

## Anemia Prevalence and Nutritional Challenges in Women of Reproductive Age: Insights from Shibpur Village, Shitakundu, Chattogram

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### Abstract

### Original Research Article

**Introduction:** Anemia remains a significant public health challenge, particularly among women of reproductive age (15–49 years), due to its multifactorial etiology and profound health implications. This study explores the prevalence and contributing factors of anemia in Shibpur village, focusing on nutritional, socioeconomic, and reproductive health determinants. **Methods:** This was a descriptive cross-sectional study conducted in the Department of Community Medicine, Chittagong Medical College, Chittagong, Bangladesh, on 3rd September 2016. In this study, we included 150 women of reproductive age between 15–49 years from Shibpur village Sitakundu, Chittagong. **Result:** The mean age of the respondents was 30.23 years having a maximum number of respondents within the age group 20–40 years (86.33%). The majority of the respondents were housewives (79.33%) and 93% of the respondents were married. 67.33% were in the upper and lower middle class. The study found 22.67%, 60.33%, 15.33% and 2% were underweight, normal, overweight, and obese respectively. Lab investigation of hemoglobin estimation reported 30%, 40%, and 30% normal hemoglobin, mild and moderate anemic conditions respectively. Measurement of blood pressure revealed normal blood pressure in 54.67%, hypertension in 4.67% hypotension in 40.67% among the respondents. **Conclusion:** Although maximum women were at normal BMI significant percentages were found in underweight (22.67%) and overweight (17%). An alarming proportion 70% of respondents were anemic, mild, or moderate which are chief facts of concern. 40.67% hypotension is also a considerable indicator of dissatisfied nutritional status. Effective nutritional education programs and social awareness among rural women are a grave demand to promote the health of women of reproductive age (15–49 years) in Bangladesh.

**Keywords:** Anemia, Prevalence, Nutritional status, Women, Reproductive Age.

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## INTRODUCTION

Anemia is a condition characterized by a reduced red blood cell count, which impairs the body's ability to supply adequate oxygen to tissues. It is a global public health issue, affecting around 1.76 billion people worldwide [1]. The World Health Organization (WHO) uses specific hemoglobin (Hb) thresholds to diagnose anemia, which vary by age, sex, and pregnancy status. For women aged 15–49 years, anemia is defined as Hb

levels below 120 g/L for non-pregnant women and below 110 g/L for pregnant women [2].

The prevalence of anemia also differs significantly across regions. Sub-Saharan Africa and South Asia report the highest rates, with anemia among women of reproductive age (WRA) being a moderate to severe public health concern in most WHO member states, where prevalence rates exceed 20% [3].

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In Anemia, the blood is lower than normal as a result of a deficiency of one or more essential nutrients, heavy blood loss, parasitic infections such as hookworm infestations, acute and chronic infections, and congenital hemolytic diseases [4-8].

The epidemiology and causes of anemia are multifactorial and complex. Common symptoms include fatigue, palpitations, breathlessness, and irritability, with severe cases potentially progressing to anemic heart failure. In Bangladesh, the prevalence of anemia among women of reproductive age (15–49 years) was 43.50% in 2011. Over the past 16 years, the highest recorded prevalence was 50.70% in 1995, while the lowest was 43.40% in 2009. This statistic reflects the combined prevalence of anemia in non-pregnant women with hemoglobin levels below 12 g/dL and pregnant women with hemoglobin levels below 11 g/dL.

[9] There are three main types of anemia: that due to blood loss, that due to decreased red cell production & that due to increased RBC breakdown. Causes of decreased production include iron deficiency, lack of Vitamin B12, folic acid, thalassemia & several bone marrow neoplasia. Anemia due to iron and other nutritional deficiencies is more common among females than males [10].

Iron deficiency is responsible for at least half of all anemia cases worldwide [11]. This deficiency is primarily caused by a lack of bioavailable dietary iron or increased iron needs, particularly during periods of rapid growth, such as during childhood, and pregnancy [2,12]. Poor dietary intake, illiteracy, and above all low socio-economic conditions in a third-world country like Bangladesh are responsible for this situation. Hookworm infests action, heavy menstrual flow & other gynecological disturbances, and repeated pregnancy also contribute to anemia among reproductive women (15-49 years). Nutritional status & dietary intake patterns play a great role in the development of anemia. Adequate & proportionate intake of protein, fat, carbohydrates, vitamins, minerals & fibers is essential to maintain a good nutritional status. A balanced diet should contain protein about 10-15% of daily energy intake, 15- 30% fat, and 60-70% carbohydrate rich in natural fibers & macronutrients also. Protein is usually found in eggs, milk, meat, pulses cereals, etc. Carbohydrates are available in cereals, roots, tubers, sugars, etc. and fat is found in ghee, butter, milk, egg, etc. Nutritious food intake by women of reproductive age especially for adolescent girls, pregnant & lactating mothers is of high value as there is increased demand. But regrettably still now women are being deprived of it due to their poor socio-economic status & negligence to women, the vulnerable group as to their health & illness. Nutritional status can be assessed by various methods [13].

Women having poor nutritional status are more vulnerable to various diseases & infections. It also leads

to increased mortality & morbidity of offspring. As the nutritional status of women is a predisposing factor for the causation of anemia, a study on anemia of women of reproductive age on the background of nutritional status is very important.

Therefore, this study aimed to explore the anemia prevalence and nutritional status of women of reproductive age (15-49 years) in Shibpur village of Sitakundu.

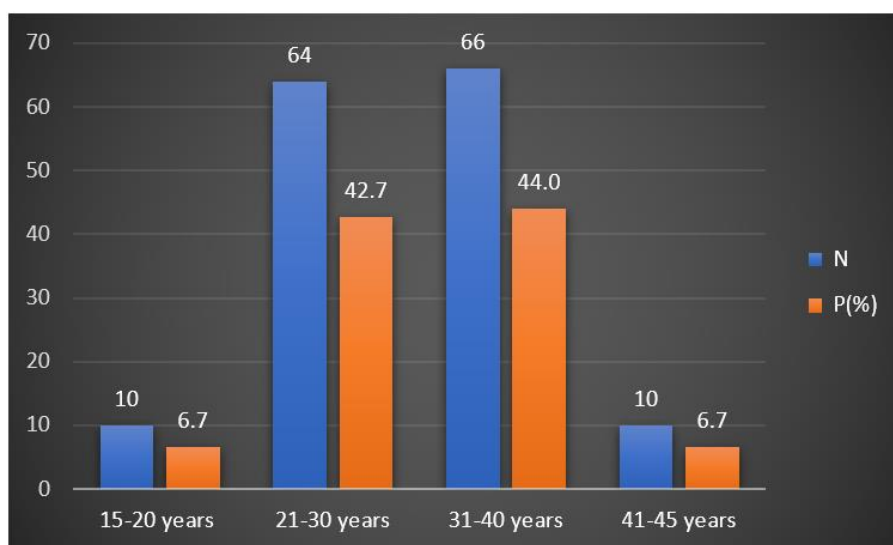
## METHODOLOGY & MATERIALS

This was a descriptive cross-sectional study conducted in the Department of Community Medicine, Chittagong Medical College, Chittagong, Bangladesh, on 3rd September 2016. In this study, we included 150 women of reproductive age between 15-49 years from Shibpur village Sitakundu, Chittagong. These are the following criteria to be eligible for enrollment as our study participants: a) Women aged between 15 to 49 years; b) Women of reproductive age who were available at the time of data collection; c) Women who were willing to participate were included in the study And a) Women who were absent from the locality; b) Women receiving Antibiotics and NSAIDs; c) Women with pregnancy and any history of acute illness (e.g., renal or pancreatic diseases, ischemic heart disease, asthma, COPD etc.) were excluded from our study.

**Data Collection:** All study participants fulfilled a mixed type of pretested questionnaire containing questions on general information, food habits and patterns, menstrual and obstetric history, and disease conditions. For blood sample collection instruments for hemoglobin estimation test tubes, syringes, and other necessary materials like measuring tape and weight machine were taken. Data was collected by face-to-face interviews with 150 respondents selected by a convenient type of nonprobability sampling. Determination of the nutritional status was done by BMI (body mass index) cut-off value for Asian people. Anemia assessment was done by hemoglobin estimation of collected blood samples. Before starting the interview, verbal consent was obtained from the respondents. It was assured that all the information they provided us would only be for academic purposes. These wouldn't harm their secrecy and privacy. This confidentiality would be maintained strictly.

**Data Analysis:** After data collection, data were checked and verified. Compilation was done manually using a scientific calculator with the help of a computer. Quantitative data was expressed as mean and standard deviation; qualitative data was expressed as frequency distribution and percentage. Then analyzed data were presented in graphs, tables, and figures. This study was approved by the ethical review committee of Chittagong Medical College.

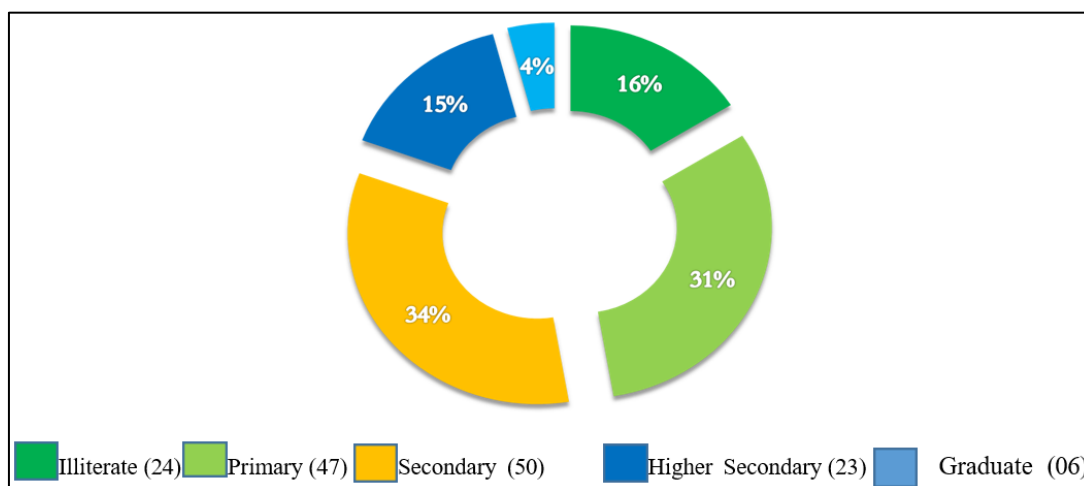
## RESULTS



**Figure 1: Age of the of the respondents**

Figure 1 showed that a total of 44% of respondents were in the age group 30-40 years, 42.7%

were in the age group 20-30 years, and 6.7% were in the age group 15-20 years and 40-45 years individually.



**Figure 2: Educational status of the respondents**

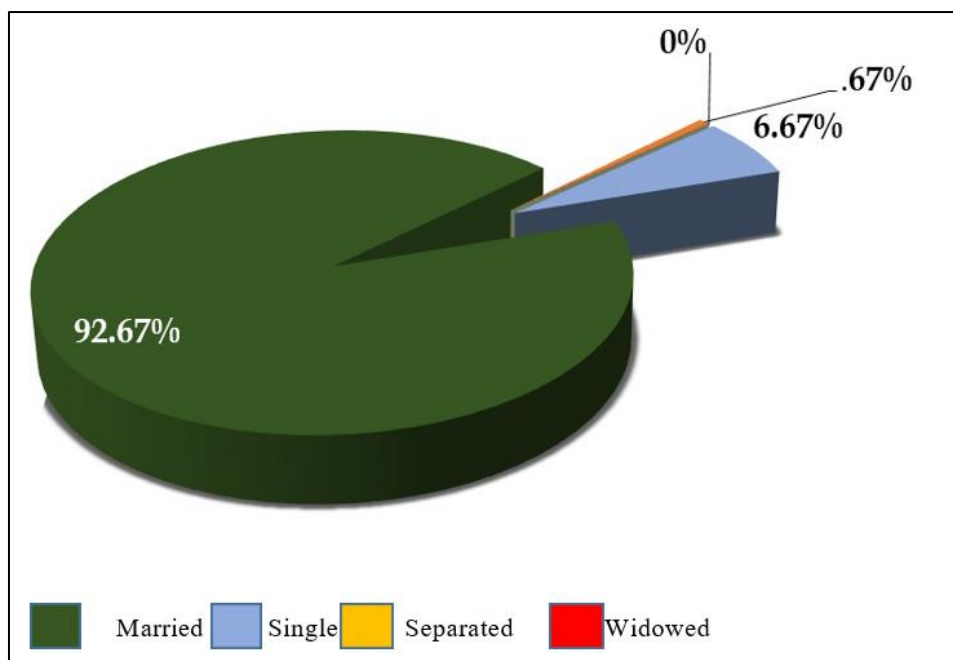
Figure 2 revealed that the educational status was higher secondary in 34% of respondents, secondary

in 31% of respondents, and Graduate in only 4% of respondents.

**Table 1: Occupation of the respondents**

Occupation	Number	Percentage
Housewife	119	79.33
School Teacher	05	3.33
Domestic Worker	08	5.33
Handicraft	06	04
Garment Worker	02	2.33
Tailor	04	2.67
Others	06	04
Total	150	100%

In the study 79.33% of respondents were housewives, 5.33% were domestic workers, and 1.33% of respondents were garment workers.



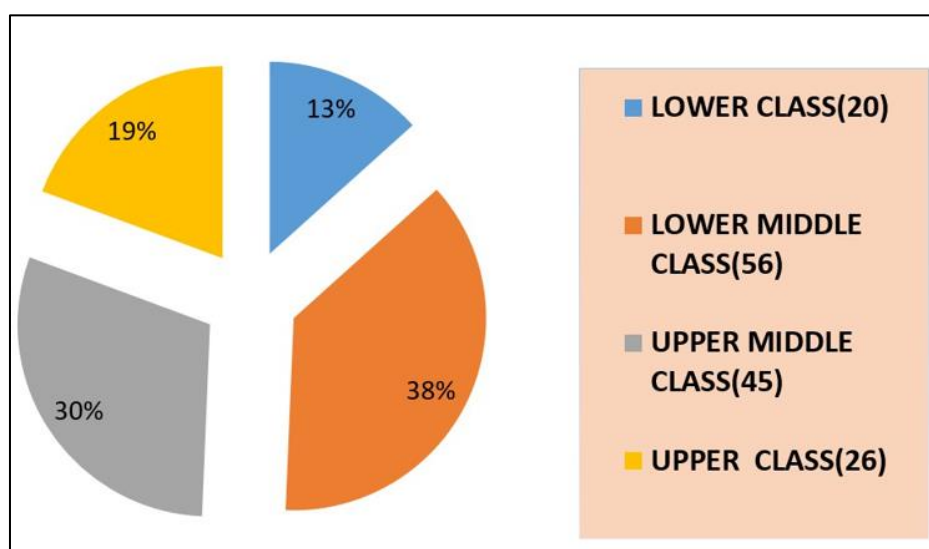
**Figure 3: Marital status of the respondents**

The pie chart shows that 92.67% of respondents were married, 6.67% of respondents were single and .67% were separated.

**Table 2: Distribution of the respondents by their kind of family**

Family Type	Number	Percentage
Nuclear	117	78.00
Joint	26	17.33
Extended	07	04.67
Total	150	100%

The table shows that the majority of the family (78%) were nuclear in type. Followed by 17.33% were joint family and 4.67% were extended family.



**Figure 4: Socioeconomic status of the respondents**

In the study 38% of respondents were from the lower middle class, 30% were upper middle class and

19% respondents were from upper class. Besides this, 13% of the respondents were from the lower class.

**Table 3: Distribution of respondents by the duration of the menstrual cycle, regular occurrence and bleeding persistence**

Duration of Menstrual cycle	Number	Percentage
<28 days	23	15.75
28-35 days	99	67.81
36-45 days	16	10.96
>45 days	12	5.48
Total	150	100%
<b>Regular occurrence</b>		
Yes	112	75.0
No	38	25.0
<b>Menstrual bleeding persistence</b>		
1	0	0
2-3	50	34.25
4-5	63	43
6-7	25	17.12
>7	12	5.48

The table shows that most of the respondents about 67.81% had a menstrual cycle of 28-35 days. In 15.75% of cases, the menstrual cycle was less than 28 days. 10.96% had a menstrual cycle of 36-45 days and 5.48% had more than 45 days. Of all patients, 75% of the females at reproductive age pass a regular cycle and 25%

of them do not. Among all participants, 43% of females at reproductive age have the persistence of menstrual bleeding for 4-5 days, 34.25% of them for 2-3 days, 17.12% of them for 6-7 days, 05.48% of them for more than 7 days, and none of them for 1 day.

**Table 4: History and time of blood transfusion of the respondents**

Decision	Number	Percentage
Yes	30	20
No	120	80
<b>Time</b>		
1	0	0.00
2	20	13.33
3	10	6.67%

Table 4 presents the respondents' history and timing of blood transfusion. Among the participants, 30 individuals (20%) reported having received a blood

transfusion, while 120 individuals (80%) had not. Among the 150 respondents, 20 of them had a history of blood transfusion for 2 times and 10 of them had 3 times.

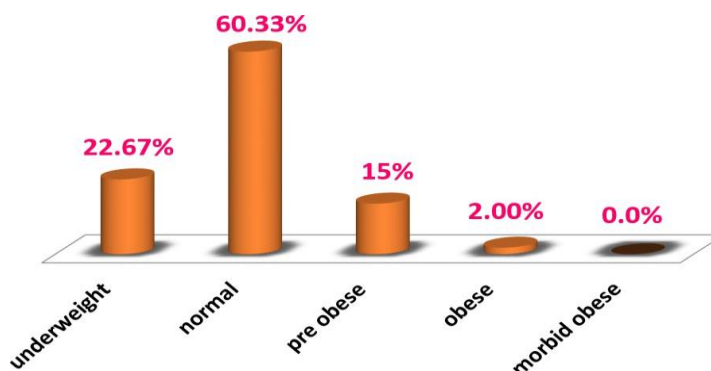
**Table 5: Any sufferings from the disease of the respondents**

Disease	Number	Percentage (%)
Fever	22	14.67
Diarrhea	7	4.67
Body Ache	32	21.33
Hypertension	19	12.66
Peptic Ulcer	33	22.00
Accidental Injury	0	0.00
Malaria	0	0.00
Typhoid	0	0.00
Dengue	0	0.00
Skin Disease	24	16.00
Others	13	8.67
<b>Total</b>	<b>150</b>	<b>100.00</b>

The table provides an overview of the reported diseases among respondents. Peptic ulcer was the most common condition, affecting 33 individuals (22%), followed closely by body aches, reported by 32 individuals (21.33%). Skin diseases were also notable,

with 24 cases (16%), while fever was reported by 22 respondents (14.67%). Hypertension accounted for 19 cases (12.66%), and diarrhea was reported by 7 individuals (4.67%). Interestingly, there were no cases of accidental injury, malaria, typhoid, or dengue among the

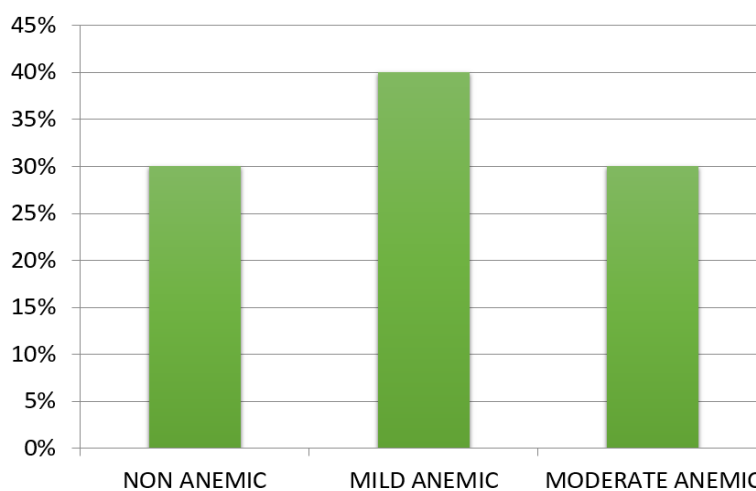
respondents. Additionally, 13 individuals (8.67%) reported other unspecified conditions.



**Figure 5: Body Mass Index (BMI) of the respondents**

The chart illustrates the distribution of body mass index among the participants. The largest proportion, 60.33%, had a normal BMI, indicating that most individuals maintain a healthy weight. The second-

largest group (22.67%) were underweight. The pre-obese group accounts for 15%, and only a small fraction, 2%, falls under the obese category, and there are no respondents in the morbidly obese category.



**Figure 6: Hb level of the respondents (All samples were collected from non-pregnant women)**

Non anemic (>12 gm/dl); Mild anemic (11-11.9 gm/dl); Moderate anemic (8-10.9 gm/dl) Severe anemia (<8 gm/dl)

The figure shows that among the respondents, 30% were non-anemic, 40% were mild anemic and the rest of the respondents were moderate anemic.

19.33% upper class, and 13.33% lower class. Marital status revealed 92.67% were married, 6.67% single, and 0.67% separated.

## DISCUSSION

In this study, we found the majority (44%) were aged 30-40 years, while 42.66% were aged 20-30 years. Educational attainment varied, with 34% having secondary-level education, 31% primary-level, and smaller groups being graduates (6%), HSC/equivalent (15%), or illiterate (16%). Regarding family structure, 40% belonged to nuclear families, 34.5% to joint families, and 25.5% to extended families.

In terms of occupation, 79.33% were housewives, while others worked as domestic workers (5.33%), school teachers (3.33%), or garment workers (1.33%). Socioeconomic classification showed 37.33% were lower middle class, 30% upper middle class,

Reproductive health assessment showed that 81.5% had a menstrual cycle of 28-35 days, while 43.15% experienced bleeding for 4-5 days. Health conditions included peptic ulcer (22%), body aches (21.33%), fever (14.67%), skin diseases (13.33%), hypertension (12.66%), and diarrhea (4.67%). About 20% had a history of blood transfusion, while 80% did not.

BMI measurements indicated that 60.33% had normal BMI, 22.67% were underweight, 15.33% were pre-obese, and 2% were obese. Hemoglobin levels showed mild anemia in 40%, moderate anemia in 30%, and normal levels in 30%.



A study was conducted by Monowarul Hoque *et.al* in 2015 on 15-49 years of Garo ethnic women in the northern part of Bangladesh. This was a cross-sectional study conducted in the Mymensingh district to assess the nutritional status of women of reproductive age by BMI (Body Mass Index) cut-off value based on the Asian population. The mean age of the respondents was 34.27 years, and more than 50% of respondents were illiterate. From the study, it was found that 67%, 30%, and 3% of women were underweight, normal, and overweight respectively. They found a significant statistical association between nutritional status and age group, education, and occupation [14].

Md Monowarul Hoque *et.al* conducted another study on the nutritional status of reproductive age from May to August 2013 in the Khagrachari district among 100 settlers and 100 Indigenous women. They assessed the nutritional status by BMI recommended by WHO. The mean age of the respondents was 29.8+ 11.1 years with the maximum age group 15-24 years. They found 17% and 46% underweight and normal BMI respectively among Indigenous women. 19% and 49% were underweight and had normal BMI respectively among settlers. The mean difference in mid-upper arm circumference was significantly different between the groups [15].

A study was conducted to identify the factors associated with the nutritional status of rural mothers in Bangladesh by M Rahman *et.al* in 2004. Data was collected from Bangladesh Demographic Health Survey data 2004 for the last five years. Women's nutritional status was defined in terms of BMI. It was observed that although the maximum number of rural mothers were nourished (56.3%), a large portion of them were acutely malnourished (43.7%), and the mean height for all ages of women was 150.43 cm. Multivariate logistic regression analysis showed that women who worked for cash were two-and-a-half times more nourished than women who did not work for cash. Women whose husbands had a lower-status job and lower household assets were suffering more from acute malnutrition. The other main contributing factors they found likely to affect the nutritional status of women were respondent's education, husband's education, vitamin A, and iron supplementation [16].

A cross-sectional study was conducted at a selected Mohakhali slum of Dhaka city by Haque MJ *et.al* in 2009 to assess the nutritional status of women of reproductive age living in the slum. A total of 510 slum women were interviewed in the study. In the study majority of the respondents (41.2%) were in the age group of 15 to 24 years, 62.7% of respondents and 67% of their husbands were illiterate. About 57% of the respondents were housewives and most of the working women were garment workers (33%). The average monthly household income of the respondents was Tk. 3056.9 ( $\pm$ 981.8). The mean BMI of the respondents was

19.2 ( $\pm$ 2.4) and about one-third (30.8%) of the respondents were malnourished (BMI <18.5). The nutrition mineral status determined by BMI was not found significantly associated with the education and occupation of the respondents ( $p>0.05$ ) but monthly family income showed a positive relationship with the BMI of the respondents ( $p<0.05$ ) [17].

Dr. Nuruzzaman *et.al* guided a study on the reproductive characteristics and nutritional status of coastal women of Bangladesh in 2013. It was done in Moheshkhali upazila, Cox's Bazar district by taking interviews from 220 respondents with a pretested questionnaire. The average age of the respondents was 26.5 years. Almost 60% of them were Muslims and 44% were illiterate. The average monthly family income and family size were Tk-6968.18 and 5.8 respectively. More than half (56%) of the respondents had a history of regular use of contraceptives and oral pills were the most common type of contraceptive [18].

Yarlina Balarajan *et al.*, in 2009 in a study aimed to examine the trends in the prevalence of overweight-obesity and underweight among women of reproductive age in 3 South Asian countries between 1996 and 2006 and to identify sociodemographic correlations of overweight in the most recent survey. They used nationally representative data from 8 Demographic and Health Surveys conducted in Bangladesh (n = 19,211), Nepal (n = 19,354), and India (n = 161,755). They examined the change in the prevalence rates of overweight-obesity (BMI 25 kg/m<sup>2</sup>) and underweight (BMI 18.5 kg/m<sup>2</sup>) over a recent 7 to 10-year period among women aged 15–49 years [19].

A health survey was conducted by Shiva Bhandari *et.al* on dietary intake patterns and nutritional status of women of reproductive age in Nepal. They found that women aged 15 to 24 years were 2.7 times more likely to be malnourished than women of 35 to 49 years of age. The unemployed women had nearly two times more chances of being malnourished than women doing manual work. In Terai, women were five times more likely to be malnourished and 20 times more likely to be anemic than women in Mountain. Pregnant women were five times more likely to be anemic than non-pregnant women. The nutritional status of women of reproductive age was considered poor, especially in Terai [20].

### Limitations of the study

Data collection time was short, so we took a small number of participants. The respondents were hesitant to provide blood samples. Some parts of the respondents were unable to provide exact information on age, vaccination, etc.

## CONCLUSION AND RECOMMENDATIONS

This study has shown that the major determinants of health and nutritional status of women within 15-49 years were socioeconomic and cultural. The level of knowledge about health and nutrition was not satisfactory. The nutritional status of poor socioeconomic group people was below average. Most of the respondents were mild (30%) to moderately (40%) anemic. BMI showed 22.67% underweight and 17.33% overweight. Apart from these, the practice of early marriage revealed several birth outcomes like prolonged labor, obstructed labor, excessive hemorrhage, and even death of a child. It is also accepted that maintaining optimum nutritional status during adolescence is important for future reproductive outcomes.

So, further study with a larger sample size needs to be done to improve the nutritional status of females at reproductive age, educational status, and advocacy.

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**Conflict of interest:** None declared

**Ethical approval:** This study was approved by the ethical review committee

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