



IJCRR

Vol 05 issue 04

Section: Healthcare

Category: Research

Received on: 21.01.13

Revised on: 07.02.13

Accepted on: 20.02.13

**NUTRITIONAL FACTORS ASSOCIATED WITH ANAEMIA AMONG NON-PREGNANT RURAL WOMEN ENGAGED IN AGRICULTURAL SECTOR IN PURBA MEDINIPUR DISTRICT OF WEST BENGAL**

Dibyendu Bhowmick, Shreyasi Sarangi, Chandradipa Ghosh

Department of Human Physiology with Community Health, Vidyasagar University, Midnapore, West Bengal, India

E-mail of Corresponding Author: dibyendubhowmick777@yahoo.co.in

**ABSTRACT**

**Background:** Anaemia is the biggest female health problem in developing country like India. This problem rises during and after pregnancies due to increased nutritional demands and inadequate iron supply. So, assessment of nutritional anaemia in non-pregnant women has a great importance.

**Objective:** To assess the prevalence of nutritional anaemia and its influential nutritional factors in non-pregnant women engaged in agricultural sector in rural area of West Bengal.

**Research methodology:** This cross-sectional study was conducted in the rural area of Patashpur II block of Purba Medinipur district. Door to door survey was conducted and study subjects (N=255) were divided into four age groups. Anthropometric measurements and haemoglobin estimation were done by the standard methods. Nutritional assessment was done by questionnaire method.

**Results:** The result showed that BMI of all subjects were of below normal value and haemoglobin percentages of all women were below or at the marginal level of the cut off points for diagnosis of anaemia. Protein and carbohydrate intake of all women were sufficient but they intake insufficient amount of fat, Fe (except age groups 25-30), Vitamin-B<sub>6</sub>, Vitamin-B<sub>12</sub> and Folic acid.

**Conclusion:** This study reveals that all non-pregnant women who were engaged in agricultural work had probability to develop severe anaemia. Consumption of green vegetables by promotion of home gardening and awareness may reduce this problem.

**Keywords:** Nutritional anaemia, non-pregnant women, rural

**INTRODUCTION**

Anaemia is considered one of the main nutritional disorders affecting a large fraction of the women population. According to World Health Organization (WHO), anaemia is a major public health problem which is at its peak in developing countries. In India, for example, upto 88% of pregnant and 74% of non-pregnant women are affected<sup>1</sup> and anaemia is the 2<sup>nd</sup> most common cause of maternal deaths accounting for 19% of total maternal deaths<sup>2</sup>. Anaemia affects mainly the women in child bearing age group, young children and adolescent girls<sup>3,4</sup>.

WHO defines anaemia as a condition in which the Haemoglobin (Hb) content of the blood is

lower than the normal as a result of deficiency one or more essential nutrients, regardless the cause of such deficiencies. Anaemia is established if the Hb is below the cut off point recommended by WHO<sup>5</sup>. Anaemia reduces the oxygen carrying capacity of the blood. Iron is an important component of haemoglobin (Hb). Nutritional problem may be caused by deficiency of protein, calorie, iron, calcium, Vit C, etc. Anaemic patients exhibits symptoms such as fatigue, breathlessness, giddiness, pallor of skin, palpitation etc.

In recent years, different programs like ICDS, RCH etc, have been introduced to improve the nutritional status of women. National Nutritional

Anemia Prophylaxis Program (NNAPP) was initiated in 1970 aiming to bring down prevalence of anemia to 25%<sup>6</sup>. 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 Program (CSSM).

The present study was planned to investigate the nutritional anaemia of agricultural non-pregnant women in a rural area.

## MATERIALS AND METHODS

The present cross-sectional study was conducted in the rural area of Patashpur II block of Purba Medinipur district, West Bengal. House to house survey was conducted in 5 villages. Non-pregnant women, present at home at the time of survey, were included in this study. The criteria of inclusion of this study were symptoms of non-pregnancy and willingness to participate this study. About 323 women of the area were interviewed and excluded some of them due to pregnancy and chronic diseases. Finally the study was conducted among 255 women. Study subjects were divided into 4 age groups. The women were all Hindu by religion and all were moderate workers.

### Anthropometric measurement, Haemoglobin estimation and Nutritional assessment

Height and weight were measured by standard method<sup>7</sup>. Hemoglobin estimation was done by Salhi's method. Nutritional assessment was done by questionnaire method.

### Statistical analysis

Data was managed on an excel spread sheet. Statistical analyses were done. The mean and standard deviation value of each parameter is calculated.

## RESULTS

**Table 1** focussed the age wise distribution of the study subjects. Among total 255 women, age group 20-25 were of 23.53 %, age group 25-30 were of 15.69 %, age group 30-35 were of 27.45

% and maximum 33.33 % women were of age group 35-40.

**Table 2** shows the anthropometric parameters like height, weight and BMI (Body Mass Index). This table shows that all age groups were of below the recommended BMI. Age group 20-25 had minimum  $17.67 \pm 1.8$  (Mean $\pm$ SD) BMI ( $\text{kg}/\text{m}^2$ ) and age group 25-30 had maximum BMI  $20.60 \pm 2.8$  (Mean $\pm$ SD) which was also below the recommended level.

**Table 3** shows blood haemoglobin % and cut off point for diagnosis of anaemia of non-pregnant women<sup>8</sup>. These tables show that the haemoglobin % had a marginal value to that cut off point for diagnosis of anaemia of non-pregnant women.

**Table 4** shows average nutrient intake of the study subjects with recommended values. All study subjects intake recommended amount of protein and carbohydrate and daily energy gain is also high but this shows that they intake insufficient amount of fat, iron, Vit B<sub>6</sub>, Vit B<sub>12</sub> and folic acid mainly they intake folic acid almost half of the recommended value.

## DISCUSSION

The situation of anaemia among non-pregnant anaemia in rural India remains precarious. This current study was undertaken to determine the prevalence of anaemia and associated nutritional factors of anaemia among the non-pregnant women who were engaged in agricultural sectors. There was no previous report of this block of the district and this study was done to produce the baseline data for public health interventions and the possible cause of anaemia of this agriculturally dependent region.

This study indicates that the blood Hb level of moderate women workers were low i.e. all were anaemic in the rural area of Patashpur II block of District Purba Medinipur. So, it will be severe when these women entered at the stage of pregnancy. This value was substantially higher than that of a study which was done by Maiti *et*

al<sup>9</sup> among the non-pregnant rural women of Paschim Medinipur District (79.55%) which is the neighbouring district.

The low BMI indicates that the women were of poor nutritional status. So, poor nutritional status along with low Hb % of the study subjects will make the situation complex for the non-pregnant women at the time of pregnancies.

The average protein intake was greater than the recommended; it may be the case of over reporting by the respondents as the women were of poor economic status so they sometimes suppress their actual intake. Average intake of fat of the age groups was less than the recommended, for that reason the subjects had dry and scaly skin with horny papules. As these women were of poor economic status intake of carbohydrate were high than the recommended value. Fe, Vit. B6, Vit.B12 and folic acid consumption were less than recommended value so, these women have possibility to develop iron deficiency anaemia and certain types anaemia related to these nutrients<sup>10,11,12,13</sup>.

This area is mainly known for their paddy cultivation for that reason they did not get sufficient amount of green vegetables and fruits. This study had some limitations; the socio-economic status of these women was not obtained during this study. Further research is needed to find detailed cause of the prevalence of anaemia in this area.

## CONCLUSION

The present study findings amply reveal that the agricultural women of Patashpur II block, District Purba Medinipur have probability to develop nutritional anaemia. Promotion of home gardening to increase the common iron rich and vitamin rich foods like green leafy vegetables will help to overcome the problem of availability of green vegetables. Awareness in women must be created. Nutritional counselling may be beneficial. Health and social workers, different voluntary organizations must aware about the

consumption of iron rich and vitamin rich foods and detrimental effects of anaemia.

## ACKNOWLEDGEMENTS

Authors are thankful to all the subjects who supported us and participated in this study.

## REFERENCES

1. World Health Organization, The prevalence of anaemia in women: a tabulation of available information. Geneva.1992
2. Ministry of Health and Family Planning Govt. of India, Annual paper 2001-2002, New Delhi. 2002
3. Luwang NC, Gupta VM, Khanna S Anaemia in pregnancy in a rural community of Varanasi, Ind J Prev Soc Med. 1980: 11: 83-88.
4. Agrawal V, Tejwani S, Prevalence of iron deficiency anaemia in Indian antenatal women especially in rural areas. Ind Med Gaz1999: 300-303.
5. WHO Preventing and controlling iron deficiency anaemia through primary health care, Geneva. 1989.
6. National nutrition policy, Ninth plan (1997-2002), Planning commission, Govt. of India, New Delhi.2002: 11: p.549.
7. Sodhi HS, In Sports Anthropometry (A Kinantropometric Approach): Anova Publication, Mohali, Chandigarh, 1991: pp.176-185
8. WHO. Technical report ser.no.405,1968
9. Maiti S, Ali KM, Jana K, Ghosh D, Paul S. Anaemia among non-pregnant women: a community based study in the rural areas of Paschim Medinipur, West Bengal. South Asian J Experimental Boil.2011: 1(4): 198-201
10. VanderJagt DJ, Spelman K, Ambe J, Datta P, Blackwell W, Crossey M et al () Folate and vitamin B12 status of adolescent girls in northern Nigeria. J Natl Med Assoc, 2000: 92: pp.334-340.

11. Nutritional anaemia [http://www.sightandlife.org/pdf/NAbook.pdf]
12. Allen LH: Pregnancy and iron deficiency: Unresolved issues. *Nutrition Reviews*, 1997; 55(4):pp.91-101.
13. Van den Broek NR, Anaemia and micronutrient deficiencies. *Br Med Bull*, 2003; 67:pp.149-60.

**Table 1: Age wise distribution of non-pregnant women**

Age (Years)	No of women (N=255)	Percentage
20-25	60	23.53
25-30	40	15.69
30-35	70	27.45
35-40	85	33.33

**Table 2: Anthropometric parameter**

Age (years)	Hight mean (cm)±SD	Weight mean (kg)±SD	BMI (kg/m <sup>2</sup> )	Recommended (kg/m <sup>2</sup> )
20-25	150.1±7.8	40.54±5.0	17.67±1.8	24.5
25-30	152.5±7.9	47.94±7.7	20.6±2.8	24.5
30-35	148.7±6.9	42.48±5.0	19.19±2.7	24.5
35-40	151.3±8.2	43.74±7.7	19.10±2.7	24.5

Values are in Mean±SD, Standard values are according to recommendation to ICMR, 1981

**Table 3: Blood haemoglobin % and cut off point for diagnosis of anaemia (WHO, 1968)**

Age (Years)	Blood Haemoglobin (mg/dl) mean±SD	Recommended (mg/dl)	Cut off point for diagnosis of anemia (mg/dl)
20-25	11.2±0.84	14.7	12
25-30	11.2±0.63	14.7	12
30-35	11.2±0.82	14.7	12
35-40	10.8±1.01	14.7	12

**Table 4: Average nutrients intake daily and recommended value**

Age (Years)	Protein gm	Fat gm	Carbohydrate gm	Energy Kcal	Fe mg	Vit. B6 µg	Vit. B12 µg	Folic Acid mcg
20-25	56.9±6.3	16.9±5.0	409±35	2014±239	27.5±1.7	0.40±0.05	0.48±0.06	63±8.5
25-30	66.0±5.5	17.3±2.4	481±32	2330±193	31.4±2.1	0.45±0.05	0.46±0.09	71±2.9
30-35	59.9±5.2	17.3±5.1	444±30	2183±180	28.5±2.3	0.42±0.04	0.57±0.12	66±4.5
35-40	58.7±8.3	17.9±7.0	454±40	2226±398	27.4±3.0	0.44±0.07	0.47±0.10	60±5.1
Recommended	50	51.9	389.3	2225	30	2	1	100

Values are in Mean±SD, Standard values are according to recommendation to ICMR, 1981