ORIGINAL RESEARCH ARTICLE

PREVALENCE AND RISK FACTORS OF ANAEMIA AMONG PREGNANT WOMEN IN EASTERN NEPAL

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ABSTRACT

Anaemia is the commonest problem in pregnancy throughout the world and vast majority of this burden occurs in developing countries especially in Nepal. The study was aimed for determining the various risk factors of anaemia in group of pregnant women of eastern region located in Nepal. To assess prevalence of anaemia and to identify the association between the demographic variables of pregnant women of eastern region. Thus there is necessity for investigate the prevalence of anaemia for pregnant women. This was a follow-up study design was for the study in Obstetrics and Gynaecology department, Birat Medical College & Teaching Hospital, Biratnagar conducted from Oct. 2014 to Jan. 2016.A total of 545 pregnant women were enrolled in this study. Venous blood was obtained for determination of haemoglobin and questionnaire was designed to collect age of marriage, age of first child birth and socioeconomic status. Women were followed up at delivery. Haemoglobin levels of 10-10.9 g/dl, 7.0-9.9 g/dl and <7 g/dl were considered as mild, moderate severe anaemia respectively. The collected data were analysed using SPSS 2, programme. Chi-square test and p-value was used. A total of 545 pregnant women were included in this study. Their mean age was 25.93±4.60.The overall prevalence of anaemia was 40.7% (N=222). The mild, moderate and severe anaemia were at rates of 55.0% (N=122),39.2% (N=87) and 5.9% (N=13) respectively. Women aged 20-24 years were found more anemic with prevalence by severity of 42.8% (N=95). The mean age of marriage and first child birth were 21.92±3.02 and 23.47±2.96 respectively. Majority of pregnant women were at high school level with nuclear family and monthly income NRs<5000 were 35.0% (N=191). Anaemia is significant risk factor for maternal mortality in Nepal. Prevalence of anaemia during pregnancy was 40.7% and this rate is higher to those indicated in others developing countries. In our study population Women with pregnancy had a higher risk of anaemia at the age group 20-24 years by severity of 42.8%.The study revealed that anaemia present at considerable levels in eastern Nepal.

Key words: Anaemia, Haemoglobin concentration, Pregnancy

INTRODUCTION

Anaemia is worldwide health problem and in developing countries about two third of pregnant women population are affected by this disease.[1] Iron deficiency type of anaemia is most prevalent due to nutritional deficiency all over the world.[2] The prevalence aetiology and degree of severity vary in different populations, it is 35% for non-pregnant and 51% for pregnant women globally, and 3-4 times higher in developing countries.[3] Anaemia is particularly prominent in South Asia. In India up to 88% of pregnant women are affected.[4] A high prevalence of anaemia in pregnancy was observed (96.5%),of which 22.8% had mild,50.9% had moderate and 22.8% had severe anaemia in a study conducted in Delhi.[5]

Many researches in different parts of developing countries have documented iron deficiency as the leading cause of death in pregnancy.[6,7] In pregnancy the prevalence of anaemia varies considerably because of differences in socioeconomic conditions, lifestyle and health seeking behaviours in different countries.[6,7] In developing countries anaemia in pregnancy is considered as one of the major risk factors for contributing to maternal death.[7] Three major causes of maternal deaths in Nepal are haemorrhage, eclampsia and infections.[8] In the last trimester of pregnancy the daily requirement for

iron as well as folate is six times greater than non pregnant women. The diet alone cannot meet this need; it also derived from parental reserves. Around half of the total requirement of iron may come from iron reservoirs in well nourished women. Anaemia occurs whenever these reservoirs are low because of malnutrition or frequent pregnancies.The present study was conducted with the aim of determining the frequency of anaemia amongst pregnant women in Biratnagar, Nepal along with demographic associates.

METHODS

Five hundred and forty five patients from eastern region, who visited over a period of one year from October 2014 to January 2016 at the Obstetrics and Gynaecology Department, Birat Medical College & Teaching Hospital, Biratnagar, were enrolled. A detailed questionnaire was filled during admission. Epidemiological information including age of marriage, age of first child birth, level of education, type of family and other status were documented. So, we included only those who came to Birat Medical College and Teaching Hospital for antenatal check up and came for delivery as well.

A total of 545 outdoor and indoor patients during the study period for their antenatal check-up and got their haemoglobin estimated by Cyanmethemoglobin method. Multiple pregnancy and history of chronic disease were excluded from the study. Outcome variables were to see incidence of anaemia & to identify the risk factors. Haemoglobin (Hb %) estimation was performed at the time of admission and pre-designed Performa filled. Haemoglobin percentage and severity of anaemia used to evaluate Hb<11.0gm/dl, were included in the study.

RESULTS

The prevalence of anaemia was 40.7% among pregnant women (222 out of 545). In which 122 (55.0%) had mild anaemia, 87 (39.2%) had moderate and 13 (5.9%) had severe anaemia. We found that severity of anaemia was higher 43.2% in women who were in the age group of 20-24. 43.2% of the pregnant women got married between the age group of 20-24 years. Similarly age of first child birth of women was 20-24 years. Most of them (55.80%) belonged to nuclear family and 54.50% of pregnant women had education high school and post-graduation was only 0.40%. Majority of the pregnant women were income >5000, 65% (N=354) and <5000, 35.0%(N=191) of the total study population.

Women who were in the age group of 20-24 years were found more anemic with prevalence by severity of 42.8% (N=95) followed by age group of 25-29 years 30.6% (N=68). The mean and Std. deviation of age in years, age of marriage and age of first child birth are 25.93±4.60, 21.92±3.02 and 23.47±2.96 respectively. (p-value: 0.003) **(Table 1-3)**

Table 1 : Prevalance of anaemia by age group

Age group (yrs)	Anaemic	Non Anaemic	Total
15-19	19 (3.5%)	38 (7.0%)	57 (10.5%)
20-24	95 (17.4%)	140 (25.7%)	235 (43.1%)
25-29	68 (12.5%)	105 (19.3%)	173 (31.7%)
30-34	29 (5.3%)	29 (5.3%)	58 (10.6%)
>35	11 (2.0%)	11 (2.0%)	22 (4.0%)
Total	**222 (40.7%)**	**323 (59.3%)**	**545 (100%)**

Chi- Square: 4.294, df: 4, p-value: 0.368

Table 2 : Demographic data of patients

Table 2a

Marriage status		
Age group (yrs)	Age of Marriage	Age of first child birth
15-19	57 (10.5%)	57 (10.5%)
20-24	235 (43.2%)	235 (43.2%)
25-29	173 (31.7%)	173 (31.7%)
30-34	**58 (10.6%)**	**58 (10.6%)**
≥35	**22 (4.0%)**	**22 (4.0%)**

Chi- Square: 224.49, df: 12, p-value: 0.000

Table 2b

Education Status						
Age Group(yrs)	Non Literate	Primary	Secondary/ High School	Graduate	Post Graduate	Total
15-19	8 (1.50%)	13 (2.40%)	31 (5.70%)	5 (0.90%)	0 (0.00%)	57 (10.5%)
20-24	18 (3.30%)	66 (12.1%)	128 (23.50%)	22 (4.00%)	1 (0.20%)	235(43.2%)
25-29	12 (2.20%)	43 (7.90%)	100 (18.30%)	17 (3.10%)	1 (0.20%)	173(31.7%)
30-34	2 (0.4%)	19 (3.50%)	30 (5.50%)	7 (1.30%)	0 (0.00%)	58 (10.6%)
≥35	3 (0.60%)	10 (1.80%)	8 (1.50%)	1 (0.20%)	0 (0.00%)	22 (4.0%)
Total	**43 (7.90%)**	**151 (27.70%)**	**297 (54.50%)**	**52 (9.50%)**	**2 (0.40%)**	**545 (100%)**

Chi- Square: 14.207, df: 20, p-value: 0.820

Table 2c

Monthly Income			
Age Group (yrs)	<Rs 5000	>Rs 5000	Total
15-19	23 (4.20%)	34 (6.20%)	57 (10.50%)
20-24	74 (13.60%)	161 (29.50%)	235 (43.10%)
25-29	58 (10.60%)	115 (21.10%)	173 (31.70%)
30-34	21 (3.90%)	37 (6.80%)	58 (10.60%)
≥35	**15 (2.80 %)**	**7 (1.30%)**	**22 (4.00%)**
Total	**191 (35.00%)**	**354 (65.00%)**	**545 (100%)**

Chi-square: 12.832, df: 4, p-value: 0.012

Table 2d: Family Status			
Age group (yrs)	**Types of Family**		**Total**
	Nuclear	**Joint**	
15-19	21 (3.90%)	36 (6.60%)	57 (10.5%)
20-24	141 (25.90%)	94 (17.20%)	235 (43.2%)
25-29	57 (17.80%)	76 (13.90%)	173 (31.7%)
30-34	32 (5.90%)	26 (4.80%)	58 (10.6%)
≥35	13 (2.40%)	9 (1.70%)	22 (4.0 %)
Total	304 (55.80%)	241 (44.20%)	545 (100%)

Chi-square: 10.097, df: 4, p-value: 0.039

Table 3: Prevelance of anaemia by severity

Age group (yrs)	Mild (10-10.9 gm/dl)	Moderate (7-9.9 gm/dl)	Severe (<7 gm/dl)	Total
15-19	8 (3.6%)	8 (3.6%)	3 (1.4%)	19 (8.6%)
20-24	50 (22.5%)	42 (18.9%)	3 (1.4%)	95 (42.8%)
25-29	38 (17.11%)	24 (10.8%)	6 (2.7%)	68 (30.6%)
30-34	16 (7.2%)	12 (5.4%)	1 (0.5%)	29 (13.1%)
>35	10 (8.2%)	1 (0.8%)	0 (0.0%)	11 (5.0%)
Total	122 (55.0%)	87 (39.2%)	13 (5.9%)	222 (100%)

Chi- Square: 29.48, df: 12, p-value: 0.003

DISCUSSION:

Anaemia in pregnancy continues to be a health problem. The overall prevalence of anaemia was 40.7%. Higher prevalence of anaemia 87.4% was found by Srivastava et al (2005).[9]It has been observed in the present study that women aged group 20-24 years were found more anaemic with prevalence by severity of 42.8%. This indicates that the nutritional status is poorer and attention is paid to the correction of anaemia in the pre-pregnancy period. Literature also shows that tea and coffee prevent absorption of iron. The pregnant women who registered early before 12 weeks for ante-natal care and took iron regularly had greater iron reserves, higher haemoglobin levels and a lower prevalence of anaemia.[10,11]

Our observation is almost similar with previous observation that deficiency of iron is the commonest cause of anaemia in developing countries and that is why WHO has emphasized on the need of epidemiological studies.[12,13] Many cases of anaemia was seen in developing countries especially during pregnancy, public awareness comes to play the vital role in the prevention one of the cause of the diseases. In pregnancy in Nepal, a study done in Kathmandu[14] the prevalence of anaemia was 62.2% out of which 3.6% with severe anaemia. Another study showed that the prevalence of anaemia was 47.2% of Morang district of Nepal.[15]High prevalence 50-60% of anaemia was found in the study carried out for Nepal in 1988.[16] In many studies it was found that anaemia is a major problem in women due to low socioeconomic status and they are unable to take dietary food, lack of awareness is also causes of anaemia.

CONCLUSION:

Population based assessments can estimate prevalence of anaemia and iron deficiency in communities and regions. Identify high risk population for intervention, monitor prevention and treatment programmes.

RECOMMENDATION :

Nutrition education along with nutritional supplementation and iron folic acid tablets should be provided to all pregnant women. Further research is recommended to identify the specific risk factors for anaemia. Population based assessments can estimate prevalence and iron deficiency in communities and region of anaemia.

LIMITATION :

Our study was small sample size .Limitation reflect the relatively small group of pregnant women, which limit our ability to draw conclusion. Hence, we recommended a large sample size with longer follow up.

REFERENCES:

1. Irshad G, Jafri SA, Kousar S, Ali I. Iron Deficiciency Anaemia. Significance of Serum Ferritin in Diagnosis of pregnant Females of Pakistan. Professional Med J 2011;18(3):475-478.

2. leanovo GN, spectre MSJ, scott K, rocky MD. Prospective evaluation of clinical guideline for diagnosis and management of iron deficiency anaemia. Amj of Med 2002;113(4):281-7.

3. A Khalil AA, Jabbar T, Akhtar S, Mohyuddin S, frequency and types of anaemia in an antenatal +clinic in the third trimester of pregnancy Pak Armed forces Med J 2007;57(4):273-8.

4. World Health Organization (2001), WHO Global Database on Iron deficiency Anaemia and micronutrients, Geneva., WHO Publication.

5. Virender P, Gautam, Bansal Y, Taneja DK and Saha R. (2002) Prevalence of Anaemia Amongst Pregnant Women and its Socio-demographic Associate in rural area in Delhi. Indian Journal of community Medicine 2002;4:16-20.

6. Marchant T, Armstrong S, Edgar T et al. Anaemia during pregnancy in Southern Tanzania Annals Trop Ted Parasit 2002;96:477-8.

7. AbouZahr C, Royston E. Maternal mortality. A global fact book. WHO, Geneva, 1991.

8. His Majesty,s Government Nepal/WHO. Research report on prevention of maternal mortality in hospitals of Nepal. Kathmandu, 1992.

9. Srivastava A, Prabha T, Quershi S, Das Vinita. Anaemia in pregnancy – A Novel Regime of Intramuscular Iron therapy. Journal of Obstrics and Gynaecology of India2005;55(3):237-240.

10. Milman N, Bergholt T, Byg KE, Ericksen L, Graudal N. Iron status and Iron Balance during pregnancy. A Critical Reappraisal of Iron Supplementation. Acta Obstet Gyneco Scand 1999;78(9):749-57.

11. Ray SK. Mallick S, Kumar S, Biswas. A Rapid Assessment of Anaemia in Pregnancy in west Bengal with Special Reference to Care Seeking Behaviours of Mothers. Indian Journal of Public Health 2000;46 (2):58-64.

12. Lone FW, Qureshi RN, Emmanuel F. Maternal anaemia and its perinatal outcome in a tertiary care hospital in Pakistan. Eastern Mediterranean health J 2004;10:801-7.

13. WHO. Mother Baby package:implementation safe motherhood in developing countries. Geneva, 1994.

14. Bondevik GT, Ulstein M, Lie RT, Rana G, K vale G. The prevalence of anaemia in pregnant Nepali women-a study in Kathmandu. Acta obstetric gynecol Scand 2000;79:349-9.

15. AK Sinha, GM Singh Karki, Sanjay Yadav, Md.

Nazrul Islam. Prevalence of anaemia during pregnancy in the women of Eastern Nepa. IJPBA 2012;3(5):1024-1026.

16. Ulstein M, Rana G, yangzom K et al. Some fetal and pregnancy parameters in Nepal. Acta Obstetric Gynecol Scand 1988;67:47-52.