

# Prevalence of Anaemia among Rural Women Population of Paschim Medinipur, West Bengal, India

*Maiti S,<sup>1,3</sup> Ali KM,<sup>1</sup> Ghosh A,<sup>1</sup> Ghosh K,<sup>3</sup> Ghosh D,<sup>1,2,3</sup> Paul S<sup>2,3\*</sup>*

<sup>1</sup>Department of Bio-Medical Laboratory Science and Management, (U.G.C Innovative Department), Vidyasagar University, Midnapore, West Bengal, India, <sup>2</sup>Nutrition & Dietetics Unit, Department of Bio-Medical Laboratory Science and Management, Vidyasagar University, Midnapore, West Bengal, India. <sup>3</sup>Rural Research Institute of Physiology & Applied Nutrition (RRIPAN), Gitanjali, Dr. Nilay Paul Road, Midnapore, West Bengal, India.

## ABSTRACT

**Background:** Anaemia is a common health problem among women throughout the world and vast majority of this burden occurs in developing countries. In the present study, an attempt has been made to gauge the prevalence of anaemia among adult women residing in five rural blocks of Paschim Medinipur, West Bengal, India. Therefore, associations between haemoglobin concentration and anthropometric data were evaluated.

**Methods:** The study was confined to the non-pregnant women of age group of 21-50 years. A total of 368 women were participated in the present study. The estimation of anaemia was undertaken using the standard procedure and anthropometric measurements were collected. Anaemia was classified as per the World Health Organisation (WHO) grading criteria.

**Results:** The overall prevalence of anaemia among women was 70.1%. The majority 205 (55.7%) demonstrated moderate anaemia while mild anaemia was recorded in 53 (14.4%) and none of the subject had severe anaemia. Lower body mass index was associated with higher prevalence of anaemia.

**Conclusion:** This study revealed that anaemia is present at considerable levels among adult women in our study area which provide intensive approaches are required to combat the anaemia in this population.

**Keywords:** Anaemia; women; rural area

## \*Corresponding Author:

Dr. Shyamapada Paul  
Director,  
Rural Research Institute of Physiology & Applied  
Nutrition (RRIPAN)  
Gitanjali, Dr. Nilay Paul Road, Midnapore - 721 101,  
West Bengal, India  
Email: paul\_shyamapada@rediffmail.com

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## Background:

Anaemia continues to be a major public health problem worldwide, particularly among women.<sup>1</sup> It has been estimated that more than one third of the world's women are anaemic; the vast majority of this burden occurs in developing

countries.<sup>2,3</sup> It is a common health problem among the women of 18-45 years age.<sup>3,4</sup> Due to different socioeconomic and other influencing factors, the epidemiology of anaemia varies among different regions.<sup>1</sup>

Anaemia is one of the most common health problems in

India.<sup>1,5,6</sup> The problem is much more in rural than in the urban areas.<sup>6,8</sup> Recent nationally representative data from the National Family Health Survey-3 (2005-2006) on anaemia of women describe the magnitude of the problem.<sup>9</sup>

This produces an enormous public health impact, because anaemia poses a significant mortality and morbidity risk, particularly among women. The consequences of anaemia for women include increased risk of low birth weight or prematurity, perinatal and neonatal mortality, inadequate iron stores for the newborn, increased risk of maternal morbidity and mortality, and lowered physical activity, mental concentration, and productivity.<sup>1,7</sup> In addition, it also causes fatigue and leads to negative impact on cognitive and physical functions as well as on the quality of life.<sup>8</sup>

Anaemia prevalence studies an essential requirement as baseline information for future health monitoring.<sup>3</sup> Very few reliable data on women in this region are available. This study was conceived and designed with the objective to determine prevalence anaemia among the non-pregnant women in rural area of Paschim Medinipur, West Bengal.

## Methods:

### *Study area and participants*

This is a community based, cross sectional study, conducted in rural area of Paschim Medinipur district of West Bengal during April 2010 to December 2010. The data were collected from four adjacent blocks namely Sankrial, Gopiballavpur-I, Gopiballavpur-II, Nayagram which are situated western portion of the province. From each block two villages are randomly selected for the investigation. Subjects were relatively poor and contain sizable ethnic population. Women who were pregnant at the time of survey were not included in the study. Age in years was obtained from the date of birth which the majority of the women could recall.

### *Anthropometric data*

Height and weight were measured using standard procedure as recommended by WHO.<sup>10</sup> Height and weight was measured with an accuracy of 0.1 cm. and 500 gm respectively. The body mass index (BMI) was computed following the standard formula:  $BMI (kg/m^2) = Weight (kg) / Height^2 (m^2)$ . BMI was subdivided into low ( $<18.5 kg/m^2$ ), normal ( $18.5-24.9 kg/m^2$ ) and high ( $\geq 25 kg/m^2$ ) according to WHO criteria.<sup>10</sup>

### *Haematological assessment*

The blood haemoglobin concentrations of the subjects were assessed in the field using portable haemoglobinometers (HemoCue Hb analyser) which were checked each day. A sample of capillary blood was obtained from the middle finger of the left hand of each subject. All the examinations were carried out by medical personnel.

### *Assessment of anaemia*

The classification of anaemia was based upon criteria developed by the WHO.<sup>12</sup> Mild anaemia was defined as haemoglobin concentration lay between 10 and 11.9 g/dL, moderate anaemia was defined as haemoglobin concentration lay between 7 and 9.9 g/dL and severe anaemia was defined as haemoglobin concentration of less than 7g/dL.

### *Ethical consideration*

The study protocol was approved by ethics committee of Vidyasagar University. The study protocol was fully explained to the subjects and consent was obtained prior the commencement of the study.

## Results:

The total sample covered by the survey was 368 women aged between 21 and 50 years. Most of the women were between 26 to 30 years of age (25.2%), followed by 46-50 years (17.3%), 31-35 years (16.8%) while lower number of subjects accounted (12.7%) for 21-25 age group.

**Table 1: Characteristics of study population (N=368)**

Age group	No	Percentage (%)
20-25	47	12.7
26-30	93	25.2
31-35	62	16.8
36-40	51	13.8
41-45	51	13.8
46-50	64	17.3

The severity of anaemia according to age groups is shown in Table 2. The prevalence of anaemia, defined as a haemoglobin  $<11.9 g/dL$ , was 70.1% (258/368). The majority (55.7%) had moderate anaemia, only 14.4% were mild range of anaemia. None of the subjects had severe anaemia. Most of the anaemic women were in the older age group.

**Table 2: Age group wise prevalence of anaemia among rural women population**

Age (in years)	Anaemia				Normal
	Mild	Moderate	Severe	Total	
21-25	6 (12.7)	25 (53.1)	-	31 (65.9)	16 (34.0)
26-30	14 (15.0)	51 (54.8)	-	65 (69.8)	28 (30.1)
31-35	7 (11.2)	37 (59.6)	-	44 (70.9)	18 (29.0)
36-40	7 (13.7)	27 (52.9)	-	34 (66.6)	17 (33.3)
41-45	8 (15.6)	29 (56.8)	-	37 (72.5)	14 (27.4)
46-50	11 (17.1)	36 (56.2)	-	47 (73.4)	17 (26.5)
Overall	53 (14.4)	205 (55.7)	-	258 (70.1)	110 (29.9)

Values in parenthesis are percentages

The association of anaemia with BMI is shown in Table 3. Women with lower BMI had the highest prevalence of any degree of anaemia. The results reveal that out of 258 anaemic women, about 176 (68.2%) were low (<18.5) level of BMI, only 29.4% were normal (18.5-25) level of BMI and high (>25) BMI anaemic women were only 2.32%.

**Table 3: Association of anaemia with body mass index**

Anaemia Classification	Body mass index (kg/m <sup>2</sup> )			Total
	BMI (kg/m <sup>2</sup> )	BMI (kg/m <sup>2</sup> )	BMI (kg/m <sup>2</sup> )	
	< 18.5 (%)	18.5-24.9(%)	≥ 25 (%)	
Mild	139 (67.8)	60 (29.2)	6 (2.9)	205
Moderate	37 (69.8)	16 (30.1)	-	53
Severe	-	-	-	-
Total	176 (68.2)	76 (29.4)	6 (2.3)	258(100.0)

Values in parenthesis are percentages

### Discussion:

The importance of anaemia as a major public health problem throughout the world is widely recognized. Study among non-pregnant adult women is virtually non-existence in rural area of West Bengal. The present study was undertaken in order to gauge the prevalence of anaemia among women in the rural areas of Paschim Medinipur, West Bengal.

The present study demonstrated that the overall prevalence of anaemia was 70.1%. The study observed very high prevalence of anaemia and its severity although is similar to earlier studies.<sup>5</sup> In present study none of the subjects had severe anaemia while 55.7% were moderately anaemia and

14.4% had mild anaemia. Only 29.9% subjects had normal. While the prevalence of anaemic women was substantially higher in older age group than in other. According to WHO if the prevalence of anaemia at community levels is more than 40% it is considered as problem of high magnitude.<sup>6</sup> A study from Andhra Pradesh has reported moderate anaemia in 14.1% of the subjects which is lower to our findings. Kaur & Kochar (2009) reported burden of anaemia among rural Jat women of Haryana.<sup>8</sup> A recent community based study by Maiti *et al* documented that extreme levels of anaemia (79.5%) among non-pregnant women in rural of Paschim Medinipur, West Bengal.<sup>11</sup> The high rates of anaemia among Indian women, therefore, reflect their social and biological vulnerability both within society and the household.<sup>1</sup> In contrast, a survey of 3625 non-pregnant women aged 18-45 years living in Kazakhstan, the estimated prevalence of anaemia was 40.2%.<sup>3</sup>

The study also highlights the facts that the prevalence of anaemia was more (68.2%) in individual having low body mass index. These findings are suggestive of nutritional deficiency (dietary factors) as the major cause of anaemia. One of the previous studies has shown a significant association of anaemia with low BMI.<sup>12</sup> The results suggest that the 40-50 years age group were nutritionally vulnerable as evidence by their low haemoglobin concentration. This result corresponds well with those of Dangour *et al*.<sup>3</sup>

There are several factors which could possible be the underlying causes of the anaemia in this population.<sup>1</sup> The main causes of anaemia in developing countries include: inadequate intake and poor absorption of iron, malaria, hookworm infestation 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.<sup>8,12</sup> A peripheral blood film was also not made in present study, which could have given an indication of the type of anaemia in this population. There is a need for a systematic study to find out the causes of anaemia in this area among women. Although determining the causes and association of anaemia was not the objective of this study.

### Conclusion:

Our study confirmed that anaemia is a major public health problem in women of in this area. Hence, the study suggests that an intensive approach is required immediately and should implicated proper nutritional intervention among the rural women.

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**Conflict of interest:** None disclosed

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