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ANEMIA AND ITS RISK FACTORS AMONG PREGNANT WOMEN IN SHIBBARI

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Abstract: *This is a cross-sectional descriptive study conducted in Shibbari in joydebpur, August to January. A total of 100 women aged 18-35 years participated in this study.A pretested questionnaiar was used to collect data through face to face interviewed.*

The study revealed that 21% of the women of all trimester of the pregnancy suffer from anemia. The study finding showed that anemia is a big problem in sub urban area of Sibbari.This anemia is contributed by diet which is a predominantly cereal-based along with less educational status particularly lack of health education. The figure showed that highest no of pregnant women in 2nd trimester 80%, 13% in 3rd trimester and 7% in 1st trimester have mild anemia. Figure showed that highest number of pregnant women in 2nd trimester 83%, 17% in 1st trimester have moderate anemia (7-9.99 gm/dl). The contribution of this prevalence is contributed by low calorie intake, low protein intake particularly hem sources of protein and high intake of non-hem protein and iron along with early age at pregnancy.

This problem may be overcome by increasing literacy of the girls before pregnancy imparting health education and insurance of balanced diet and regular support from the family.

Keywords: *Shibbari, anemia, pregnant women, trimester*

Introduction

Nearly half the pregnant women in the world are estimated to be anemic. Among them 52% are developing countries compared to 23% in industrialized countries[1]. Recent World Health Organization (WHO) showed approximately 10.8 million in African countries, 9.7 million in the Western Pacific and 24.8 million pregnant in South East Asia are anemic and the highest number being in South East Asia[2].

Anemia in pregnancy constitutes a major public health problem in developing countries and found a strong association of severe anemia (OR 3.51, 95% CI: 2.05-6.00) with high maternal mortality. In addition, associated adverse prenatal outcomes have been well documented[3].

Anemia in pregnancy (AIP) is a condition is deleterious to mothers and fetuses. Maternal complications include due to AIP premature labor, poor weight gain, and dysfunctional labor.[4] Fetal or neonatal complications include prematurity, low birth weight, poor Apgar score, fetal distress, and neonatal distress, requiring prolonged resuscitation and causing neonatal anemia due to poor reserve.[5,6]A variety of etiologies exist for anemia, including

dietary deficiencies of foliate or vitamin B12 (pernicious or macrocytic anemia), infections, and chronic conditions that result in insufficient production of red blood cells (aplastic anemia) or excessive destruction of red blood cells (hemolytic anemia). The adult body contains 2.5–5 g of iron, approximately two-thirds of which is present in hemoglobin. Other essential iron-containing systems include muscle myoglobin (3%) and a variety of iron-containing enzymes (5–15%), including cytochromes. The body's iron needs during pregnancy is high despite the cessation of menstruation. Demand for iron comes primarily from the expansion of the red blood cell mass (450 mg), the fetus (270 mg), the placenta and cord (90 mg), and blood loss at parturition (150 mg).

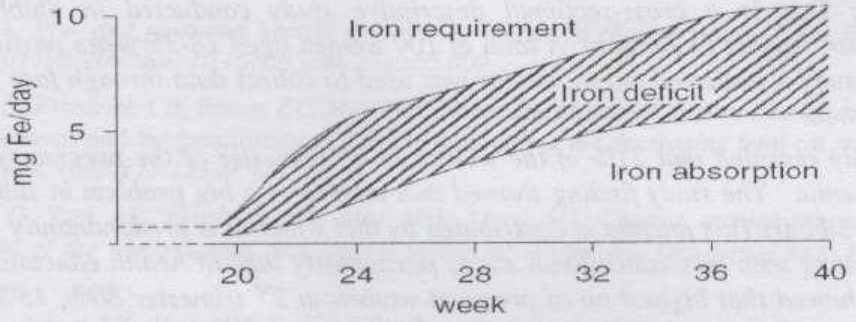


Figure 1: The discrepancy between iron requirements and availability of iron from dietary absorption in pregnant women beyond 20 weeks of gestation. The resulting iron deficit is maintained as pregnancy progresses into the second and third trimesters.[7]

However, the requirement for iron is not spread evenly over the course of pregnancy, as depicted in Figure 1, Iron requirements actually reduced in the first trimester because of cessation menstrual and fetal demand for iron is negligible. Iron requirements increase dramatically through the second and third trimesters to support expansion of maternal red blood cell mass and fetal growth.

Anemia is a widespread in Bangladesh. It poses a major threat to maternal and child survival, contributes to low birth weight, lowered resistance to infection, poor cognitive development and decreased work productivity. It has effect on health, both physical and mental, thereby affecting quality of life, and translating into significant economic losses for the individuals and for the country. These impacts are estimated to cost Bangladesh 7.9% of its gross domestic product (GDP). In Bangladesh, two different surveys have estimated the anemia prevalence among pregnant women to be 50 and 59%[8-9].The commitment of the government in addressing anemia is seen through the poverty Reduction Strategy Paper and the Health, Nutrition and Population Sector Program for 2003-10, in which the prevention and control of anemia is one of the key strategies for reducing maternal, neonatal and childhood mortality and improving maternal and childhood nutrition. Anemia prevention and control also features in the 1997 National Plan of Action for Nutrition (NPAN) and the National Plan of Action for children (2004-2009). The MOHFW has overall responsibilities for all activities related to anemia control in Bangladesh through the Directorate General of Health services (DGHS),

Directorate General of Family Planning (DGFP) and the National Nutrition programmed (NNP). In 2001, the Institute of Public Health Nutrition developed National Guidelines for the prevention and Treatment of Iron Deficiency Anemia, which recommend iron supplementation, dietary improvement, food fortification and helminthes control in preschool-aged children, school-aged children, adolescent girls, and women of reproductive age[10-11].

Materials and Methods

Study Design: The present cross sectional study was conducted among 100 pregnant women of 1st, 2nd& 3rd trimester of pregnancy. The study was designed to estimate the prevalence of anemia in pregnant women and its related risk factors who attend antenatal care at Surjethasi clinic. Face to face interview was taken and findings are recorded in the questionnaire. The study was conducted from August 2012-January 2013.
All pregnant women willing to participate was selected for interview. Height and weight was measured by using Dectomedico instrument and recorded height in cm and weight in kg.

Questionnaire: A structured questionnaire is prepared for this study with Characteristic of Socio-demographic condition, Types of Health Services Facilities, used by the pregnant women, 24 hrs recalls method

Blood tests and procedures: Blood samples (20 μL) was collected from all participants for determining hemoglobin level.20 μL of blood was added to 5 ml of Drabkins cyanide-ferricyanide solution and kept 5 minute into photoelectric calorimeter at a wavelength of 540mm.After 5 min the result of hemoglobin level was recorded in gm/ml. All samples with a value less than 10.5 gm/dl (second trimester) and less than 11 g/dl (third trimester) will considered to be at risk as anemic.

Data analysis: Data of the questionnaire and results of blood tests were analyzed using software program statistical package for social sciences (SPSS-12). Frequencies and percentages were calculated. The findings of the study were presented by frequency, percentage, table, graphs, figure.

Results

Socio-demographic characteristics of the study population

Table 1: Age Distribution of the Respondents (n= 100)

Age group of the respondents	Frequency	Percent (%)
18-21	39	39%
22-25	35	35%
26-29	11	11%
30+	15	15%

The highest number of the respondents (74%) are in the age of 18-25 years.

Table 2: Distribution of Educational Status of the Respondent (n= 100)

Education of the respondent	Frequency	Percent (%)
Illiterate	17	17%
Primary Secondary	15	15%
Secondary	27	27%
Higher Secondary	24	24%
Graduate	10	10%
Non-formal education	7	7%

Table 2 depicts that among 100 pregnant women, 27% women have secondary,24% higher secondary education and 17% illiterate.

Table 3: Distribution of Occupation of the Respondent (n= 100)

Occupation of the respondent	Frequency	Percent (%)
Housewife	37	37%
Student	16	16%
Service Holder	11	11%
Day laborer	15	15%
Maid servant	15	15%

Table 3 shows that 37% of the respondents housewives

Figure 2: Distribution of Type of Family of the Respondent (n=100)

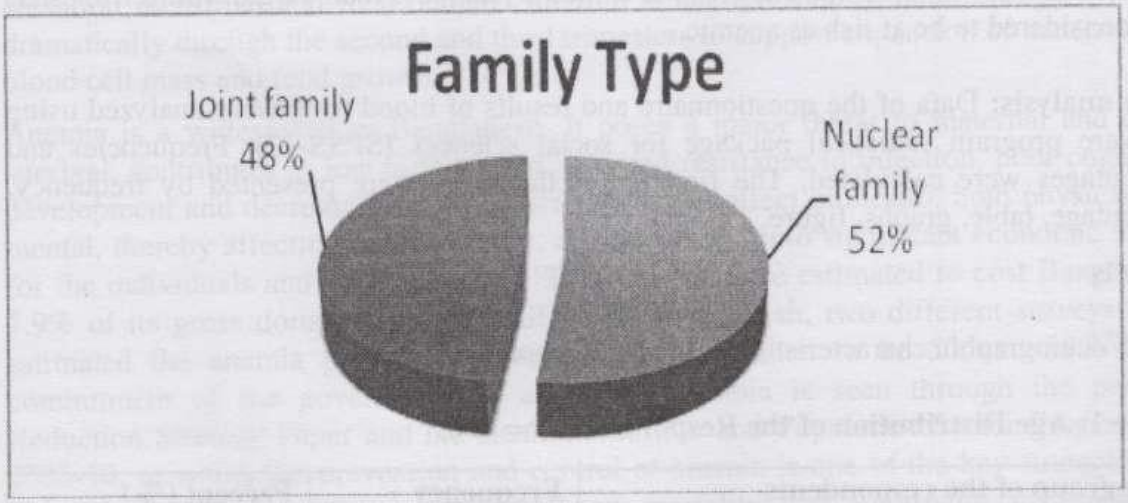
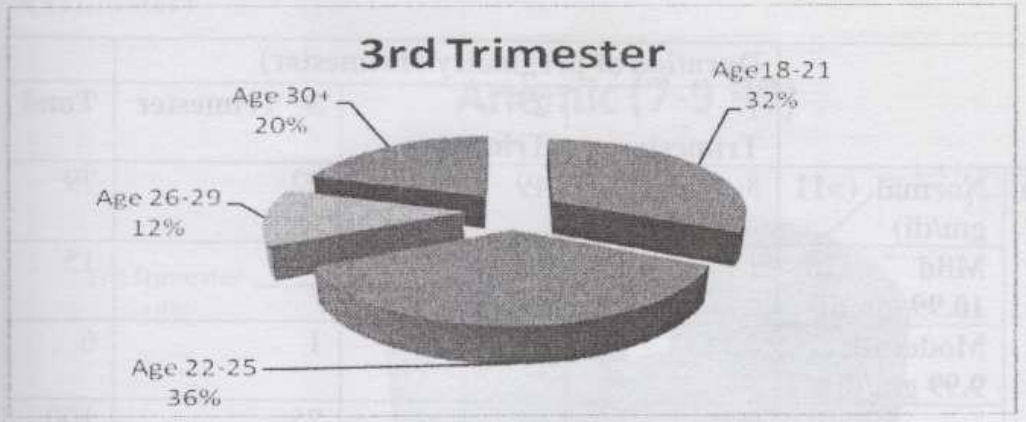


Figure 2 shows the pregnant women 52% lived in a nuclear family and 48% in joint family.

Figure 3: Distribution of Pregnant by 3rd Trimester



BMI of the respondent

Table 4: Nutritional Status by BMI

BMI	Frequency	Percent (%)
<18.5	7	7%
18.6-24.99	44	44%
25-29.99	40	40%
>30	9	9%

The table 4 shows that 7% mother are malnourished, while 9% are obese.

Table 5: Distribution of Dietary Intake During the Pregnancy by Trimester.

Duration of pregnancy	Calorie	Fat	Protein source from animal	Protein source from vegetable
1st Trimester	1449	12	30	70
2nd Trimester	1544	15	40	60
3rd Trimester	1900	19	43	57

Figure 4: Total intake protein by trimesters from animal and vegetable sources.

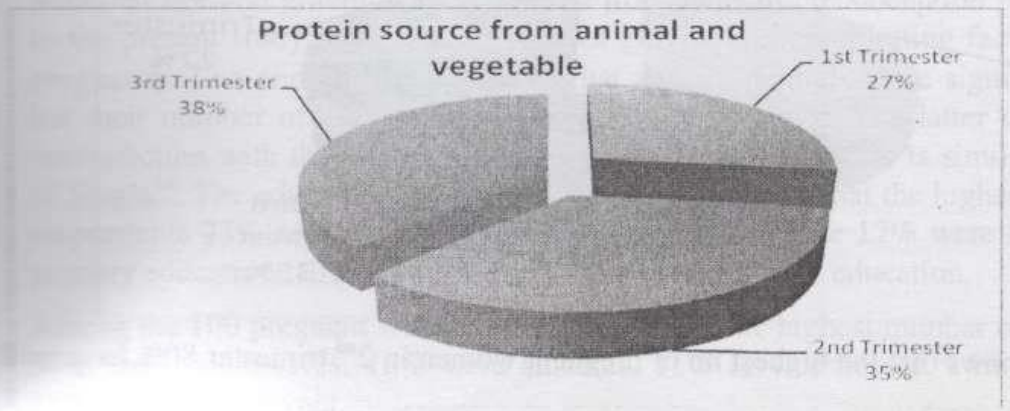


Table 6: Distribution between Hemoglobin level (gm/dl) and duration of pregnancy (Trimester)

		Duration of pregnancy (Trimester)			
		1st Trimester	2nd Trimester	3rd Trimester	Total
Hemoglobin Level	Normal (>11 gm/dl)	8	49	22	79
	Mild (10-10.99 gm/dl)	1	12	2	15
Total	Moderate (7-9.99 gm/dl)	0	5	1	6
		9	66	25	100

Figure 5: Distribution between Hemoglobin level (gm/dl) and duration of pregnancy

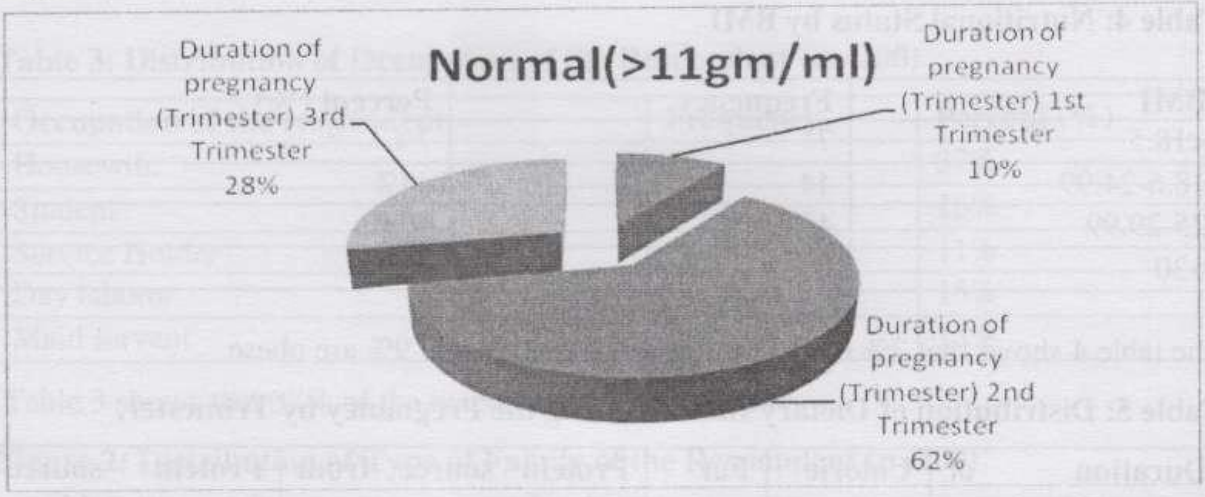
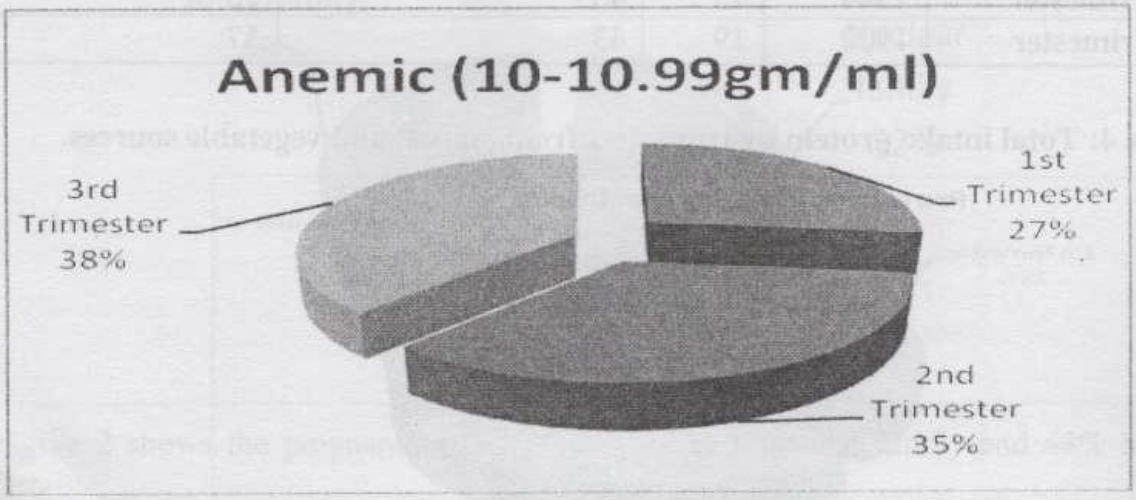


Figure 6: Distribution between hemoglobin level (gm/dl) and duration of pregnancy (Trimester)



The figure 6 shows that the highest no of pregnant women in 2nd trimester 80% have mild anemia.

Figure 7: Distribution between Hemoglobin level (gm/dl) and duration of pregnancy (Trimester)

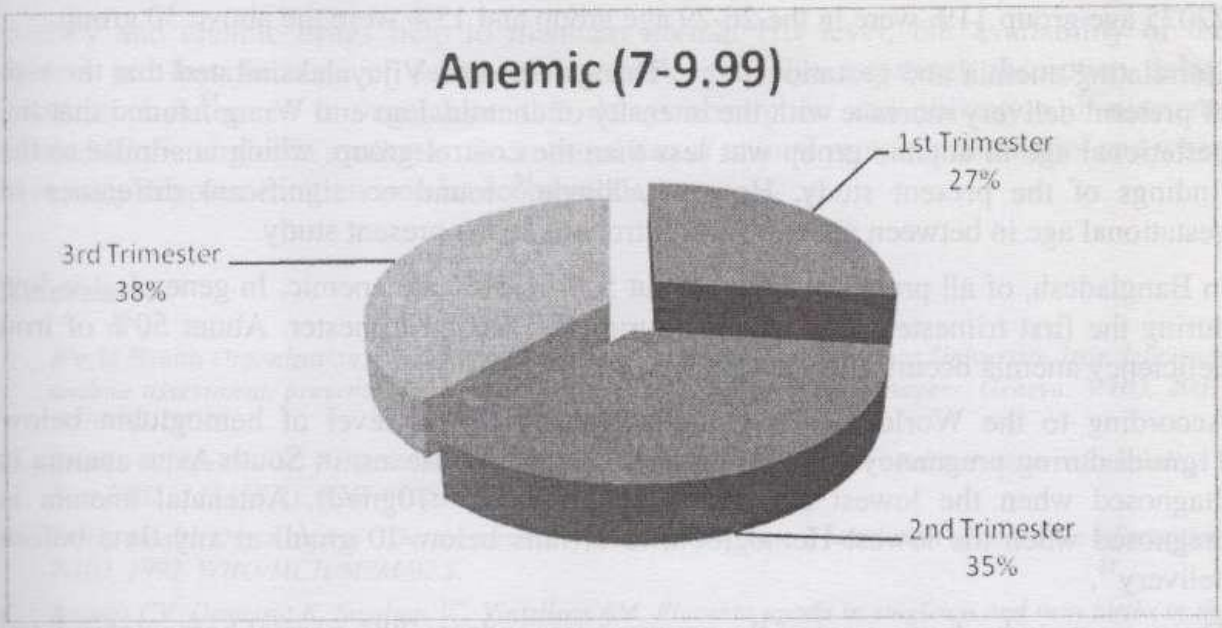


Table 7: Total Iron Intake by Trimesters.

Duration of pregnancy	From animal (mg)	From vegetable (mg)	Total
1st Trimester	6	12	18
2nd Trimester	9	15	24
3rd Trimester	12	18	30

Discussion

In this study the highest number of the pregnant women 39% were in the age group of 18-21 years, 35% in the age group of 22-25, 11% in the age group 26-29 and 15% respondents in the age group 30+. 35% in the age group of 22-25, 11% in the age group 26-29 and 15% respondents in the age group 30+.

A fall in the hemoglobin concentration is a late consequence in iron deficiency anaemia[12]. Maternal age and gravidity influence the iron status in preconception period. According to the present study, increased number of gravity is a contributing factor for anemia in pregnancy. Lao and Wong[13] observed that anemic mothers were significantly younger, but their number of gravity had no significant difference. The latter observation has a contradiction with the present study. However, our observation is similar to the findings of Singla[14]. The education level of the respondents shows that the highest numbers of the respondents 27% secondary education, 24% HSC, illiterate 17% were followed by 15% primary education, 10% graduate and 7% were non-formal education.

Among the 100 pregnant women were interviewed the highest number of the respondents 37% were housewives, 16% were students, 11% service holder, 15% day laborer and 15% were maidservant.

Majority of the pregnant women 66% were in 2nd trimester, 25% were in 3rd trimester and 9% were in 1st trimester whereas 39% were in the 18-21 age group, 35% were in the 22025 age group 11% were in the 26-29 age group and 15% were the above 30 group.

Correlating anemia and gestational age, Thangaleeta and Vijayalaksmitated that the risk of preterm delivery increase with the intensity of anemia. Lao and Wong[13] found that the gestational age in anemic group was less than the control group, which is similar to the findings of the present study. However, Single[14] found no significant difference in gestational age in between anemic and control unlike the present study.

In Bangladesh, of all present women, about 50% to 59% are anemic. In general, it is low during the first trimester and increases during the second trimester. About 50% of iron deficiency anemia occurs after the 25th gestational week[15].

According to the World Health Organization (WHO), a level of hemoglobin below 11gm/dl during pregnancy is an indicator of anemia. However, in South Asia, anemia is diagnosed when the lowest antenatal hemoglobin is <10gm/dl. Antenatal anemia is diagnosed when the lowest Hemoglobin level falls below 10 gm/dl at any time before delivery[16].

The present study shows most of the pregnant respondents 79% normal hemoglobin level >11 gm/dl whereas 15% respondewnts have mild anemia 10-10.99 gm/dl and only 6% have moderate anemia. So total anemia is 21 out of 100.

The table shows the nutritional status of mother. Calculating their individual BMI we find that 7% mother have poor BMI. Majority of the respondents 44% are well nourished, 40% have overweight and 9% were in obesity.

The study design discussed on pregnancy. Boby mass index also was consistent with those of previous studies that reported the underweight women were at increased risk of anemia [17].

Limitation of the study: Lack of fund and short duration to cover all pregnant women was one of the main limitations of the study area; Lack of participation of the subjects; The study population was selected was selected only Shibbari. So it does not represent the situation in other part of the country; Some responds could not tell the food intake correctly

Conclusion

This study finding concludes that anemia is a big problem in sub urban area of Shibbari. Anemia prevalence is 21%. This anemia is contributed by diet which is predominantly cereal-based along with less educational status particularly lack of health education. The figure shows that highest no of pregnant women in 2nd trimester 80%, 13% in 3rd trimester and 7% in 1st trimester have mild anemia. Figure showing that highest number of pregnant women in 2nd trimester 83%, 17% in 1st trimester have moderate anemia (7-9.99 gm/dl).The contribution of this prevalence is contributed by low calorie intake, low

protein intake particularly hem sources of protein and high intake of non-hem protein and iron along with early age at pregnancy.

Dietary and anemic drugs help to maintain normal HB level, but availability of the protein are less because of eating of vegetable and also intestinal absorption delay. Because phytates are in vegetables, that delays absorption and utilization of nutrients needed for hemoglobin synthesis. So, rational use of animal protein protein diet and when necessary supplementation iron is recommendation

Referances

1. *World Health Organization, United Nations Children's Fund, United Nations University. Iron deficiency anemia assessment, prevention and control. A guide for programme managers. Geneva: WHO, 2001. WHO/NHD/013.*
2. *Brabin BJ, Hakimi M, Pelletier D. An analysis of anemia and pregnancy-related maternal mortality. J Nutr.2001; 131 (2S-2): 604S-615S.*
3. *World Health Organization . The prevalence of anemia in women; a tabulation of available information. WHO, 1992. WHO/MCH/MSM/92.2.*
4. *Ananth CV, Demissie K, Smulian JC, Vintzileos AM. Placenta previa in singleton and twin births in the united States,19889 through 1998; Am J ObstetGynecol 2003; 1881;275-81*
5. *Hyder SM, Persson LA, chowdhury M, Lonnerdal BO, Ekstrom EC. Anemia and iron deficiency during pregnancy in rural Bangladesh. Public Health Nutr 2004; 7(8); 1065-70*
6. *K;ebanoff MA, Shiono PH, Selby JV, Trachtenberg AI, anemia and spontenious preterm birth. AM J ObstetGynecol 1991: 164 (1);59-63*
7. *(Reproduced with permission from the Food and Agriculture Organization of the United Nations (2001) Iron. In*
8. *Human Vitamin and Mineral Requirements: Report of a Joint FAO/WHO Expert Consultation, Bangkok, Thailand, pp. 195–221. Rome: FAO.)*
9. *Helen Keller International (HKI)/Institute of Public Health Nutrition (IPHN). Iron Deficiency Anemia throughout the Lifecyclic in Rural Bangladesh. Dhaka; HKI/IPHN, 1999.*
10. *Areekul S. Nurtitional anemia in Thailand. J Med Assoc Thai 1980; 63: 346-51*
11. *BBS/UNICEF. Anemia prevalence survey of Urban Bangladesh and Rural Chittagong Hill Tracts 2003. Dhaka:2004*
12. *BBS. Bangladesh Health and Demographic Survey 2011.Dhaka-2004.*
13. *Lao TT, Wong WM. Placental ratio—its relationship with mild maternal anemia. Placenta 1997; 18(7): 593-6.*
14. *Singla PN, Chand S, Khanna S, Agarwal KN. Effect of maternal anemia on the placenta and the new born infant. ActapaediatrScand 1978; 67(5); 645-8.*
15. *MedappaN.ed. Iron absorption and its implications on strategies to control iron deficiency anaemia. ICMR Bull 2000; 30(2);1-7.*
16. *Gambling L, Mcardle HJ. The effect of nutrient deficiency on fetal development, pregnancy outcome and adultmetabolism. Arch Tierz 2003; 46(SI2): 130-41.*
17. *Hyder SM, Persson LA, Chowdhury M, Lonnerdal BO, Ekstrom EC. Anemia and iron deficiency during pregnancy in rural Bangladesh. Public Health Nutr 2004.*