Original Article

The Burden of Anaemia amongst Antenatal Women in the Rural Population of Northern India

M Shams Khan,
Anupama Srivastav,[1]
Anil K Dixit[2]

Associate Professor, Dept. of Community Medicine, Rama Medical College Hospital & RC Ghaziabad,
[1]Assistant Professor, Dept. of Community Medicine, Rama Medical College Hospital & RC Kanpur,
[2]Professor & HOD, Dept. of Community Medicine, Rama Medical College Hospital & RC Ghaziabad

Corresponding Author: *Dr. Mohd. Shams Khan, 301, Utkarsh Shikhar Apart., Near Upvan Hotel, Mount Road, Sadar, Nagpur-440001. E-mail: mohmmed.k1954@yahoo.com*

Abstract

Background: Nutritional anaemia in pregnant women is one of the India's major public health problems and is major factor responsible for low birth weight. Out of total maternal deaths in world most of them occur due to anaemia.

Objectives: To check prevalence of anaemia in pregnant women and its association with literacy status, dietary factors and BMI.

Material & Methods: The study was conducted in village Khera at RHTC, Rama Medical College Hospital and Research Centre, Hapur, Uttar Pradesh. It is cross sectional study.

The study was carried from Oct 2012 to June 2013. A total of 321 pregnant women with gestational period between 12 to 20 weeks were registered. The detail clinical examination including measurement of weight and height was carried out. Hemoglobin was estimated and peripheral smear examination was done. Data was analyzed by using Chi-Square Test. P-value less than 0.05 were considered significant.

Results: A high prevalence of anaemia (79.75%) was observed in antenatal women. Majority of the antenatal women were moderately anaemic (58.38%) and were under 20 years of age. Occurrence of anaemia in antenatal women was found to be inversely proportional to the literacy status. Statistically significant association (P <0.05) were found amongst anaemic antenatal women with their literacy status and BMI however statistically significant association was not found in various dietary factors.

Keywords: Antenatal Women, Anaemia, Basal Metabolic Index, Literacy Status

INTRODUCTION

Anemia is the most common nutritional deficiency worldwide. It leads to reduced work capacity in adults and leads impact on mental development in children and adolescents. There is some evidence that anemia affects cognition in adolescent girls and causes fatigue in adult women. Anemia may affect visual and auditory functioning and is weakly associated with poor cognitive development in children.[1]

In India, anaemia contributes directly to 20% maternal death and indirectly to further 20%.[2,3] The main causes of Anaemia in the developing countries in Antenatal women includes low dietary intake of iron and folic acid, poor bioavailability of iron and fiber rich Indian diet, poor absorption of iron due to hook worms infestation and blood loss during delivery and heavy menstrual blood loss.[4-6] Iron deficiency & Anaemia during antenatal period are associated with low birth weight babies, premature birth, increase perinatal and neonatal mortality. Anaemia increases the risk of maternal morbidity & mortality and adverse maternal outcome such as ante partum haemorrhage, post-partum haemorrhage & puerperal sepsis,[7-9] National Nutritional Anaemia prophylaxis programme (NNAPP) was initiated in 1970 during the fourth five year plan with the aim to reduce the prevalence of Anaemia to 25%.[10] After subsequent evaluation it was seen that there was no change in situtaion. Since 1992 the daily dosage of elemental iron for prophylaxis and therapy has been increased to 100 mg & 200 mg, respectively under Child Survival and Safe Motherhood Programme (CSSM Programme).

This current study was carried out to find out the prevalence of the Anaemia in antenatal women and to determine the association with their literacy status, dietary factors and BMI.

MATERIAL AND METHODS

Present community based, cross sectional study was carried out at Rural Health Training Centre, Khera, Rama Medical College Hospital. Research centre Hapur, Uttar Pradesh from October 2012 to June 2013. Total 321 antenatal women with gestational period 12-20 weeks, visiting at antenatal clinic were registered for the study. Antenatal women giving history of worm's infestation, bleeding disorder and bleeding in last pregnancy were excluded from the study.

The antenatal women were interviewed by using pre-structured, pre-tested performa. Prior consent was obtained from the subjects. Detail clinical examination was done at Khera, RHTC. Weight and Height measurement of the subject were taken with pre-standardized weighing machine and Height scale. BMI was calculated by the formula weight in Kgs/Height in meter square. Haemoglobin estimation was done by Sahli's method. Anaemia was classified as per WHO criteria.[11] Haemoglobin below 11 gm/dl in Labeled as anaemia during antenatal period. Typing of anaemic was done as per standard peripheral smear examination.[12] Literacy status was assessed according to modified B.G. Prasad Classification.[13-14] Severely anaemic pregnant women were referred to Rama Medical College Hospital, Hapur for further management. Data was analyzed by using Chi-Square Test. P-value < 0.05 were considered significant.

RESULTS

In this observational study, 47.97% of subjects were from joint family, 39.25% from muscle family and 12.77% from the extended family. Majority of the antenatal women belonged to Hindus religion (75.70%) followed by Muslims (12.14%), Christians (3.73%) and other caste (8.41%) respectively.

As shown in Figure 1, Pie diagram, 79.75% subjects were found anaemic. The prevalence of mild, moderate and severe anaemia was 20.56%, 44.23% and 14.97% respectively. Majority of them were moderately anaemic.

Table no. 1 shows 94.81% and 91.66% of Antenatal women were belonged to illiterate and primary school category. Moderate anaemic was seen amongst middle school (52.12%) and high school category (65.62%). Severe anaemia was detected in illiterate (29.31%) and primary school (23.33%) category. Lower percentage of anaemia was found in higher education category viz: intermediate (40%), Graduate (27.77%) and post graduate (28.5%) subjects. Statistically significant difference were observed ($x^2 = 47.05$, $P < 0.05$)

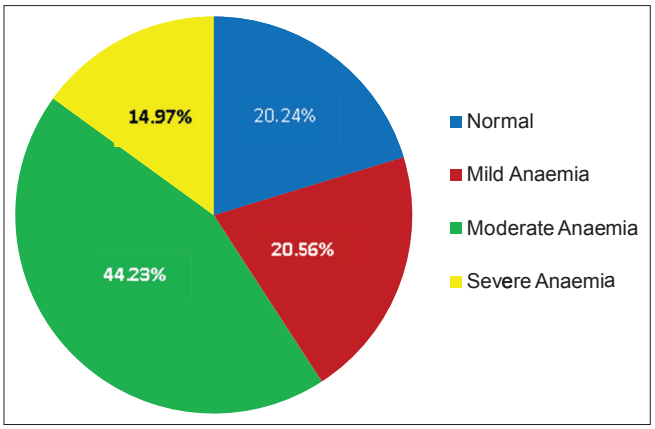

Figure 1: Pie diagram showing – Distribution of anaemia in the antenatal women

Table 1: Distribution of antenatal women according to their literacy status (n=321)

Women education	Anaemia n (%)				Normal	Total
	Mild	Moderate	Sever	Total		
Illiterate	18	20	17	55	3	58
	31.03%	34.48%	29.31%	94.82%	5.17%	
Primary School	20	21	14	55	5	60
	33.33%	35%	23.33%	91.66%	8.5%	
Middle School	19	49	12	80	14	94
	20.21%	52.12%	12.76%	85.10%	14.89%	
High School	6	42	3	51	13	64
	9.37%	65.62%	4.68%	79.68%	20.31%	
Inter-media	2	5	1	8	12	20
	10%	25%	5%	40%	60%	
Graduate	1	3	1	5	13	18
	5.5%	10.66%	5.5%	27.77%	72.22%	
Post Graduate	0	2	1	2	5	7
	0%	28.57%	14.28%	28.51%	71.42%	
Total	66	142	48	256	65	321
	70.56%	44.23%	14.97%	79.75%	20.24%	

Table no. 2 shows 34.89% antenatal women were vegetarian and 65.11% were on mixed diet. The percentage of mild anaemia (22.32%) moderate anaemia (44.42%) and severe anaemia (16.07%) were higher amongst vegetarian as compared to those on mixed diet subjects where mild, moderate & severe anaemia was detected as 19.61%, 43.06% & 14.35% respectively.

In this study percentage of pure non-vegetarian subjects was zero. Statistically significant difference was not observed. ($x^2 = 3.86$ $P > 0.05$) amongst vegetarian & mixed diet subject.

Table no. 3, shows that majority of the anaemia subject belonged to category of BMI <18.5 kg/m^2 viz: mild anaemia (21.37%), moderate anaemia (48.38%) and severe anaemia (16.93%) respectively. 31.14% of moderate anaemia was seen in the subjects of BMI category 18.5 – 24.9 kg/m^2 and 33.33% mild anaemia was seen in

Table 2: Distribution of Anaemia according to dietary habits of Antenatal Women (n=321)

Type of Diet	Mild Anaemia	Moderate Anaemia	Severe Anaemia	Normal	Total
Vegetarian	25	52	18	17	112
	22.32%	44.42%	16.07%	15.17%	34.89%
Mixed diet	41	90	30	48	209
	19.61%	43.06%	14.35%	22.96%	65.11%
Total	66	142	48	65	321

Table 3: Distribution of Anaemic Antenatal women according to their BMI. (n=321)

BMI kg/m^2	Mild Anaemia	Moderate Anaemia	Severe Anaemia	Normal	Total
18.5	53	120	42	33	248
	21.37%	48.38%	16.93%	13.30%	77.25%
18.5-24.9	9	19	5	28	61
	14.25%	31.14%	8.19%	45.90%	19.00%
>25	4	3	1	4	12
	33.33%	25%	8.33%	33.33%	3.73%
Total	66	142	48	65	321

BMI category >25 kg/m^2. Statistically significant difference was observed ($x^2 = 18.04$ $P<0.05$) in different categories.

DISCUSSION

The high prevalence of Anaemia (79.75%) was observed amongst antenatal women in this study which is similar to earlier studies.[2,3] Higher prevalence of Anaemia was observed in the subjects of lower literacy category and lower prevalence of anaemia was seen in high literacy category. Anaemia in antenatal women is thus inversely related to the literacy status as seen in earlier studies.[15-17] Present study showed the high prevalence of anaemia in vegetarian diet subjects as compare to the subjects on mixed diet & similar results were seen in earlier studies.[18] Prevalence of anaemia was minimal amongst over weight subjects and higher in lower BMI subjects. These results coincides with the earlier studies of Bentley/Griffith.[19]

Normocytic hypochromic and Microcytic hypochromic type of blood was predominantly present in antenatal women which in consistent with the other studies except for dimorphic blood picture.[20] It indicates iron deficient intake and absorption amongst antenatal women irrespective of their literacy status, dietary habits & type of the family.

CONCLUSION

- As high prevalence of nutritional Anaemia was detected in antenatal women, Nutritional education & dietary counseling is recommended by nutritionist.
- Supplementation of iron & folic acid should be implemented to all the antenatal women in rural area.

ACKNOWLEDGEMENT

This study was conducted at RHTC Rama Medical College Hospital and Research Center, Hapur. He wants to thank Principal & Head of Department of Community Medicine for allowing him to the carry out this study. He is thankful his colleagues, laboratory staff, nursing staff member, social workers and statistician for their coordination & co-operation during the study.

REFERENCES

1. Killip, Shersten, John M. Bennett, and Mara D. Chambers. "Iron deficiency anemia." Children 1994, no. 1999 (2000).
2. World Health Organization. Prevention and management of anaemia in pregnancy. WHO/FHE/MSM/93.5 Geneva: WHO, 1993.
3. Brabin, B. J., Hakimi, M., Pelletier. An analysis of anemia and pregnancy-related maternal mortality. The Journal of nutrition. 2001;131(2),604S-615S.
4. Karine Tolentino, Jennifer F. Friedman. An update on Anaemia in less developed countries. Am. J. Trop. Med. Hyg. 2007;77(1):44-51
5. World Health Organization, Iron deficiency Anaemia; Assessment, Prevention and control. Geneva: WHO, 2001.
6. National Nutrition Monitoring Bureau, 2002 (NNMB) Micronutrient Survey Hyderabad: National Institute of Nutrition.
7. Scholl T, Hediger M, Fischer R, et al. Anaemia Vs Iron deficiency: increased risk of preterm delivery. Am J. Clin. Nutr. 1992;55:985-8.
8. Roy S, Chakravorty PS. Maternal and Perinatal out come in severe anaemia. J obstet Gynae Ind. 1992;42:743-50.
9. Rangnekar AG, Darbari R. fetal outcome in anaemia during pregnancy. J obstet Gynae Ind. 1993;43:172-6.
10. Agrawal DK, Agrawal KN, et al. Targets in National Anaemia prophylaxis programme pregnant women. Indian Paediatric. 1988;25:319-22.
11. Preventing and controlling iron deficiency anaemia through primary health care, Geneva: WHO, 1989.
12. Firkin F, Chesterman C, et al. Clinical Haematology in Medical Practice, oxford university press, 5th edition 1990, Page-31
13. The text book of preventive and social medicine. In : Mahajan, Gupta, editors. 3rd ed. 2003 Page-117-8.
14. Economic survey 2000-2001. Govt. of India, Ministry of Finance, Economic Division.
15. Gautam VP, Bansal Y, et al. prevalence of anaemia in pregnant women and its socio demographic associate is a rural area of Delhi. Ind J. community medicine. 2002; 27(4):157-60
16. Thangaleela T, Vijayalakshmi P. Prevalence of anaemia in Pregnanc. Ind J. Nutr Dietet. 1994;31: 26-4.
17. Shah, S. N., A. Bakash, A. Rauf, A. Muzzafar, and M. L. Zuthshi. "Incidence of iron deficiency anaemia in rural population of Kashmir. Indian journal of public health. 1982;26(3):144-54
18. Nadeem Ahmed, Piyush Kalakoti et al. Prevleance of Anaemia & associated Factor in Pregnant Women. Australasian Medical Journal. 2010;3(5):276-280.
19. Bentley M.E. Griffiths P L. the burden of anaemia amongst women in Indian. European. J of clinical nutrition. 2003;07(1):52-60.
20. Dass, A., I. Bhatt, and B. Dhaliwal. "Megaloblastic anaemia in pregnancy (In Delhi). J Obstet Gynae Ind.1967;17:37-43.

How to cite this article: M Shams Khan, Anupama Srivastav, Anil K Dixit. "The Burden of Anaemia amongst Antenatal Women in the Rural Population of Northern India". International Journal of Scientific Study. 2014;1(4):40-42.

Source of Support: Nil, **Conflict of Interest:** None declared.