ORIGINAL ARTICLE

Anaemia in Pregnancy and Its Contributing Factors among Women in a Rural Area of Chattogram District, Bangladesh

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ABSTRACT

Background: Maternal anaemia alludes to a condition characterized by a reduction in the number of red blood cells or the amount of haemoglobin during pregnancy; haemoglobin is the protein responsible for transporting oxygen throughout the body. In contemporary times it is an ongoing public health concern. ***Objectives:*** To explore the association of maternal anaemia with its contributing factors among women living in a rural area of Chattogram district in Bangladesh. ***Methods:*** This cross-sectional, descriptive study was conducted among 146 pregnant women having some sorts of clinical anaemia, who came at Sitakunda Upazila Health Complex, Chattogram, Bangladesh, between July and December of 2023. A pre-tested, semi-structured questionnaire as well as patient data sheet were used for data collection through face-to-face interviews. ***Results:*** Among 146 participants, 74(50.7%) belonged to the 18–25 years age group, followed by 58(39.7%) in the 26–33 years age group, and 14(9.6%) in the 34-49 years age group. Most of them 88(60.3%) had secondary education, followed by 46(31.5%) primary and 12(8.2%) higher education. Regarding employment, 40(27.4%) were employed and 106(72.6%) were unemployed. Most of them 105(71.9%) had first time pregnancy (1st gravida), while 31(21.2%) had 2nd gravida, and 10(6.9%) had third or more gravida. Regarding frequency of daily meals, two times eating habit was reported by 15(10.3%), while three times by 120(82.2%) and four times or more by only 11(7.5%) women. Based on the World Health Organization (WHO) criteria, 5(3.4%) had mild anemia, while 123(84.3%) and 18(12.3%) had moderate and severe anaemia respectively. Among the participants, 20(13.7%) and 23(15.75%) had antepartum and postpartum haemorhage respectively, while 21(14.4%) received blood transfusion. Birth spacing was reported by only 12(8.22%) women. Regarding mode of delivery, 122(83.56%) had history of normal vaginal delivery (NVD) and 24(16.44%) had history of Caesarean section. Anaemia was significantly associated with maternal age, education, daily meals, history of antepartum and postpartum haemorrhage, blood transfusion, birth spacing, and mode of delivery. ***Conclusion:*** Regular antenatal checkup and iron supplementation are important to monitor and address any signs of anaemia during pregnancy.

Keywords: Maternal anaemia, pregnancy, antenatal check up, iron supplementation, contributing factors

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INTRODUCTION

The most distinguished blood disorder symptom during gestation is anaemia and it is a worldwide health concern affecting nearly half of all pregnant women, primarily in developing countries[1]. Anaemia is a crucial factor especially in women's health during adolescent, pregnancy and old age[2]. The most frequent anaemia during pregnancy is iron deficiency anaemia, which is prevalent in about 75% cases[3]. Reproductive age of women who are suffering from anaemia

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has long-term consequences and also increased risk of fatal birth outcomes[4,5]. Therefore, a familiarity with proportion of anaemia and their sociodemographic variables would help for preventive and therapeutic purposes especially in developing countries[6].

The reasons behind anaemia in pregnancy are unhealthy lifestyle, pregnancy itself, alcohol intake, smoking, malnutrition, blood loss, chronic diseases, and chronic infections[7]. Others determining risk factors are low socioeconomic status, rural residence, rapid succession of birth, late initiation of antenatal medications, multiple expectancy and deficiencies of vitamin B_{12}, vitamin A, riboflavin, folic acid, and iron[8]. In our South Asian region, low dietary intake of iron is the most common cause of anaemia in pregnancy, mostly diagnosed as iron deficiency anaemia[9,10].

Earlier studies done in South Asian region as well as in Bangladesh tried to scrutinize many individual and household level factors that are responsible for maternal anaemia[11-15]; however, association of clinical and obstetric factors were not highlighted that much. With this regard, there are scarcity of literature about contributing factors of maternal anaemia in rural areas of Chattogram district in Bangladesh. Hence we propsed this study to explore the association of maternal anaemia with its contributing factors among women living in a rural area of Chattogram district in Bangladesh. The results of the study would be helpful for planning proactive interventions including antenatal healthcare for women and monitoring of their nutrition at the community level to combat anaemia.

METHODS

This cross-sectional, descriptive study was conducted among 146 pregnant women having some sorts of clinical anaemia, aged between aged between 18 and 49 years, who came at Sitakunda Upazila Health Complex under Chattogram district, Bangladesh, between July and December of 2023. We considered a non-probability convenience sampling technique, as to gather a subset of the target population to get the desired sample. We excluded pregnant women having history of thalassemia, malaria, or menorrhagia, non-pregnant women visiting the hospital and pregnant women who declined consenting to this study. A pre-tested, semi-structured questionnaire as well as patient data sheet were used to collect data through face-to-face interviews with the participants. Data was collected from those pregnant women while they were laying down or seating on the bad for their comfort. Data included patients' sociodemographic characteristics, clinical and obstetric history and outcomes. According to the World Health Organization (WHO) criteria, anaemia among pregnant women was classified as: mild anemia (haemoglobin 9.0–10.9 g/dL), moderate anemia (haemoglobin 7.0–8.9 g/dL), and severe anemia (haemoglobin less than 7.0 g/dL)[16].

Immediately after the completion of data collection, collected data was checked and verified. Data cleaning, coding and recording were done. Only fully completed questionnaire was entered into the computer for final analysis. Data analysis was carried out using Statistical Package for the Social Sciences (SPSS) version 25.0 for Windows. Analysis was done in line with the objectives. For descriptive statistics, data was presented as frequency and percentage – for sociodemographic variables, levels of anaemia, clinical and obstetric variables. Logistic regression analysis was done to reveal the factors contributing to anaemia in pregnancy. A p-value <0.05 was considered statistically significant. Results were presented in various tables in descriptive manner.

RESULTS

A total of 146 pregnant women were included in this study. Among them, 74(50.7%) belonged to the 18–25 years age group, followed by 58(39.7%) in the 26–33 years age group, and 14(9.6%) in the 34-49 years age group. Most of them 88(60.3%) had secondary education, followed by 46(31.5%) primary and 12(8.2%) higher education. Regarding employment, 40(27.4%) were employed and 106(72.6%) were unemployed. Most of them 105(71.9%) had first time pregnancy (1st gravida), while 31(21.2%) had 2nd gravida, and 10(6.9%) had third or more gravida. Regarding frequency of daily meals, two times eating habit was reported by 15(10.3%), while three times by 120(82.2%) and four times or more by only 11(7.5%) women (Table 1). Based on the World Health Organization (WHO) criteria, 5(3.4%) had mild anemia, while 123(84.3%) and 18(12.3%) had moderate and severe anaemia respectively (Table 2). Among the participants, 20(13.7%) and 23(15.75%) had antepartum

and postpartum haemorhage respectively, while 21(14.4%) received blood transfusion. Birth spacing was reported by only 12(8.22%) women. Regarding mode of delivery, 122(83.56%) had history of normal vaginal delivery (NVD) and 24(16.44%) had history of Caesarean section operation (Table 3). Logistic regression analysis revealed significant association between anaemia in pregnancy and matenal age, education, daily meals, history of antepartum and postpartum haemorrhage, blood transfusion, birth spacing, and mode of delivery (Table 4).

Table 1: Sociodemographic characteristics of study participants (n=146)

Variables	Frequency (Percentage)
Age group (in years)	
18–25	74 (50.7)
26–33	58 (39.7)
34–49	14 (9.6)
Educational status	
Primary	46 (31.5)
Secondary	88 (60.3)
Higher	12 (8.2)
Occupational status	
Employed	40 (27.4)
Unemployed	106 (72.6)
Gravida	
1st	105 (71.9)
2nd	31 (21.2)
3rd and more	10 (6.9)
Daily meals	
Two times	15 (10.3)
Three times	120 (82.2)
Four times or more	11(7.5)

Table 2: Levels of anaemia in study participants (n=146)

Level of anaemia	Frequency (Percentage)
Mild (9.0–10.9 g/dL)	5 (3.4)
Moderate (7.0–8.9 g/dL)	123 (84.3)
Severe (<7.0 g/dL)	18 (12.3)

Table 3: Clinical and obstetric characteristics of study participants (n=146)

Variables	Frequency (Percentage)
Antepartum haemorrage	
Yes	20 (13.7)
No	126 (86.3)
Postpartum haemorrage	
Yes	23 (15.75)
No	123 (84.25)
Blood transfusion	
Yes	21 (14.4)
No	125 (85.6)
Birth spacing	
Yes	12 (8.22)
No	134 (91.78)
Mode of delivery	
NVD	122 (83.56)
LUCS	24 (16.44)

Table 4: Correlation of anaemia and its contributing factors

Variables	p-value
Age	<0.05
Education	<0.05
Occupation	>0.05
Gravida	>0.05
Daily meals	<0.05
APH	<0.001
PPH	<0.001
Blood transfusion	<0.05
Birth spacing	<0.05
Mode of delivery	<0.05

DISCUSSION

In the present study, most of the pregnant women 123(84.3%) had moderate levels of anaemia, while 5(3.4%) and 18(12.3%) had mild and severe forms of anaemia respectively. A similar study reported a prevalence of 42.7% anaemia during pregnancy[17]. A study from Ethiopia showed a very lower rate of severe anaemia compared to our finding[18]. Another study from urban areas of Malaysia showed no severe anaemia among the study subjects[19]. The cause behind may be the fact that all our study participants were from rural areas, where resources and facilities are scarce.

Our study revealed that anaemia in pregnancy was significantly associated with maternal age, education, daily meals, history of antepartum and postpartum haemorrhage, blood transfusion, birth spacing, and mode of delivery. Another study in Bangladesh reported that the prevalence of anemia was the highest among the low-income group and with the increase of income the prevalence decreased to 20%. Previous studies also showed that age is significantly associated with anaemia in pregnancy, which is in congruence with our study finding[15,19]. Evidence also revealed that anaemia is more prevalent in low-income households, especially where women have no income, which is also true for our study participants[20]. Moreover, association of anaemia with low education status was supported by the same evidence from rural areas of Bangladesh[20]**.** In our study, the prevalence of anaemia was higher in first pregnancy than that of second, third, or subsequent pregnancies. Similar results were reported by Badfar et al.[21]; however, they found maternal anaemia was much prevalent in the first trimester compared to the second and thrid trimester[21]. We found an association of daily food consumption and anaemia. Evidence showed that the haemoglobin levels can be affected by the dietary habits of pregnant women[15]. Evidence also showed that women who have inadequate diets and who are not receiving prenatal iron and folate supplements tend to suffer more from the consequences of anaemia during pregnancy incorporating of the increased risks of low birth-weight, preterm birth and miscarriage[22].

We also found significant association between anaemia and antepartum and postpartum haemorrhage, which is supported by another study done in Saudi Arabia[23]. Regarding mode of delivery, anaemia was found more who had previous history of premature delivery, as well as normal vaginal delivery, which supports our findings[24]. Besides, history of blood loss and subsequent blood transfusion had significant association with maternal anaemia, which is supported by the evidence from Ethiopia[25].

As pregnancy is a critical stage for every woman, we highly recommended that the people should take extra care apart from the treatment received from the hospital so that they can prevent the life threatening risks of anaemia[26].

Last but not the least, our study was a rural primary level institution-based study, which means that the results cannot be extrapolated to the whole population. We did not consider the other factors such as, malaria, parasitic infection that could also cause anaemia in pregnancy. Moreover, the actual diet of the participants was not investigated except for meal frequency. We, therefore, are not much confident to determine the effect of diet on anaemia among our study population. Besides, being a cross-sectional study, we could not identify the cause-and-effect relationship. Further studies with larger samples taken from different clusters are warranted to justify the findings of our study.

CONCLUSION

Our data indicated a high prevalence of anaemia among pregnant women; the majority had a moderate level of anaemia (haemoglobin levels 7.0–8.9 g/dL). The severity of anemia had relation to maternal age, education, daily meals, history of antepartum and postpartum haemorrhage, blood transfusion, birth spacing, and mode of delivery. As the rate of maternal anaemia was found high in Sitakunda Upazila of Chattogram district, it may cause more maternal morbidity and mortality as well as adverse outcomes for their newborn baby. If we want to achieve the Sustainable Development Goals (SDGs), e.g., reduction in maternal mortality by 2030, we need to focus on better maternal health services not only in rural healthcare center but also in the community. Therefore, evaluation of existing healthcare and nutrition related programmes should be conducted to understand the gaps in reducing anaemia and malnutrition among pregnant women. Besides, necessary measures must be taken for reducing the adverse maternal health outcomes associated with maternal anaemia.

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