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ANEMIA DURING PREGNANCY IN THE WOMEN OF WESTERN NEPAL

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Objective: Anemia is the most common nutritional deficiency disorder in the world. The prevalence of anemia in pregnancy varies considerably because of differences in socioeconomic conditions, lifestyles and health seeking behaviors across different cultures. The aim of this study was to evaluate the prevalence of anemia among pregnant women in western part of Nepal. **Method**: A hospital based study was carried out in Nepalgunj Medical College, Kohalpur, Banke Nepal to determine prevalence of anemia among pregnant women. A total of 512 pregnant (15-45 years old) were included in this study. Cyanmethaemoglobin method was used to determine the hemoglobin level. The study took place from January 2012 to December 2012. Statistical analyses were carried out by applying percentage and words excel 2007. **Results**: Out of five hundred twelve pregnant women, 210 (41.02%) pregnant women were anemic and 302 pregnant women were non anemic (58.98%). Also, among these anemic pregnant women, majority (67.14 %) of these women were mildly anemic, whereas 28.57% were moderately and 4.29% were severely anemic**. Conclusion:** Prevalence of anemia was higher in the pregnant women at the second trimester (51.1%) and also at the 20-35 years age group (62.79%).

Keywords: Pregnancy, Anemia, Prevalence, Hb concentration

INTRODUCTION

Anemia is the most common nutritional deficiency disorder in the world. WHO has estimated the prevalence of anemia in pregnant women in developed and developing countries, and that is 14% in developed and 51% in developing countries.[1] The prevalence of anemia in pregnancy varies considerably because of differences in socioeconomic conditions, lifestyles and health seeking behaviors across different cultures.[2,3] Anemia in pregnancy is considered as one of the major risk factors for contributing to maternal death in developing countries.[3] Hemorrhage, eclampsia and infections are being the three major causes of maternal deaths in Nepal.[4] Bonevik et al showed that prevalence of anemia is 62.2% (out of which 3.6% with severe anemia) in a study conducted in Kathmandu, Nepal.[5] A. K. Sinha et al showed in Biratnagar area, the prevalence of maternal anemia was 47.25%.[6]

The daily requirements for iron as well as folate are six times greater for a woman in the last trimester of pregnancy than for a non pregnant woman. This need cannot be met by diet alone, but is derived at least partly from maternal reserves. In a well nourished woman, about half of the total requirement of iron may come from iron stores. When these reserve are low due to malnutrition and /or frequent pregnancies, anemia results. Keeping this view in mind we conducted this study on the population of Nepalgunj in western Nepal. We considered different age group and trimester and its relation with the severity of the anemia.

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PATIENTS AND METHOD

The study was conducted on 512 pregnant women for determination of hemoglobin level in the central laboratory of Biochemistry, Nepalgunj Medical College, Kolhapur, Banke, Nepal from January 2012 to December 2012. Institutional review board/ethics committee approval was obtained from Nepalgunj Medical Center and this study adhered to the tenets of the Declaration of Helsinki.

We included only those who came to Nepal Hospital and Research Centre for antenatal check up and came for delivery as well. As anemia is classified into three degree according to WHO are mild, moderate and severe. Hb cut-off values of anemia were 10.0-11.9 g/dl (mild), 7.0-9.9 g/dl (moderate) and <7.0g/dl (severe).[7] World Health Organization's guideline was used for interpretation and classification of anemia.[8] The hemoglobin was determined by Cyanmet-hemoglobin method.[9]

RESULTS

A total of 512 pregnant women samples were collected and analyzed for this study from January 2012 to December 2012. The age group for this study was considered from 15-45 years. Table 1 shows that among the total pregnant women, 210 (41.02%) pregnant women were anemic and 302 pregnant women were non anemic (58.98%).

Table 1
Anemic and Non anemic pregnant women

Total pregnant women	Anemic	Non anemic
512 (100%)	210 (41.02%)	302 (58.98%)

Also, among these anemic pregnant women, majority (67.14%) of them were mildly anemic, whereas 28.57% were moderately and 4.29% were severely anemic as can be seen in Table 2 and Figure 1).

Table 2
Grading of anemia

Age Group	Mild	Moderate	Severe	Prevalence rate
15-19	38	18	2	58 (27.62%)
20-35	84	39	6	129 (61.43%)
>36	19	3	1	23 (10.95%)
Total	141 (67.14%)	60 (28.57%)	9 (4.29%)	210 (100%)

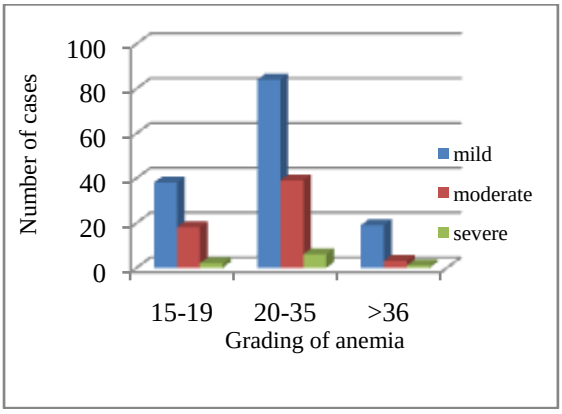

Figure 1
Comparison of grades of anemia in different age groups

Prevalence of anemia was higher in pregnant women at the second trimester (50.48%) and at the age group of 20-35 years (61.43%) as indicates in Tables 3 and Figure 2.

DISCUSSION

In this study population of western part of Nepal, the prevalence of maternal anemia was 41.02%. Further analysis of results revealed that the majority of the anemic women observed were mildly 67.14% anemic, whereas 28.57% were moderately and 4.29% were severely anemic.

Table 3
Distribution of anemic and non-anemic pregnant women at different trimester of pregnancy

Trimesters	Anemic	Non-Anemic	Total
First	11 (5.24%)	81 (26.82%)	92
Second	106 (50.48%)	69 (22.85%)	175
Third	93 (44.29%)	152 (50.33%)	245

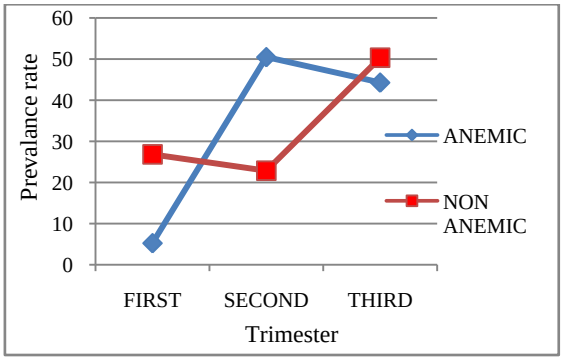

Figure 2
Prevalence of anemia in trimester of pregnancy

DISCUSSION

In this study population of western part of Nepal, the prevalence of maternal anemia was 41.02%. Further analysis of results revealed that the majority of the anemic women observed were mildly 67.14% anemic, whereas 28.57% were moderately and 4.29% were severely anemic. Our study further revealed that anemia was mostly recorded at the age group of 20-35 years and those at the second trimester of pregnancy. Results of our work corroborates well with the reports of WHO on the prevalence of anemia in developing countries.[1] Data of our study indicates that the prevalence of anemia in our study was closer to that recorded among the pregnant women of Biratnagar, Nepal (47.25%) and Venezuela (34.4%) which further supports our interpretation.[6,10] Our observation is quite in agreement with the earlier observation that iron deficiency is the commonest cause of anemia in developing countries and that is why WHO has

emphasized on the need of epidemiological studies.[11,12] Yuan Xing et al (2009) on Tibet pregnant population concluded that an average of 63 percent of Tibet mothers were anemic and that the gestational age, ethnicity, residence and low income of Tibetans amounted significantly to the Hb level and the occurrence of anemia in pregnant Tibetans.[13] Ma AG and Chen XC et al (2004) reported 41.58% in pregnant people of Qingdao province of China were anemic and the subjects with iron deficiency anemia had much higher rates of vitamin C, folate and B12 deficiencies than those in the non anemic subjects and especially in the deficient rates of ascorbic acid and folate in the anemia group. Moreover, they observed that the decreasing trends of Hb concentrations were accompanied by the decreases of serum levels of vitamin A, ascorbic acid, folate and B12 and concluded that multiple vitamin deficiencies may be associated with anemia in pregnant mothers in the last trimester.[14] However, the work of Karaoglu et al (2010) on pregnant women of East Anatolian province of Turkey, registered a percentage of 27.1% of anemic pregnant women.[15] As we see a lot of cases of anemia in developing countries, especially during pregnancy, public awareness comes to play the major role in the prevention of the causative factor of the disease. Continuing of daily iron supplementation program with folate and vitamin B12 in the beginning of pregnancy and food aid programs towards unemployed domestic pregnant women is advocated to reduce this problem.

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