



## Prevalence of Anemia amongst Women in Reproductive Age Group of Morang District, Nepal

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### ABSTRACT

Women reproductive aged covers 15-45 years of age and is the transition period of life. A hospital based study was carried out in Morang district to determine prevalence of anemia in difference group among women of reproductive age population. Cyanmethaemoglobin method used to determine the hemoglobin level. Out of 3,859 subjects, 2,597(67.3%) women amongst reproductive age group were diagnosed as anemic. The highest prevalence of anemia 13.7% was found at the age group of 25-29 years and the second highest prevalence of anemia 13.1% was at the age >40 years of the study population. The mean and standard deviation (SD) of the age and hemoglobin were 30.78±8.175 years & 11.345±1.70gm/dl among anemic total population.

**KEY WORDS:** - Reproductive age, Anemia, Hb concentration.

### INTRODUCTION:

An anemia is a disorder in which the hemoglobin level in the blood is below the lower limit of the normal range for the age and sex of the individual<sup>(1)</sup>. This results in reproduction of oxygen carrying capacity of blood usually due to a reduction below normal limits of the total circulatory red cell mass. World Health Organization (WHO) defines the anemia as a condition in which the hemoglobin content of blood is lower than normal as a result of deficiency of one or more essential nutrients, regardless of the cause of such deficiencies. Anemia is established if the hemoglobin is below the cutoff point recommended by WHO<sup>(2)</sup>.

Nepal is a developing country and literacy rate is low as compared to many other developing countries. People are still ignorant about the specific dietary requirement. This results in inability of the erythropoietic tissue to maintain a normal hemoglobin concentration on account of an inadequate supply of one or more nutrients. Parasitic infections and poor bioavailability of iron contribute to high prevalence of iron deficiency anemia<sup>(3)</sup>. Anemia is a very common problem in our country. It affects almost all ages and both sexes. It is especially common in female and lower socio-economic group.

There are many studies on anemia in pregnancy in Nepal. The prevalence of anemia was 62.2% out of which 3.6% with severe anemia showed in a study done in Kathmandu, Nepal by Bonevik<sup>(4)</sup>. Similarly high prevalence (50-60%) of anemia was noted in the study carried out for Nepal in 1988<sup>(5)</sup>. The prevalence of anemia was 68.8% in

adolescent girls in Dharan, a town of eastern region of Nepal<sup>(6)</sup>. Another study showed that prevalence of anemia was 47.2 % in Biratnagar (eastern region) of the country<sup>(7)</sup>.

Anemia is particularly prominent in South Asia. In India, for example, upto 88% of pregnant and 74% of non-pregnant women are affected<sup>(8)</sup>. Association of anemia with malaria and Hookworm infestations has been seen earlier in various studies done across the globe<sup>(9)</sup>.

A study done by Hawdon and Hotez showed that Hookworms cause severe anemia and malnutrition in developing countries of the tropics, with an essential one billion people infected World Wide<sup>(10)</sup>. WHO emphasized the need of epidemiological studies was up-to-date information is not available<sup>(11)</sup>.

The purpose of present study is to find out the prevalence of anemia amongst female patients in reproductive age group and to determine the association between attributes.

### MATERIALS & METHODS:

This was a retrospective hospital based study of the prevalence of anemia in females of reproductive aged 15-45 years old. The study was conducted at the Birat Hospital and Research Centre (BHRC) Biratnagar, Morang district of Nepal, from December 2011 to August 2012. BHRC is a tertiary level hospital situated at eastern part of Nepal and provides health services to people from different district of Koshi Zone of Nepal and adjoining areas of Bihar state of India. Age and hemoglobin levels of study patients were collected from the hospitals records

and analyzed for the anemia. Statistical Package for Social Science (SPSS version 18.0) was used for data analysis. Statistical significance was calculated using chi-square test and p value. P value < 0.05 was considered significant. Sample sizes of 3895 subjects were investigated for estimation of Hb level by cyanmethemoglobin method. Anemia was defined as Hb <12 gm/dl in females. Target group was women of reproductive age, physically healthier and aged 15-45 years without considering pregnancy. International cut-off recommended by International Nutritional Anemia Consultative Group (INACG). Severe, moderate and mild anemia was defined as Hb <7 gm/dl, 7-9 gm/dl and 9-11.9 gm/dl respectively.

### RESULTS:

Anemia is a condition characterized by a decrease in the concentration of hemoglobin in the blood<sup>(12)</sup>. Hemoglobin is necessary for transporting oxygen to tissues and organs in the body. The reduction in oxygen available to organs and tissue when hemoglobin levels are low responsible for many of the symptoms experienced by anemic people. The consequences of anemia include general body weakness, frequent tiredness and lowered resistance to disease. Anemia can be a particularly serious problem for pregnant women, leading to premature delivery and low birth weight. Overall, morbidity & mortality risks increase for individuals suffering from anemia. Hb testing is the primary method of anemia diagnosis. Based on concentration of hemoglobin in the blood, anemia is classified into three groups: mild, moderate and severe<sup>(13-15)</sup>.

The mean and standard deviation of age and hemoglobin were  $30.78 \pm 8.175$  years &  $11.345 \pm 1.70$  gm/dl among anemic total population.

**Table 1** Shows the prevalence of anemia (2597) was found 67.3%. The highest prevalence of anemia (13.7%) was found at the age group of 25-29 years and the second highest prevalence of anemia (13.1%) was at the age > 40 years of the study population. There was significant difference in distribution of study population with their age group since the p-value is 0.000.

**Table 2** Shows the distribution of anemia and its severity as determined by hemoglobin level. Among the anemic patients, when the level of anemia is disaggregated by severity mild, moderate and severe anemia were 74.1%, 22.8% and 3.1% respectively. In the age group > 40 years, the maximum anemia (26%) were found to be severe followed by mild (19.8%) and moderate (17.7%).

The distribution of age and grading of severity of anemic mild, moderate and severe was significant since the p-value was 0.029. When we see the association between

grades of anemia with attributes, we find that age category is also showing significant association with grades of anemia.

### DISCUSSION:

Anemia is recognized as a major public health problem, affecting over 1.2 billion people in both the developed and developing countries<sup>(16)</sup>. Complications the prevalence of anemia worldwide shows a large variation among regions. Although the prevalence is highest in developing countries but it is also common in industrialized countries<sup>(17)</sup>.

It was hospital based study in which we included female patients of reproductive age group. The prevalence of anemia for study population of Morang district of Nepal was 67.3% (Table-1). This result was consistent with the results of Bonevik<sup>5</sup> and Shah<sup>7</sup> where it was 62.2% and 68.8% respectively. In Morang District, anemia is considered to be one of the major public health problems.

Further analysis of only anemic study population results revealed that the majority of the women (74.1%) were observed mildly anemic whereas 22.8% were moderately anemic and 3.1% were severely anemic. This result also conformity with the result of Bonevik<sup>5</sup> in which the severe anemic was 3.6%.

Our study further revealed that anemia was mostly recorded at the age group of 25-29 years and >40 years. In many studies it was found that anemia is a common problem in reproductive age group women due to low income they are unable to take dietary food, lack of awareness is also a main cause of anemia. Iron deficiency is the most common cause of anemia worldwide. It frequently occurs due to inadequate iron intake, chronic blood loss or disease, mal-absorption, or a combination of all these factors. Similarly data from NNMB Surveys<sup>(18)</sup> showed that iron and folic acid intake in all the age groups was very low. It affects one's development, growth and resistance to infections and is also associated with mortality among children younger than two years old. Iron deficiency usually develops in a sequential manner over a period of negative iron balance such as period of blood loss and / or prolonged iron-deficiency diet, accelerated growth in children and adolescents as well as during pregnancy and lactation<sup>(19)</sup>. Further research is recommended to identify the specific risk factors for anemia; it may be helpful to implement measures to improve nutritional knowledge and awareness among mothers and health workers. Finally, nutritional education and intervention programs should address anemia with a focus on the dietary quantity. All of these interventions must be monitored for effectiveness of the program<sup>(20)</sup>.

Table 1: Distribution of patients according to age group and disease

Age group	No. of anemic patient	Percent	No. of non-anemic patient	Percent	Total	Percent
15-19	215	5.6	99	2.6	314	8.1
20-24	453	11.7	187	4.8	640	16.6
25-29	529	13.7	241	6.2	770	20.0
30-34	475	12.3	227	3.0	702	18.2
35-39	419	10.9	226	5.9	645	16.7
>40	506	13.1	282	7.3	788	20.4
Total	2597	67.3	1262	32.7	3859	100.0

P-value= 0.000

Table 2: Patients distribution according to age group and grading of anemia

Age Group	Anemic of patient			Total
	Sever	Moderate	Mild	
15-19	11	59	145	215
20-24	13	102	338	453
25-29	18	139	372	529
30-34	8	94	373	475
35-39	10	93	316	419
>40	21	105	380	506
Total	81	592	1924	2597

P-value=0.029

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