Study of Anaemia in Pregnant Women Visiting Paropakar Maternity and Women's Hospital, Thapathali, Kathmandu, Nepal

Thapa PA, [1] Acharya G,[1] Vaidhya K, Mandal PK [2]

[1]Department of Microbiology, Paropakar Maternity and Women's Hospital Thapathali, Kathmandu, [2] St. Xavier's College, Maitighar, Kathmandu, Nepal.

Corresponding author: Mrs. Pratima Adhikari (Thapa). Email: me.pratima.thapa@gmail.com

ABSTRACT

Pregnant women need supplementary nutrition during pregnancy. More specifically, they need extra iron and vitamins for the proper growth of foetus. Insufficient consumption of food and micronutrients during pregnancy causes anaemia and other diseases affecting both mothers' and foetus health. Anaemia is one of the contributing factors. This study was conducted to analyse the prevalence of anaemia in pregnant women visiting Paropakar Maternity and Women's Hospital, Thapathali. The study found that the cases of anaemia is still high, 29.43% (nearly 30%) among which 27.29% had mild anaemia and 2.14% had moderate anaemia. Parasitic infection, unsafe drinking water and lack of nutritional education were found to aggravate the anaemia in pregnant women.

Keywords: Anaemia, Mild, Moderate, Parasitic infection, Pregnancy

INTRODUCTION

Maternal nutrition at conception and during pregnancy influences the growth and potential development of the foetus and contributes to the maturity of a healthy baby. Poor nutrition during pregnancy decreases availability of nutrition to the foetus. Body mass index (BMI) is one of the indicators of good health in case of mothers. For a healthy pregnant woman, her BMI should be between 18.5 to 24.9 kg/m^2. In Nepal, more than one fourth (27%) women of reproductive age have a BMI of less than 18.5 kg/m^2.[1,2] Anaemia is classified as mild, moderate or severe based on the concentrations of hemoglobin in the blood. Mild anaemia corresponds to a level of hemoglobin concentration of 10.0-10.9 gm/dl for pregnant women and children under age 5 and 10.0-11.9 gm/dl for non-pregnant women. For all of the tested groups, moderate anaemia corresponds to a level of 7.0-9.9 gm/dl, while severe anaemia corresponds to a level less than 7.0 gm/dl. Nutritional anaemia is a major public health problem in the world.[3] This problem is more severe in pregnant women. The prevalence of anaemia in the South Asian regionis 85.4%, the highest in the world.[4] The most prevalent cause of nutritional anaemia is inadequate iron. Heavy blood loss as a result of parasitic infection, malaria, nutritional deficiencies of vitamin A, folate and vitamin B-12 are other contributing factors.[5,6]

The global maternal mortality rate has been estimated at 207.2 per 100, 000 live births. In Nepal, it has been estimated at 229 per 100, 000 live births.[7] It has been reported that anaemia alone causes 20-40 % of the total maternal death globally.[8] In Nepal, 36% of pregnant women are anaemic.[9] When a pregnant woman suffers from anaemia, the risk of poor weight gain of foetus and preterm labour increases.[10]

MATERIALS AND METHODS

This is a cross sectional study and was conducted in Paropakar Maternity and Women's Hospital, Thapathali, Kathmandu. The required information was collected for 6 months from May 25th to November 25th, 2011. A total of 700 stool and blood samples were collected from the pregnant women. All stool samples were collected in clean, wide mouthed, screw capped plastic containers. Blood samples were collected with the consent of the pregnant women and was put into a vial containing EDTA (ethylene diamine tetra acetic acid) as an anticoagulant. Stool samples were examined macroscopically and microscopically by wet mount technique (saline mount and iodine mount). Anaemia in pregnant women was defined as haemoglobin concentration <11.0 gm/dl. Haemoglobin was measured by cyanmethhemoglobin method.[11]

RESULTS

Cases of anaemia in pregnant women

It was found that 29.43 % pregnant women were suffering from anaemia. Among them, 27.29% had mild anaemia while 2.14% had moderate anaemia (Table 1)

Table 1: Cases of anaemia in pregnant women.

Severity of anaemia	Frequency	
	No.	%
Normal	494	70.57
Mild[1]	191	27.29
Moderate[2]	15	2.14
Severe[3]	0	0
Total	700	100

[1] Hemoglobin level less than 7g/dl

[2] Hemoglobin level 7-9.9 g/dl

[3] Hemoglobin level 10-11.9 g/dl (10-10.9 g/dl for pregnant women)

Level of education and cases of anaemia Among the illiterate, 37.88 % had anaemia, whereas it was 29.25% among the women having primary to middle secondary level education and 25.84 % in women with secondary and above secondary level education (Table 2). The cases of anaemia were significantly higher in illiterate women than educated women at 1% level of signifi cance.

Cases of anaemia inssociation with parasitic infection

In the studied sample, out of 112 positive cases, 16 (28.07%) were found to be anaemic in hookworm infection. This was followed by *Trichuris trichiura* (15.79%), *Ascaris lumbricoides* (15.79%), *Giardia lamblia* (14.04%), *Entamoeba histolytica* (10.53%), *Hymenolepsis nana* (3.51%) and *Strongyloides sterocalis* (1.75%). In case of co-infection with *G. lamblia* and *Ancyclostomaduodenale* infection, it was found to be 5.26% followed by *A. lumbricoides* and *T. trichiura A. lumbricoides* (3.51%) and *S. Stercoralis* (1.75%)(Table 3). The cases of anaemia in infected case was signifi cantly higher than in non-infected case (P value 0.00 i.e. <0.05).

DISCUSSION

The cases of nutritional anaemia in pregnant women are still high. The prevalence of mild anaemia was higher than moderate to severe anaemia. The cases of anaemia was significantly higher in illiterate women then educated women. It shows that educated people do manage their nutrition and other health problems better. This finding agreed with the other studies.[12,13] Iron rich nutritious food, safe drinking water and health education contributes positively to reduce the anaemic problem in pregnant women. Hence, the pregnant women should be given health education in the antenatal clinics including causes of anaemia and measures to manage the problem. Although the primary cause of anaemia is iron deficiency, it is seldom present in isolation.

Table 2: Distribution of anaemic pregnant women with respect to anaemia

Education level	Severity of anaemia				Anaemic cases	P Value
	Moderate	Mild	Nil	Total		
	No.(%)	No.(%)	No.(%)	No.(%)	No.(%)	
Illiterate (class 0)	2(1.52)	48(36.36)	82(62.12)	132(100)	50(37.88)	0.00
Primary-Mid Secondary (class 1-7)	5(2.36)	57(26.89)	150(70.75)	212(100)	62(29.25)	
Secondary and above (class 8 and above	8(2.25)	84(23.60)	264(74.16)	356(100)	92(25.84)	
Total	15(2.14)	189(27.00)	496(70.86)	700(100)	204(29.14)	

Table 3: Cases of anaemia with respect to parasites

Parasites observed	Anaemic cases		Non anaemic cases		Total	P value
	No.	%	No.	%		
G. lamblia	8	14.04	26	47.27	34	0 .00 i.e. <0.05
E. histolytica	6	10.53	1	1.82	7	
Hookworm	16	28.07	9	16.36	25	
A. lumbricoides	9	15.79	5	9.09	14	
T. trichiura	9	15.79	11	20.00	20	
H. nana	2	3.51	1	1.82	3	
S. Stercoralis	1	1.75	0	0.00	1	
G. lamblia & Hookworm	3	5.26	1	1.82	4	
A. lumbricoides & *T. Trichiura*	2	3.51	0	0.00	2	
A. lumbricoides & *H. Nana*	0	0.00	1	1.82	1	
A. lumbricoides & *S. Stercoralis*	1	1.75	0	0.00	1	
Total	57	100.00	55	100.00	112	

The cases of anaemia were high when there was parasitic infection. The most prevalent intestinal parasite among pregnant was hookworm (28.07%) in anaemic cases. The result of this study was similar with other findings.[8, 14-17].The cases of nutritional anaemia in pregnant women is still high. As reflected by the findings, it is concluded that anaemia becomes more severe when there is parasitic infection in pregnant women. Iron rich nutritious food, safe drinking water and health education contributes positively to reduce the anaemic problem in pregnant women. Hence, it is recommended that the pregnant women should be given health education in the antenatal clinics including causes of anaemia and measures to manage the problem.

ACKNOWLEDGEMENTS

Our sincere thanks go to the pregnant women and staff of Paropakar Maternity and Women's Hospital Thapathali, Kathmandu, Nepal whose participation made the study and findings possible.

REFERENCES

1. Rai SK, Hirai K, Abe A, Ohno Y. Infectious Diseases and Malnutrition Status in Nepal.Overview. Mal J Nutr 2002; 8(2): 191-200.
2. Gillepsie, Haddad, 2003 .Repositioning Nutrition as control to Development, World bank 2006.
3. G.K. Kariyeva, A. Magtymova, A. Sharman.Anaemia.
4. Benoist BE, McLean IE, Cogswell M. Worldwide prevalence of anaemia 1993-2005. WHO Global database on Anaemia 2008 Geneva.
5. AyoyaMA, Brouwer GMS, TraoreAK, Stoltzfus R J, Garza C. Determinants of anaemia among pregnant women in Mali. .FoodNutr Bull 2006; 27: 3-11.
6. Dreyfuss ML, Stoltzfus RJ, Shrestha JB, Pradhan EK, LeClerq SC, Khatry SK. Hookworms, Malaria and Vitamin A Deficiency contribute to anaemia and iron deficiency among pregnant women in plains of Nepal. J Nutr 2000; 130 (10): 2527-36.
7. NPC. Three Year Plan 2009/2010-2011/2012. National Planning Commission Secretariat 2011. Singh Durbar, Kathmandu, Nepal. pp10.
8. Larcoque R, Casapia M, Gotuzzo E, Gyorkos WT. Relationship between intensity of soil transmitted helminth infections and anaemia during pregnancy. Am J Trop Med Hyg 2005; 73 (4): 783-789.
9. WB. Nepal overview of childhood malnutrition 2010. Washington, DC: The World Bank
10. Steer PJ. Maternal haemoglobin concentration and birth weight. Am J ClinNutr 2000; 71 (1): 1285-1287.
11. Tsehayu TB. Determinant of anaemia in pregnant women with emphasis on intestinal helminthic infection at Bushulo at health center in Ethiopia 2012. pp. 1-4.
12. Noronha JA, BhaduriA, BhatHV, KamathA.Maternal risk factors and anaemia in pregnancy. A prospective retrospective cohortstudy. JObstetGynaecol2010; 30(2):132-136.
13. Chotnopparatpattara P, Limponqsanurak S, Charnngam P. The prevalence of and risk factors of anaemia in pregnant women. J Med Asssoc Thai 2003; 86(11): 1001-7.
14. BaidooSE, TaySCK, Obiri-Danso K, Abruquah HH. Intestinal helminth infection and anaemia during pregnancy. A community based study in Ghana. J Bacteriol Res2010; 2 (2): 9-13.
15. Sukrat B, Sirichotiyakul S. The prevalence and causes of anaemia during pregnancy in MaharajNakorn Chiang Mai Hospital. J Med Assoc Thai 2006; 89 (4): 142-146.
16. Brooker S, HotezPJ, Bundy DAP. Hookworm-Related Anaemia among pregnant women. PLosNegl Trop Dis pregnant women2008; 2 (9): 1-9.
17. Fuseini G, Edoh D, Kalifa BG, Knight D. Plasmodium and intestinal helminths distribution among pregnant women in the Kassena-Nankana District of Northern Ghana. J Entomology and Nematology 2009; 1 (2): 19-24.