) were diagnosed as microcytic anaemia and most probably iron deficiency anaemia. Other causes found are various infections, polycystic ovarian disease, abortion/miscarriage, abnormal uterine bleeding, obstetric complications, etc.

Conclusion: Hospitalized women of reproductive age are vulnerable due to a high rate of anaemia. It increases hospital stay, financial burden, morbidity, and mortality. Prevention of negative outcomes of anaemia can be done by proper detection of causes, early diagnosis, and treatment.

Keywords: Anaemia, Iron deficiency, Haemoglobin, Reproductive Women, Pregnancy, Hospitalization.

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INTRODUCTION

Anaemia is an illness in which the number of red blood cells or the haemoglobin concentration within them is less than normal¹. It is a very common health problem in different age groups of females, particularly among the reproductive age group. It is one of the most common nutritional deficiency disorders that affects pregnant women. According to estimates from the WHO, anemia affects 37 percent of pregnant individuals and 30 percent of women aged 15 to 49 years globally.

International data indicate that 56% of pregnant women in low- and middle-income countries are

Table 1. : Haemoglobin cutoffs to define anaemia severity in individuals²

Samples	Anaemia			
	No	Mild	Moderate	Severe
Hb conc. (gm/dl)				
Non-pregnant	≥12.0	11.0-11.9	8.0-10.9	<8.0
Pregnancy				
First trimester	≥11.0	10.0-10.9	7.0-9.9	<7.0
Second trimester	≥10.5	9.5-10.4	7.0-9.4	<7.0
Third trimester	≥11.0	10.0-10.9	7.0-9.9	<7.0

affected by anaemia³. The condition is most prevalent among pregnant women in Sub-Saharan Africa

(57%), followed by Southeast Asia (48%), while the lowest rate (24.1%) is observed in South America⁴.

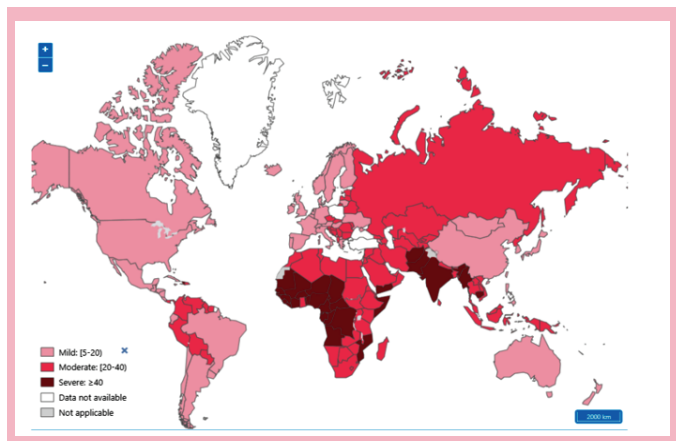


Figure 1: Prevalence of anaemia in reproductive age group women¹

Bangladesh is a South Asian developing country which has been struggling with anaemia. In Bangladesh, anaemia affects around half of the adolescent girls (52%)⁵, pregnant (50%) and lactating (49%) women.⁶ About 26% of maternal deaths are caused by nutritional anaemia and postpartum haemorrhage⁷. The etiology of anaemia in women is multifactorial. From a public health perspective, iron deficiency represents the predominant cause of nutritional anaemia on a global scale.⁸ Contributing factors to this deficiency include insufficient intake or bioavailability of iron-rich foods, elevated physiological iron requirements during periods of growth and pregnancy, blood loss from menstruation, and infections with intestinal parasites^{4,9,10,11}. Consequently, the heightened iron demands associated with growth, menstrual cycles, and pregnancy render women of reproductive age particularly susceptible to developing anaemia^{4,9,10,11}. Beyond iron, insufficiencies in other essential nutrients—such as vitamins A, C, B₂, B₁₂, folate, and copper—as well as protein-energy malnutrition, are also recognized contributors to the development of anaemia^{4,10,11}. Additionally, the condition may arise from a range of hereditary disorders, including thalassemia and sickle cell disease, as well as chronic inflammatory states^{4,9,10,11}. Certain infectious diseases, such as parasitic intestinal infesta-

tions, tuberculosis, malaria, AIDS, and schistosomiasis, are also significant causative factors^{10,11}.

Recent evidence regarding the prevalence of anaemia and its associated determinants among women of reproductive age residing in rural community settings within Bangladesh, particularly in the southern region, remains limited. This geographical area is notably vulnerable to various climate change impacts and may exhibit increased susceptibility to multiple micronutrient deficiencies¹². Therefore, the present study is designed to assess the prevalence of anaemia among hospitalized women of reproductive age in a peripheral hospital located in Bangladesh.

MATERIALS AND METHODS

This is a retrospective, cross-sectional study done in Border Guard Hospital, Satkania, Chattogram, from June 2024 to November 2024. In that period total of 131 reproductive age group women (age 12-45 years) got admitted due to various problems and were included within this study. All data were entered into a sheet containing epidemiological, clinical, para-clinical data, and clinical evaluation of the patient. Various samples were collected to diagnose the disease of the patient. For the Complete blood count sufficient amount of blood was collected in EDTA EDTA-containing vacutainer. Then it was evaluated by a fully automated haematology analyzer, SYSMEX and CELLTAC-F. In case of various abnormal findings, peripheral blood films were manually checked by a Pathologist. Then, based on 15 parameters, of CBC diagnosis was made. Statistical analysis was performed with the Package for the Social Sciences (SPSS, version 20), and ethical clearance was taken from patients and the medical branch, BGB HQ.

RESULTS

A total 131 reproductive age group women were admitted in hospital. Among them 56 (42.74%) was found anaemic according to the definition of WHO (Figure 1). Age group of 21-30 years patients found mostly anaemic among samples (Table 1).

Anaemia was found more prevalent among married (87.5%) and pregnant women (51.78%) (Figure 2).

Among pregnant women who are >3rd gravida suffers most (55.17%) in anaemia where primi gravida suffers less (17.24%) (Table 2).

Total samples (n=131)

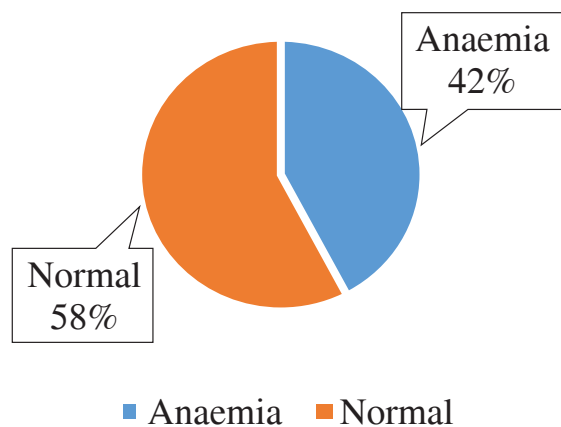


Figure 1: Total anaemic cases among total samples

Table 1- Age distribution of positive patients (n=56)

Range	Number	Percentage
12-20	6	10.71 %
21-30	38	67.86 %
31-40	11	19.64 %
41-45	1	1.79 %

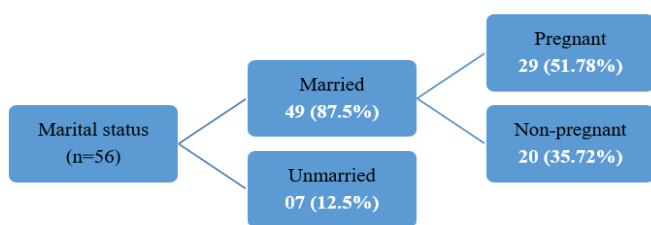


Figure 2: Marital status and pregnancy state (n=56)

Table 2 – Gravida state of pregnant women (n=29)

Gravida	Number
Primi	5(17.24%)
2nd	6 (20.68%)
≥ 3 rd	16 (55.17%)

Severity of anaemia is classified into mild, moderate and severe according to WHO². 32 (57.1%) patients were suffering in moderate severity anaemia. Only 2 (3.5%) patients were found suffering in severe anaemia (Figure 3).

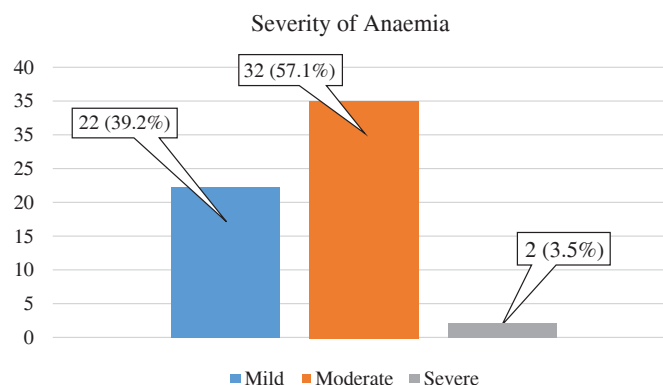


Figure 3: Severity of anaemia

MCV (mean corpuscular volume) was evaluated from complete blood count and anaemic cases were morphologically classified into microcytic, normocytic and macrocytic anaemia (Table 3). 33 patients (58.9%) were diagnosed as microcytic anaemia and only 1 (1.7%) patient was with macrocytic anaemia. By examining the peripheral blood film most microcytic anaemia slides 31 (93.93%) showed significant amount of microcytic hypochromic cells with presence of elongated and pencil shaped cells, which clearly indicates towards iron deficiency anaemia. Only 2 cases were presented with target cells which later diagnosed as HbE trait.

Table 3: Morphological classification of anaemia

Type	Number
Microcytic (MCV <83 fl)	33 (58.9%)
Normocytic (MCV 83 fl-101 fl)	22 (39.2%)
Macrocytic (MCV >101 fl)	1 (1.7%)

Anaemia is a multifactorial disease. In our hospital we categorized the causes in two main heading- Gynecological causes and Other associated disease. Among gynecological causes PCOD (Polycystic ovarian disease) was most prevalent and among associated diseases various infections could be the main cause of anaemia (Figure: 4).

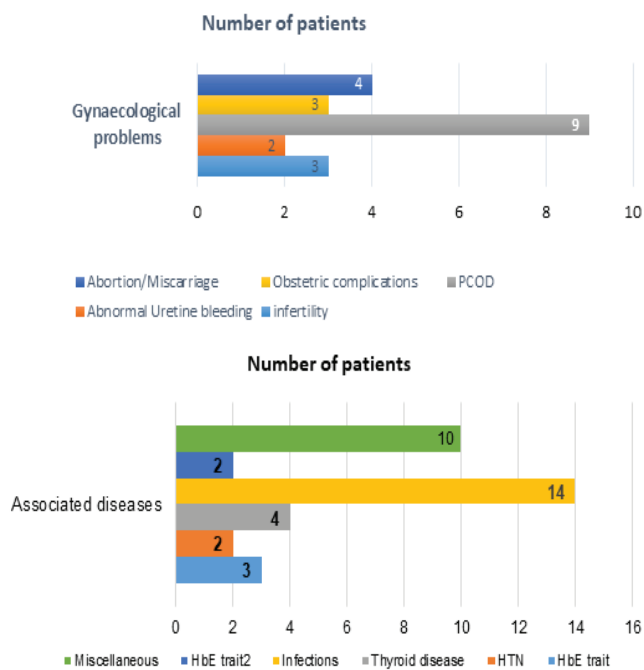


Figure 4: Number of patients according to etiology

DISCUSSION

Anaemia is a great concern in the reproductive age group of females. In Bangladesh, the number of studies on this aspect was relatively low. But according to available data, anaemia poses a considerable risk to the health of girls (adolescents), pregnant and lactating mothers, including their babies¹². We aimed to evaluate the major types of anaemia occurring in both serving and non-serving female members of Border Guard Bangladesh and the possible causes of that anaemia. Here, the prevalence rate was about 39%, which is nearly similar to previous studies^{5,13} and with the worldwide prevalence rate of 37%¹⁴. But it is much lower than that of related studies done in Pakistan with 76.8%¹⁵ and in India with 62.3% prevalence rate¹⁶. The comparatively lower prevalence of anaemia observed in this study may be attributed to the naturally high iron concentration found in groundwater across Bangladesh¹⁷. Furthermore, heightened health and hygiene awareness among defense personnel—including practices such as consuming safe water, regular handwashing after restroom use, and before meals—likely contributed to reducing both the occurrence and severity of anaemic cases. A multi-country investigation involving women of

reproductive age in Bangladesh, Maldives, and Nepal indicated that the consumption of safe and filtered water may serve as a protective factor, associated with decreased anaemia prevalence among women in these nations¹⁸. In our study, most anaemic patients fall in mild (39.2%) and moderate severity (57.1%) which is similar to another study¹³, but differs from other studies¹². Which could be due to the environment in which the defense personnel described above. The most prevalent age group to suffer from anaemia was 21-30 years in our study. This is similar to other studies^{15,19}. Among the reproductive age group, Pregnant women were the most and worst sufferers. The prevalence rate of anaemia in pregnancy (51.78%) is concordant with studies²⁰. Lack of diverse foods in dietary habits and increased requirement of iron during pregnancy may contribute to the development of anaemia,²¹ Among pregnant mothers who are >3rd gravida, they suffer most (55.17%) from anaemia. This is similar to studies done in Bangladesh^{13,19} but differs from other country studies^{16,22}. From the examination of CBC and PBF, most reports in this study indicate towards Microcytic type of anaemia and most likely due to Iron deficiency anaemia, which is consistent with other International⁸ and national²³ studies. Among Other causes of anaemia, polycystic ovarian disease, various infections, abortion/miscarriage, abnormal uterine bleeding, Obstetric complications, etc, constitute the major portion. These are similar causes according to the study¹⁶. Here total of 14 patients suffered from various organ infections, and it was the main prevalent cause. Which is similar to study¹⁵ but other causes differ in various studies^{15,24}. The difference in causes of anaemia may be due to variation in patient number, geographical location, number of ANC visits, dietary practices, etc.

LIMITATIONS OF THIS STUDY

Due to a lack of testing facilities like iron profile, Hb electrophoresis, etc., we couldn't evaluate the cause of anaemia more elaborately.

CONCLUSION

Hospitalized women of reproductive age are vulnerable due to a high rate of anaemia. It increases

hospital stay, financial burden, morbidity, and mortality. Prevention of negative outcomes of anaemia can be done by proper detection of causes, early diagnosis, and treatment.

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