ORIGINAL ARTICLE

Biosocial correlates of anemia in rural women of Bareilly, Uttar Pradesh

Rajesh Kumar Seth[1], Swati Khan[2]

[1]Assistant Professor,[2]Professor, Department of Community Medicine, Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh

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Corresponding Author

Address for Correspondence: Dr Rajesh Kumar Seth, Assistant Professor, Department of Community Medicine, Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh.
E Mail ID:rajeshseth0510@gmail.com

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Abstract

Background: Anaemia results from nutrition related causes and from inflammatory or infectious diseases, worm infestations and from blood loss. Iron deficiency anaemia resulting from inadequate intake and low absorption of dietary iron is the most common form of anaemia in India. **Objective:** To find out the prevalence of maternal anemia and its correlates. **Methods**: This was a cross-sectional study involving 435 women of reproductive age. The women of reproductive aged 15-45 years old were included in the study. The purposive sampling method was adopted for the selection of women. **Results**: The prevalence of anemia was found to be 49%. The percentage of mild anemia was observed among 55.4% of the women. However, 34.3% and 10.3% of the women were moderately and severely anemic. The prevalence was higher among the women having no education. **Conclusion:** It is evident from the current study that the burden of nutritional anemia is high among women in the rural areas and hence, sincere efforts must be initiated adopting specific interventional measures with regard to nutritional education and anemia prophylaxis to reduce the morbidity due to anemia in the rural areas.

Key Words

Maternal anemia; Prevalence; Biosocial Characteristics

Introduction

Anemia is still considered a major public health problem in India. The National Family Health Survey-31 revealed a high prevalence of anemia among children (78.9%), ever-married women (56.2%), pregnant women (57.9%) and ever-married men (24.3%) in India (1). Anaemia is one of the most common nutritional disorders and it has public health importance in developing countries like India where it is the most widespread nutritional problem and common cause of anaemia in adolescents and women of reproductive age. WHO has estimated that prevalence of anaemia in pregnant women is 14% in developed and 51% in developing countries while it is 65-75% in India (2,3). As a result, about one-third of the global population (over 2 billion) is anaemic4. The economic and social consequences of anaemia, as yet un-quantified, are thought to be enormous including a significant drain on health care, education resources and labour productivity, and reduced physical and mental capacity of large segments of the population. Anaemia results from nutrition related causes and from inflammatory or infectious diseases, worm infestations and from blood loss. Iron deficiency anaemia resulting from inadequate intake and low absorption of dietary iron is the most common form of anaemia in India (5,6). In view of the discrepancies and non-conclusive results available in the country, we have examined the magnitude of anaemia among the rural women of reproductive age group in Bareilly district of Uttar Pradesh, India.

Aims & Objectives

1. To examine the magnitude of anaemia among the rural women of reproductive age group in Bareilly district of Uttar Pradesh, India.
2. To find correlate socio-demographic factors with the magnitude of anaemia.

Material and Methods

This was a cross-sectional study conducted in the rural field practice area of the Department of Community Medicine of Rohilkhand Medical College and Hospital, Bareilly, UP, India. The study was approved by the ethical committee of the institute and consent was taken from each participant before including in the study. The women of reproductive aged 15-45 years old were included in the study. Sample size of 400 was required to find an adequate power of the study to determine the prevalence of anemia among women calculated as follows: the prevalence of anemia among the rural women of 15-49 was 50.3% in Uttar Pradesh (1). Considering the 80% power and 5% significance level, the required sample size was 400 ($4pq/d^2$).

The purposive sampling method was adopted for the selection of women. A list of villages falling in the field practice area was made and arranged in descending order according to population of the village. From the list, one village was randomly selected. Then after, the subsequent villages were taken till the completion of the required sample size. All the reproductive age group women who were eligible and agree to participate had included in the study. The lactating women were excluded from the study. Written informed consent was obtained from each subject for their participation after the nature of the study was fully explained. For hematological investigations, 2 ml of venous blood from each study respondent was taken in a pre-numbered vial containing EDTA (anticoagulant). All the sample vials were sent to the central laboratory, where the hemoglobin estimation was done by the cyanmethemoglobin method using photoelectric colorimeter. Any anaemia was defined as Hb<12 g/dl1. Severe, moderate, and mild anaemia was defined as Hb below 7 g/dl, 7-9.9 g/dl and 10-11.9 g/dl respectively (1). Data were entered and compiled to avoid human errors.

Statistical analysis: Statistical Package for Social Science (SPSS) version 16.0. Descriptive statistics were used to show the socio-demographic characteristics of the anaemic women. Cross tabulations were used to see the association between different attributes.

Results

Table-1 describes the distribution and prevalence of any anemia in relation to maternal factors. About one fourth of the women were between 20-29 and 30-39 years. However, 23.9% and 22.1% of the women belonged to 15-19 and 40-49 years respectively. More than half of the women were currently married and 33.3% of the women never married. More than one third of the women had no education and 20.5% of the women had less than 5 year's education. However, 20.7%% had 10 or more years of education and 15.4% had years of education. The overall prevalence of anemia was 49%. The prevalence of anemia was higher among the women of age 15-19 years than 30-39, 20-29 and 40-49 years. The prevalence of anemia was almost similar according to marital status of the women. The prevalence was 39% among the women who were neither pregnant nor breastfeeding. The prevalence was higher among the women who had no education (65.6%) compared with less than 5 years of education (47.2%), 5-9 years (43.3%) and 5-9 years (20%) of education.

The percentage of mild anemia was observed among 55.4% of the women. However, 34.3% and 10.3% of the women were moderately and severely anemic. The prevalence of mild (68.9%) and severe (11.1%) anemia was higher among 40-49 years of the women than other age groups. However, the moderate anemia (30.2%) was found to be higher among 15-19 years of the women. The severe anemia (16.1%) was higher among widowed/divorced women than other marital status of the women. The pregnant women were found to highly severely anemic. The percentage of severe anemia was higher among the women who had no education (Table-2)

Discussion

The Government of India started national nutritional anemia prophylaxis program in 1970 (7) and ICDS in 1975 (8). Out of the many objectives of these programs, the main were to improve nutritional status and reduce anemia amongst women in the reproductive age group. Despite of these, low coverage with IFA and high prevalence of anemia in women are well-known issues (9,10,11). Thousands of Anganwadi centers, sub centers, primary health centers and health facilities in urban area are involved in iron tablet distribution (8). Why anemia

is increasing and why coverage with IFA is low are questions that need to be answered. It seems that absence of focus of the program at the lowest level or shortage of iron tablets is also a familiar scenario at the ground level. The NFHS-3 findings should act as a trigger for independent evaluation of the program, with special focus on the qualitative aspects. Alternative strategies for distribution of IFA tablets are immediately needed. New researches should be the basis of interventions carried out to reduce the prevalence of anemia in this population (12,13,14).

In the present study, the overall prevalence of anemia was 49% among the women of reproductive age group. This finding is similar to the prevalence of anemia reported for Uttar Pradesh in NFHS-I (50.9%) (15), NFHS-II (49%) (16) and NFHS-III (49.9%) (1). Bentley and Griffiths (17) analyzed the data from NFHS II for the state of Andhra Pradesh and observed that 58.8% married women aged 15-49 years were anemic of which 32.4, 14.2 and 2.2% had mild, moderate and severe anemia respectively. Another cross-sectional study conducted by Brihan Muncipal Corporation in slum areas of Mumbai reported high prevalence (82.2%) of anemia among non-pregnant women of reproductive age (18). The WHO suggests that if the prevalence of anemia in a population is detected to be 40% or higher, it is considered to be severely anemic (19).

In the present study, the prevalence was 39% among the women who were neither pregnant nor breastfeeding whereas the study conducted by Brihan Municipality Corporation reported that those who were pregnant or who had a surviving child were significantly more likely to have lower mean hemoglobin values18. In this study, the percentage of mild anemia was observed among 55.4% of the women. However, 34.3% and 10.3% of the women were moderately and severely anemic. The prevalence of mild (68.9%) and severe (11.1%) anemia was higher among 40-49 years of the women than other age groups.

It is evident from the current study that the burden of nutritional anemia is high among women in the rural areas and hence, sincere efforts must be initiated adopting specific interventional measures with regard to nutritional education and anemia prophylaxis to reduce the morbidity due to anemia in the rural areas.

Conclusion

It is evident from the current study that the burden of nutritional anemia is high among women in the rural areas and hence, sincere efforts must be initiated adopting specific interventional measures with regard to nutritional education and anemia prophylaxis to reduce the morbidity due to anemia in the rural areas.

Recommendation

A comprehensive educational intervention is required for women of all age groups to reduce the nutritional deficiencies among them. However, further studies should be undertaken involving more number of women to assess the true burden of nutritional anemia and to get more clarifications regarding various issues related to nutritional anemia.

Relevance of the study

The study findings provide some clues on the socio-demographic factors which are important to be included in the intervention programmes to reduce the nutritional deficiencies among the women.

Authors Contribution

Both authors have contributed equally in concept designing, data collection, interpretation of data and preparing the manuscript.

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Tables

TABLE 1 DISTRIBUTION AND PREVALENCE OF ANY ANEMIA IN RELATION TO MATERNAL FACTORS

	No. of women		Any anemia (Hb<12 g/dl)	
	No.	%	No.	%
Age in years				
15-19	104	23.9	53	51.0
20-29	123	28.3	58	47.2
30-39	112	25.7	57	50.9
40-49	96	22.1	45	46.9
Marital status				
Never married	145	33.3	70	48.3
Currently married	233	53.6	112	48.1
Widowed/Divorced	57	13.1	31	54.4
Maternity status				
Pregnant	222	51.0	124	55.9
Breastfeeding	67	15.4	32	47.8
Neither	146	33.6	57	39.0
Education				
No education	189	43.4	124	65.6
< 5 years complete	89	20.5	42	47.2
5-9 years complete	67	15.4	29	43.3
10 or more years complete	90	20.7	18	20.0
All women	435	100.0	213	49.0

TABLE 2 SEVERITY OF ANEMIA ACCORDING TO MATERNAL FACTORS

	Mild (10 - 11.9)		Moderate (7.0 - 9.9)		Severe (<7.0)	
	No.	%	No.	%	No.	%
Age in years						
15-19	34	64.2	16	30.2	3	5.7
20-29	37	63.8	17	29.3	4	6.9
30-39	36	63.2	15	26.3	6	10.5
40-49	31	68.9	9	20.0	5	11.1
Marital status						

Never married	48	68.6	19	27.1	3	4.3
Currently married	77	68.8	29	25.9	6	5.4
Widowed/Divorced	17	54.8	9	29.0	5	16.1
Maternity status						
Pregnant	12	37.5	15	46.9	5	15.6
Breastfeeding	43	75.4	12	21.1	2	3.5
Neither	85	68.5	27	21.8	12	9.7
Education						
No education	67	49.3	53	39.0	16	11.8
< 5 years complete	23	57.5	13	32.5	4	10.0
5-9 years complete	17	70.8	5	20.8	2	8.3
10 or more years complete	11	84.6	2	15.4	0	0.0
Total	118	55.4	73	34.3	22	10.3