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A CROSS SECTIONAL STUDY TO ASSESS THE PREVALENCE OF NUTRITIONAL ANEMIA AND ITS DETERMINANTS AMONG PREGNANT WOMEN IN RURAL BARABANKI

Community Medicine

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ABSTRACT

Objective: This study was undertaken to assess the role of micronutrient intake on prevalence of anemia amongst pregnant women in Barabanki. **Study design:** cross-sectional study. **Study area:** Rural areas of Barabanki. **Study subjects:** A total of 420 pregnant women of reproductive age group. **Results:** The overall prevalence of anemia was 57.8% among the pregnant women. Of these, the moderate anemia was found in 28.4% women, mild anemia was 62.9% and severe anemia was 8.5%. The calorie intake was significantly ($p<0.0001$) lower in anemic women (1853.12 ± 312.00) as compared to non-anemic women (2333.12 ± 291.6).The iron intake was significantly ($p<0.0006$) lower in anemic women (21.36 ± 11.6) as compared to non-anemic women (26.19 ± 7.81). The folic acid intake was significantly ($p=0.04$) lower in anemic women (141.82 ± 39.51) as compared to non- anemic women (149.61± 53.03). **Conclusion:** The micronutrient intake was lower in the studied population and it was found to be significantly associated with problem of anemia amongst pregnant women.

KEYWORDS

Pregnant women, anemia, micronutrient intake

INTRODUCTION

Anaemia is a major public health problem. It is now one of the most frequently observed nutritional diseases in the world. It is especially prevalent in women of reproductive age, particularly during pregnancy. The main causes of anaemia in developing countries include: inadequate intake and poor absorption of iron, malaria, hookworm infestation, diarrhoea, HIV/AIDS and other infections, genetic disorders (e.g., sickle cell and thalassemia), blood loss during labour and delivery, heavy menstrual blood flow and closely spaced pregnancies WHO, 2001).The populations of developed countries are not by any means completely free of anemia and a significant percentage of women of child-bearing age (estimated between 4% and 12%) suffer from anemia.[1] Iron deficiency anemia is a major nutrition problem in India and many other developing countries. In addition, many subjects have iron deficiency without anemia. [2,3]. The incidence of anemia is highest among women and young children, varying between 60% and 70%. Recent surveys indicate that in rural India anemia is much more widespread than hitherto believed even among men[4]. This study investigated the prevalence and determinants of anemia among rural pregnant women in the district of Barabanki, UP, India.

MATERIAL AND METHODS

Study area: The present study was carried out in rural areas of Barabanki.

Subjects: All pregnant women registered at RHTC were assessed for micronutrient intake on the prevalence of anemia amongst pregnant women.

Study design: The present study was a cross-sectional study in rural areas of Barabanki district.

Total period of study: Study was carried out for a period of one year from 2019 to 2020.

Sample size: Sample size was calculated by using the following formula:

$n = 4 p x q / (d^2)$ Where
n= sample size p= prevalence q= 100-p
d= error
As per NFHS-3 UP (2005-06), prevalence of anemia in reproductive is 51.6 percent. Thus, p is 51.6
q Calculated comes 48.4

Taking error of 10% of prevalence, d comes out to be 5.16. Sample size comes out be 375.19=375.

Taking non response to be 10%, sample size comes out to be 420. The study included 420pregnant women from rural area.

Hb estimation:

Sahli's method was used to estimate the concentration of hemoglobin in capillary blood. A single drop of blood was taken from a finger prick after removing the first two drops of blood to ensure that the sample was based on fresh capillary blood. The graduated tube placed between the brown glass standard of Sahli's haemoglobinometer is filled with N/10 hydrochloric acid up to lowest mark (mark 2). Blood sample obtained from the finger prick or from the vein is drawn into Sahli's pipette till 20 mm-3 marks and added into graduated tube containing N/10 hydrochloric acid. The blood and acid are mixed thoroughly with a glass stirrer and allowed to stand for 3 minutes for acid hematin to form. Distilled water is added drop by drop mixing it with a stirrer until color in the graduated tube is matched with the brown glass standard. Results were read as g/dl present on the side of the graduated tube considering the lower level of meniscus.

Data collection:

A structured pre-tested interview schedule was used. The schedule consisted demo-graphic information of the women as well as other related variables such as nutrient intake, anthropometric measurements and hemoglobin estimation. First household was selected randomly and then consecutive household was surveyed till the desired number of study units completed. Each participant was explained about the purpose of the study prior to administration of tool. Informed consent was taken from each participant. The confidentiality was assured. Interview was started with general discussion to gain confidence and it slowly extended to the specific point. Ethical clearance was taken prior to the study (certificate number – MIMS/EX/2020/151).

Analysis:

The data collected was entered in Microsoft Excel and checked for any inconsistency. The dichotomous/categorical variables were analysed by using Chi-square statistics. The unpaired t-test was used to test differences anemic and non-anemic pregnant women. The relative risk with its 95% confidence interval was used to find the risk of anemia in different socio-demographic groups, women's profile etc. The multivariate logistic regression analysis was carried out to find the risk factors associated with prevalence of anemia. The p-value<0.05 was considered as significant. All the analysis was carried out by using SPSS 15.0 version.

RESULTS

Profile of women: Majority (89.2%) of the women get married

between ages 18-30 years. Overall, more than half (68.8%) of the respondents belonged to Hindu and 31.2% were Muslim.

Table-1: Socio-demographic profile of the pregnant women (n=420)

Profile of Women		No.	%
Age at marriage (in years)	<18	30	7.1
	18-30	375	89.2
	31-40	15	3.6
Religion	Hindu	289	68.8
	Muslim	131	31.2
Type of family	Nuclear	315	75
	Joint	105	25
Family size	≤ 4	302	39.8
	>4	118	60.2
Marital status	Married	419	99.8
	Widow/ Separated	1	0.2
Education of women	Illiterate	163	38.8
	Literate	237	61.2
Occupation	Housewife	388	92.4
	Others	32	7.6
Gestational age in months	≤6	240	57.1
	>6	180	42.9
Anthropometric measurements	Height (cm)	161.31±7.125	
	Weight (kg)	50.12 ± 7.61	
	BMI	21.81± 3.65	

Overall, 75% respondents belonged to nuclear family. More than half (61.2%) of the women were literate, 92.4% were housewives and 99.8% were married. More than half (57.1%) of the women had less than 6 months of gestational age (Table-1).

Prevalence of anemia: The overall prevalence of anemia was 57.8% among the pregnant women. The moderate anemia was found in 28.4% women, mild anemia was 62.9% and severe anemia was 8.5% (Table 2).

Table.2 Severity of anemia among pregnant women.

Severity of anemia	Frequency	Percentage
Mild	153	62.9
Moderate	69	28.4
Severe	21	8.5
Total	243	100

Micronutrient intake: The calorie intake was significantly ($p<0.0001$) lower in anemic women (1853.12 ± 312.00) as compared to non-anemic women (2333.12 ± 291.6).The iron intake was significantly ($p<0.0006$) lower in anemic women (21.36 ± 11.6) as compared to non-anemic women (26.19 ± 7.81). The folic acid intake was significantly ($p=0.04$) lower in anemic women (141.82 ± 39.51) as compared to non- anemic women (149.61± 53.03) (Table-2).

Table-3: Micronutrient intake (Mean ± SD) by Anemia status among women

Type of micronutrient intake	Anemic (n=243)	Non-anemic (n=177)	t and p-value
Calories	1853.12 ± 312.00	2333.12 ± 291.6	14.6, <0.0001*
Iron	21.36 ± 11.6	26.19 ± 7.81	4.6, 0.006*
Folic acid	141.82 ± 39.51	149.61± 53.03	2.1, 0.04*

*Significant

DISCUSSION

In the present study, overall 68.8% women were Hindu while 31.2% were Muslims. As per NFHS-3 (2005-06)[5], 82.6% of households in Uttar Pradesh were Hindus and 16.3% Muslims. The reason for high Muslims representation in the study is because the catchment areas of the institute are Muslims predominated.

The literacy status in the present study was 61.2% in women, which is less than NFHS-3 (2005-06)[5] -Uttar Pradesh data of 79% probably because of the low socio-economic status and Muslims predominance. In the present study, Overall 315 (75%) respondents belonged to nuclear family and 105 (25%) belonged to joint family.

The micronutrient intake was not good in quantity as observed in the present study which supported the studies conducted by Panwar and Punia (2000)[6] and Pathak et al (2004)[7].

In our study, the prevalence of anemia was 57.8%. Ray et al (2000)[8] also reported a high prevalence of anemia (86.4%) in Haryana. The mildly anemic women were 62.9%, moderate were 28.4% and severely anemic were 8.5% in the present study. The World Health Organization also estimated that 58% of pregnant women in developing countries were anemic (Galloway et al, 2002)[9]. Toteja et al (2006)[10] assessed the status of anemia among pregnant women from 16 districts of 11 states of India and found that 84.9% of pregnant women (n=6,923) were anemic (hemoglobin <110g/L); 13.1% had severe anemia (hemoglobin <70g/L), and 60.1% had moderate anemia (hemoglobin ≥70 to 100 g/L). They concluded that any intervention strategy for this population must address not only the problem of iron deficiency, but also deficiencies of other micronutrients, such as B12 and folic acid and other possible causal factors.

Anemia among women in this large, Indian state cuts across social class, place of residence, and other factors that normally discriminate health status. Rich or poor, fat or thin, urban or rural—the prevalence of anemia is high among women in all these groups and differences are only relative.

Although the opportunities or health care have increased at present, the rural poor are still more marginalized in their ability to access health services because of constraints in financial and administrative resources that are necessary to access the services.

Similarly, although rural areas have greater access to a wide variety of food and nutrients through close access to farmer's markets, extreme poverty limits the ability of the poor to purchase them.

CONCLUSION

The micronutrient intake was lower in the studied population and thus, the prevalence of anemia was higher in the study area.

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