

Screening and Awareness on Anemia among Pregnant Women

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KEYWORDS

Anemia, Antenatal care, Deworming, IFA supplementation, Iron deficiency, Knowledge, Pregnancy

ABSTRACT:

Background: Anemia in pregnancy remains a significant public health challenge globally, associated with increased risks of maternal and fetal morbidity and mortality. This study aimed to assess the prevalence of anemia, along with the associated knowledge, attitudes, and practices regarding its prevention among pregnant women. **Methods:** A cross-sectional study was conducted among 107 pregnant women attending antenatal care at Life Line Hospital, Kamal Nagar, Lakshmipur, Bangladesh from July 2024 to June 2025. Data on socio-demographics, hemoglobin levels, iron-folic acid (IFA) supplementation, deworming, knowledge of anemia, and dietary practices were collected and analyzed using descriptive statistics and chi-square tests. **Results:** The prevalence of anemia was 43.9%, with most cases being mild (27.1%) or moderate (16.8%). A significant proportion of women (52.4%, $p=0.001$) were not taking IFA supplements, primarily due to lack of knowledge (50.0%) and cost (42.9%). Deworming adherence was critically low (19.6%, $p<0.001$). Knowledge gaps were substantial: only 29.9% of women knew what anemia was, and 31.8% were aware of iron-rich foods ($p<0.001$). Notably, 73.8% received no information on anemia ($p<0.001$). While most (86.0%) consumed green leafy vegetables frequently, 33.6% practiced tea/coffee consumption within an hour of meals, inhibiting iron absorption. **Conclusion:** The study reveals a high burden of anemia, driven by inadequate IFA intake, poor deworming practices, and a critical lack of knowledge. There is an urgent need to strengthen antenatal education, provide free IFA supplements, and integrate routine deworming to effectively combat anemia in this vulnerable population.

INTRODUCTION

Pregnancy related anemia, which is defined by the World Health Organization (WHO) as a concentration of hemoglobin below 11.0 g/dL, represents a significant public health issue that disproportionately affects the women in low and middle-income countries (LMICs) [1]. It is a key marker of maternal health and nutritional status, and has significant implications for perinatal outcomes. It is a major cause of maternal mortalities and morbidities, predisposing them to increased risk of postpartum haemorrhage, pre-eclampsia; and maternal infection [2, 3]. For the growing fetus, maternal anemia becomes a risk factor of intergenerational poor health and underdevelopment in the well-known syndromes, such as intrauterine growth restriction (IUGR), preterm birth, low birth weight and compromised cognitive development [4, 5]. Anemia in pregnancy is caused by many factors and iron deficiency is anemic predominant cause all over the world [1]. However, other etiological factors including other vitamin B12 and folate deficiencies, parasitic conditions (e.g., hookworm, malaria) and

genetic hemoglobinopathies contribute significantly to its pathogenesis especially in regions of endemicity [6, 7]. To address this, a WHO standard package of care consisting of daily oral IFA supplementation, routine antenatal deworming and tailored dietary advice for improved iron utilisation has been advocated [8, 9]. In spite of these clear directives and international initiatives, the prevalence of anemia among pregnant women has increased alarmingly in recent years indicating a huge difference between these policy decisions and effective implementation at ground level [10, 11]. The efficacy of prophylactic measures strongly relies on high adherence and is usually driven by a complex interaction of multiple factors. These factors include the access to and availability of supplements, quality of antenatal care (ANC) counseling, economic limitations, as well as critically the degree of awareness and knowledge that pregnant women themselves have about anemia [12, 13]. A woman's knowledge about roots of etiology, ramifications and prevention of anemia is the key determinant to her health-seeking behavior and adherence to recommended interventions. Nevertheless, research has continued to indicate that awareness on anemia is generally poor among pregnant women in most resource-poor regions. This gap in knowledge constitutes a significant obstacle to the success of national nutrition programmes [12]. Thus, supplements alone are not going to be sufficient if there is this baseline lack of knowledge. This research was formulated against this background. It is designed to determine the prevalence of anemia, and the knowledge attitude practice of pregnant women about its prevention. These findings will, therefore, generate critical evidence to develop and scale up focused or targeted interventions as well as bolster ongoing ANC services toward a more efficient prevention of anemia among these populations.

METHODOLOGY

Study design and setting: This was a hospital-based cross-sectional study done in Life Line Hospital, Kamal Nagar, Lakshmipur, Bangladesh during the period of July 2024 to June 2025. The participants were pregnant women attending the antenatal care (ANC) clinic at this hospital.

Inclusion criteria: Pregnant women irrespective of their gestational age attending ANC visit and gave written consent to enroll in the study were included.

Exclusion criteria: Critically ill or actively laboring women and women with known chronic haematological disorder (e.g., thalassemias, sickle cell disease) that might independently lead to anemia were excluded from the study.

Procedure of the study: The data was collected through personal face-to-face interviews with the structured questionnaires. It included the socio-demographic, the obstetric profile, knowledge and practice about anemia. Hemoglobin levels were obtained from laboratory records; or measured on-site with a Hemoglobinometer for anemia definition (Hb <11.0 g/dL).

Statistical analysis: Data were analyzed by SPSS version 26. In the analysis, descriptive statistics (frequencies, percentages and means) were applied to summarize variables. Associations were evaluated by means of the Chi-square test, with a $p < 0.05$ indicating statistical significance.

RESULT

Analysis of 107 pregnant women revealed a high anemia prevalence of 43.9%, comprised of mild (27.1%) and moderate (16.8%) cases. Hemoglobin screening coverage was high at 96.3%. Prophylactic practices were poor, with over half (52.4%, $p = 0.001$) not taking IFA supplements, primarily due to lack of knowledge (50.0%) and cost (42.9%, $p < 0.001$). Deworming medication adherence was critically low at 19.6% ($p < 0.001$). Awareness was severely deficient. Only 29.9% of women knew what anemia was. Knowledge of iron-rich foods (31.8%, $p < 0.001$) and potential complications (28.0%, $p < 0.001$) was very low. Among those aware, poor diet (53.1%) and menorrhagia (46.9%) were the top perceived causes, while maternal tiredness and low birth weight were the most recognized complications. A significant 73.8% reported receiving no information on anemia from any source ($p < 0.001$). Dietary practices were mixed; while consumption of green leafy vegetables was high (86.0%, $p < 0.001$), a substantial

proportion (33.6%, $p < 0.001$) consumed tea or coffee within an hour of meals, a known inhibitor of iron absorption. The study cohort was predominantly young, with 63.6% of women aged between 18-25 years, and multigravida (86.0%). Slightly less than half (45.8%) had initiated antenatal care in the first trimester.

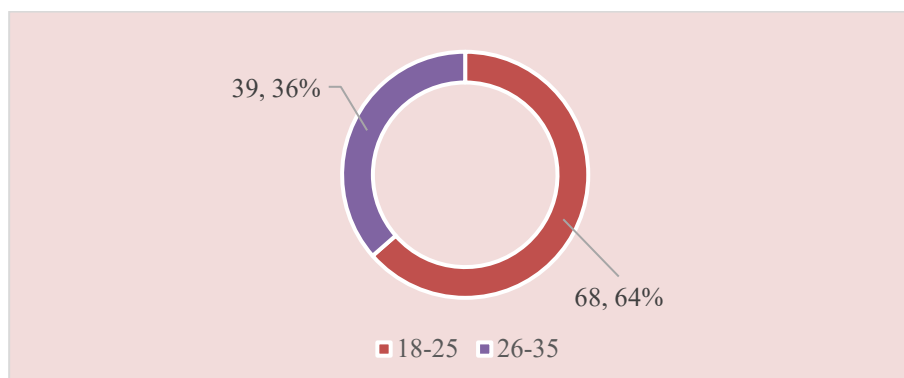


Figure 1: Age distribution

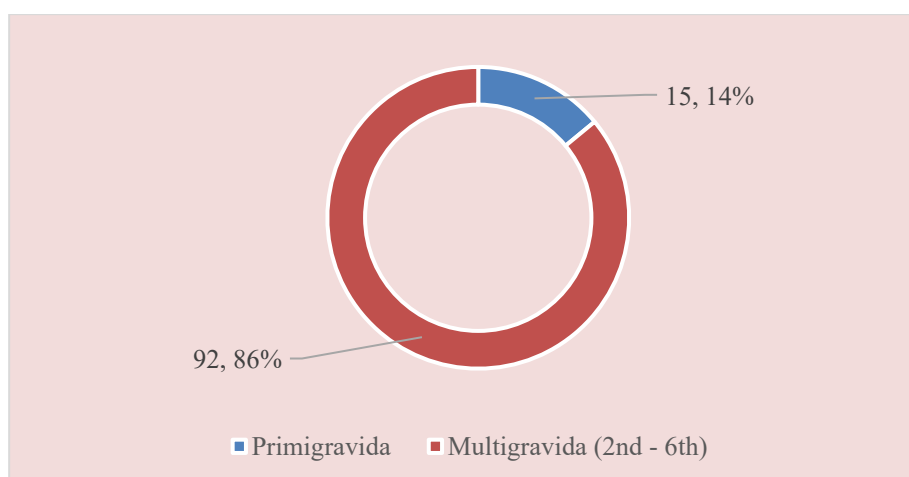


Figure 2: Gravidity distribution

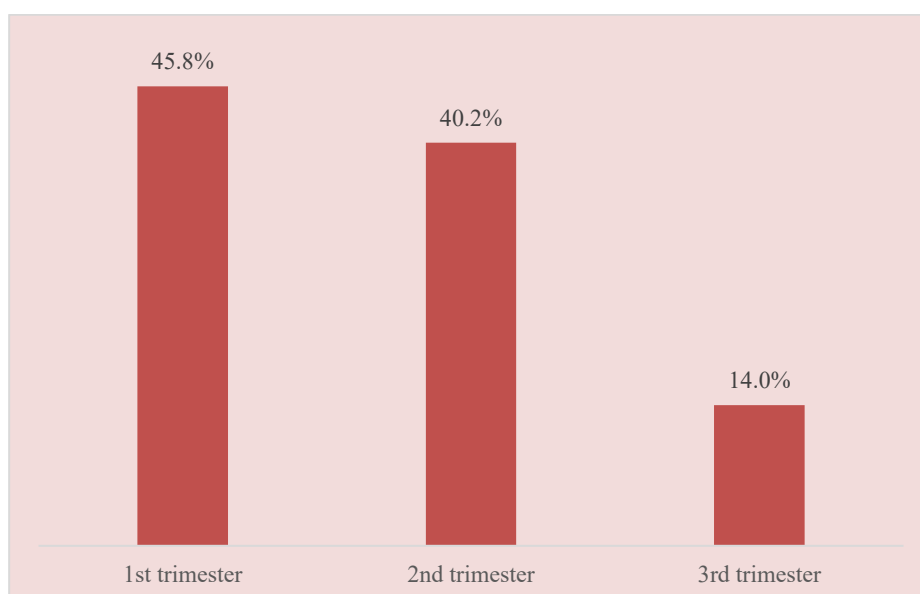


Figure 3: Trimester of first ANC visit

Table 1: Anemia prevalence and Hb screening practices (N=107)

Parameter	Category	n	%
Hb test done	Yes	103	96.3%
	No	4	3.7%
Anemia status (WHO criteria)	Non-Anemic (Hb $\geq$ 11.0 g/dL)	56	52.3%
	Mild Anemia (Hb 10.0-10.9 g/dL)	29	27.1%
	Moderate Anemia (Hb 7.0-9.9 g/dL)	18	16.8%
	Severe Anemia (Hb $<$ 7.0 g/dL)	0	0%
	Total Anemic (Hb $<$ 11.0 g/dL)	47	43.9%

Table 2: IFA supplementation and deworming practices (N=107)

Practice	Category	n	%	p-value
IFA supplementation	Yes, daily	47	43.9%	0.001
	Sometimes	4	3.7%	
	No	56	52.4%	
Reason for not taking IFA (n=56)	Lack of knowledge	28	50%	<0.001
	Cost issues	24	42.9%	
	Side effects	2	3.6%	
	Other/Not specified	2	3.6%	
Deworming medication received	Yes	21	19.6%	<0.001
	No	86	80.4%	

Pearson's Chi-square test was used for comparing categorical variables

Table 3: Knowledge and awareness about anemia (N=107)

Awareness aspect	Category	n	%	p-value
Knowledge of anemia	Yes	32	29.9%	0.642
	Heard but not sure	37	34.6%	
	No	38	35.5%	
Awareness of Iron-Rich Foods	Yes	34	31.8%	<0.001
	No	73	68.2%	
Knowledge of complications	Yes	30	28.0%	<0.001
	No	77	72.0%	

Pearson's Chi-square test was used for comparing categorical variables

Table 4: Perceived causes and complications of anemia among those aware

Category	Item	n	Awareness (%)
Perceived causes (n=32)	Poor diet / Nutrition	17	53.1%
	Menorrhagia / Heavy bleeding	15	46.9%
	Not taking Iron tablets	4	12.5%
	Previous abortion	4	12.5%
Perceived complications (n=30)	Tiredness & Weakness	32	106.7%
	Low birth weight baby	28	93.3%
	Death of mother or baby	24	80.0%
	Risk of miscarriage	17	56.7%
	Preterm birth	6	20.0%

Totals exceed 100% as participants could provide multiple responses

Table 5: Dietary habits and sources of information on anemia (N=107)

Aspect	Category	n	%	p-value
Source of information	Doctor	11	10.3%	<0.001

	Nurse/Midwife	6	5.6%	
	Family/Friends	11	10.3%	
	No one	79	73.8%	
Tea/Coffee within 1 hour of meals	Yes	36	33.6%	<0.001
	No	71	66.4%	
Green leafy vegetables ≥ 3 Times/Week	Yes	92	86.0%	<0.001
	No	15	14.0%	

Pearson's Chi-square test was used for comparing categorical variables

DISCUSSION

It gives a sombre analysis of the anemic scenario of pregnant women in a tertiary care hospital in Dhaka, Bangladesh. We report here on the persistent, acute public health work that remains in a setting where there is high case prevalence, suboptimal adherence to WHO-recommended prophylaxis and an extreme knowledge deficit among the study population. The prevalence of anemia at this survey was found to be 43.9%, which is a very high value and comparable with the huge burden reported in recent analyses in LMICs, such as Bangladesh [14, 15]. This is well above the WHO's global target for women of reproductive age and indicates that we have not been successful in addressing this complex issue with the current interventions [1]. Acta A 2013;55:1241–50 Although the lack of severe anemia is a bright note, mild and moderate cases are still noteworthy due to their proven correlation with negative results such as maternal fatigue, preterm birth, and low birth weight [4, 5]. The high coverage of Hb detection (96.3%) reflects the excellent diagnostic capacity in the clinic, which is weakened by not yet being followed up and managed. The most significant result of the present study is that prophylactic treatment fails catastrophically. The most important determinant of the high anemia prevalence remained that more than half (52.4%) of the women were not ingesting iron and folic acid supplementation. The barriers identified, lack of knowledge and cost, noticed here are also consistent with previous literature from the same context pointing to the need for both accessibility and educating not just access as supplements being made available is obviously not enough without accompanying initiatives that could make pregnant women knowledgeable and financially fit [16, 17]. This is further complicated by the low proportion of deworming (19.6%) that neglects a largely preventable cause of iron loss, specifically in endemic areas [18]. What is perhaps most surprising, however, is the sheer extent of the knowledge gap. Considering that only 29.9% of pregnant women knew what anemia was and less than a quarter heard of iron-rich foods or complications, it is obvious how low quality ANC services on health education are. This consciousness deficit is a core obstacle in behavioural modification and prevention [19, 20]. The lack of information provided by any source to 73.8% women is a damning indictment of how counseling in India is practiced today. While frequent intakes of green leafy vegetables are praiseworthy, species commonly consumed in Cambodia seem to have little influence on hepcidin expression and practical recommendations including tea or coffee intake while eating (33.6%) may not foster iron absorption, details missed with simple dietary advice [21]. This study shows a triad of high anemia prevalence, insufficient preventive behaviour and poor knowledge. These results call for a multicomponent intervention approach. But accountability programs must be beefed up to provide a series of well-organized, recurrent and productive counseling. Economic obstacles to IFA must be removed through free distribution, and deworming should be seamlessly integrated into routine care. Local community awareness campaigns are also critical for reaching women early in pregnancy. Further work needs to be done on how such integrated programmes could be operationalised and their impact on reducing anemia measured.

Limitations:

The cross-sectional design limits causal inference, and self-reported data on practices and awareness may be influenced by recall and social desirability bias. The single-site sample may also limit the generalizability of the findings to other populations.

CONCLUSION

This study uncovers a very concerning triad of high anemia prevalence, poor IFA/deworming adherence and serious knowledge deficit in pregnant women. To alleviate this huge public health burden, antenatal programmes need to be strengthened by using integrated approaches. These activities should involve effective counseling, antenatal iron supplementations with no economic barriers, routine deworming of pregnant women and community-based health promotions for mothers and children.

RECOMMENDATION

Introduce structured ANC counseling on anemia and diet. Furnish IFA prophylaxis at no cost. Incorporate mass deworming into antenatal care services. Initiate community-based communication strategies to contact women in early pregnancy, and for those who have no access health system.

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