ID: JCDR/2012/3277:1990

Original Article

Community Section

Prevalence of Anaemia among Pregnant Bauri Women of Bankura, West Bengal, India

BIKASH MONDAL, SOUMYAJIT MAITI, BIKRAMJIT MAITY, DEBIDAS GHOSH, SHYAMAPADA PAUL

ABSTRACT

Anaemia in pregnancy is a frequent manifestation and an important health problem in the developing countries. A hospital-based, cross-sectional study was conducted among 246 pregnant Bauri women, to assess the prevalence of anaemia. The study was carried out at the Bankura Sammilani Medical College and Hospital, Bankura, West Bengal, India during June to August 2010. Only the pregnant Bauri women who visited the hospital were enrolled in the study. Anaemia was classified as per the World Health Organization (WHO) grading criteria. The present study revealed that all the participants were anaemic and their mean haemoglobin (Hb) concentration level was low (9.72±1.98 g/dl). In a majority (72.76%) of the subjects, the Hb level was lies between 9.1 g/dl to 9.5 g/dl. In all, most of the women (91.46%) had moderately anaemic where mild anaemia and severe anaemia were 8.54% and 0.81%, respectively. This study demonstrated that anaemia was present at substantial level among the pregnant Bauri women of Bankura, West Bengal.These findings are useful for our maternal health program planners and implementers to target and evaluate the interventions.

Key Words: Anaemia, Pregnancy, Bauri, West Bengal

INTRODUCTION

Anaemia in pregnancy remains one of the most intractable public health problems in the developing countries [1,2]. The World Health Organization (WHO) has estimated that more than half of the pregnant women in the world have a haemoglobin level (<11.0 g/dl) which is indicative of anaemia. The prevalence may however be as high as that which has been seen in the developing countries [1]. In India, anaemia is the second most common cause of maternal deaths, accounting for 20% of the total maternal deaths [3]. The prevalence of anaemia ranges from 33% to 100% among pregnant women, with wide variations in different regions of the country [4]. The WHO has suggested that anaemia is of 'moderate' public health importance, when its prevalence is between 20% to 39.9% and 'severe' if it occurs in 40% or more of the population [1].

Anaemia during pregnancy is associated with adverse infant outcomes, including low birth weight, preterm delivery and perinatal mortality, and it may also be associated with childhood intellectual disability [5]. Women with even mild anaemia may experience fatigue and they may have a reduced work capacity. Severe anaemia is associated with maternal and child mortality [2,5].

There are variations in the prevalence of anaemia, within countries and different ethnic groups [4]. However, the information on anaemia in pregnant women in the remote areas is still limited. Only few studies have assessed the prevalence of anaemia from both the hospital based [2,6,7] and community based studies [4,8-11]. In addition, there is an absence of representative data on the prevalence of anaemia among the ethnic groups in West Bengal. The management and control of anaemia in pregnancy is enhanced by the availability of the local prevalence statistics, which has not been adequately provided in rural West Bengal. Therefore, this study was aimed at providing the prevalence of anaemia among the pregnant Bauri women of Bankura, West Bengal, India.

MATERIALS AND METHODS

The hospital-based, cross-sectional study was conducted in the Bankura Sammilani Medical College and Hospital (BSMCH), Bankura, West Bengal, India during the period from June 2010 to August 2010. Bankura is a district town, about 173 kilometres from Kolkata, the provincial capital. Pregnant Bauri women who attended the BSMCH formed the study population and a majority of them came from the rural areas. The Bauris are a comparatively well known sizeable caste group in West Bengal. The total Bauri population in West Bengal is 1,091,022, constituting 5.9% of the total scheduled caste population of the state. Bauri is a cultivating, earth-working, and palanquin-bearing caste. The socio-economic status and the literacy rate are very low [12].

The haemoglobin (Hb) concentration was determined by the cyan-methaemoglobin method as was described by Babara and Bates [13] and as recommended by the World Health Organization [1].

Women with bleeding disorders were excluded from the study. Anaemia was classified as per the WHO severity grading criteria [1]. Thus, the anaemia in pregnancy was found to range from mild (≥10.0 g/dl), moderate (7.0-9.9 g/dl) and severe (<7.0 g/dl). This study was approved by the concerned authorities.

RESULTS

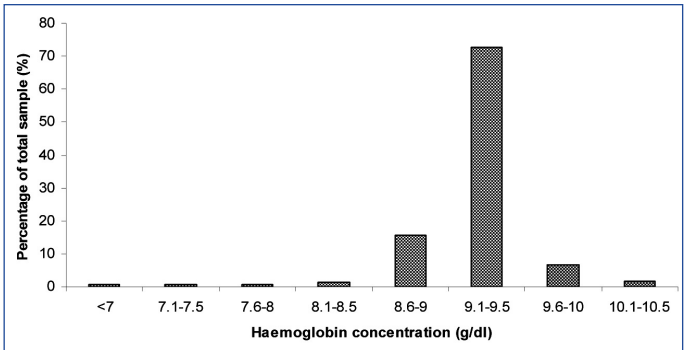
A total of 246 subjects were studied. The mean age of the women was 23.64 years, ranging from 15 to 34 years. The percentage of the women who were less 19 years old was 21.55%. A majority (64.23%) of the pregnant Bauri women were in the 20-24 years age group [Table/Fig-1].

The overall mean Hb level was 9.72 g/dl (sd 1.98). The mean Hb levels were slightly increased with the advancement of age.

[Table/Fig-2] shows the distribution of the Hb concentration for all the subjects. The range varied from 6.8 g/dl to 10.5 g/dl. The Hb

Age group (years)	n	Hb (g/dl) Mean ± SD
15-19	53 (21.55)	9.50 ± 0.42
20-24	158 (64.23)	9.53 ± 0.38
25-29	32 (13.0)	9.57 ± 0.39
30-34	3 (1.22)	9.93 ± 0.12
Total	246	9.72 ± 1.98

[Table/Fig-1]: Age group wise mean haemoglobin of the pregnant Bauri women



[Table/Fig-2]: Distribution of haemoglobin concentration (g/dl) among Bauri pregnant women (*n*=246)

Age group (years)	Anaemia			
	Mild	Moderate	Severe	Total
15-19	2 (3.77)	50 (94.34)	1 (1.87)	53
20-24	9 (5.69)	148 (93.67)	1 (0.63)	158
25-29	6 (18.75)	26 (81.25)	–(0.0)	32
30-34	2 (66.67)	1 (33.33)	–(0.0)	3
Total	21 (8.54)	225 (91.46)	2 (0.81)	246

[Table/Fig-3]: Age group wise prevalence of anaemia among the pregnant Bauri women.
Figures in parentheses denote percentages.

distribution also showed a below the normal level. In a majority (72.76%) of the subjects, the Hb level was between 9.1 g/dl to 9.5 g/dl.

The severity of anaemia according to the age groups has been depicted in [Table/Fig-3]. All the subjects were observed to be anaemic in the present study. A majority (91.46%) of the anaemic women demonstrated moderate anaemia, while mild and severe anaemia were recorded to be 8.54% and only 0.81% in the pregnant Bauri women, respectively. The women in the 15-19 years age group constituted the highest percentage of moderate anaemia patients (94.34%), followed by those in the 20-24 years age group (93.67%) as compared to the other age groups. All the cases of severe anaemia were recorded in women who were less than 25-years of age.

DISCUSSION

The situation of anaemia among the pregnant women in rural India remains precarious. The current study was undertaken to determine the prevalence of anaemia among the pregnant Bauri women of West Bengal. No previous report was available on this ethnic group and this study was done to produce baseline data for the public health interventions.

The results of this study showed that all the pregnant women in Bauri who attended the hospital for routine antenatal care were anaemic. While this value was substantially higher than pregnant women (74.8%) in rural hospital of Maharashtra (using Hb < 10.0 g/dl) [6]. The overall prevalence of anaemia in our study was similar to that of the studies in the rural areas of Delhi (96.5%) [8]. Similarly, a higher frequency of anaemia during pregnancy also was observed in the rural community of Varanasi [9]. On the contrary, the incidence of anaemia in pregnancy at a tertiary care hospital in Pakistan was found to be about 91% [7]. In Nigeria, the pregnant women who were aged 15-48 years, were studied at an antenatal clinic, 92.8% were found to be anaemic [2]. The present study showed a higher prevalence rate than that of a study which was done by Maiti *et al* [11] among the non-pregnant rural women of the Paschim Medinipur district (79.55%), as compared to the neighbouring districts.

The mean value of all the pregnant Bauri women who were studied was 9.72 ± 1.98 g/dl, but the WHO made a cut-off value at 10.9 g/dl for anaemia in pregnancy.

But a study of pregnant women in rural Tamil Nadu observed a higher mean Hb level (10.1 ± 1.5 g/dl) [10]. In our study, the Hb distribution also showed a below the normal level and in a majority of the women, the Hb value was lies between 9.1-9.5 g/dl.

The observed prevalence of the severity of anaemia as mild, moderate and severe anaemia was 8.54%, 91.46% and 0.81%, respectively. Similarly, Ahmad *et al*., [6] also demonstrated that a majority (50.9%) of the participants were moderate anaemia, followed by those with mild (30.17%) and severe (18.9%) anaemia.

The possible explanations for a higher prevalence of anaemia among the Bauri women were their inadequate dietary intake, lower parity and lower social class. This study had some limitations; the socio-economic status of Bauri was not obtained during the study. Further research is needed in this ethnic group to ascertain the cause, the predisposing factors and the effectiveness of the prophylaxis of the iron and folate supplementation programme.

In conclusion, anaemia in pregnancy is alarmingly high amongst the Bauri population. These findings are useful for our maternal health program planners and implementers to target and evaluate interventions for the improvement of this ethnic group.

ACKNOWLEDGEMENT

We are grateful to Prof. Manoj Coudhury, Principal of the B. S. Medical College and Hospital, Bankura, West Bengal for continuous encouragement and providing the necessary permission to carry out the study.

REFERENCES

[1] The World Health Organization.Iron deficiency anaemia assessment, prevention and control. *A guide for programme managers.* Geneva, 2001; WHO/NHD/01.
[2] Buseri FI, Uko EK, Jeremiah ZA, Usanga EA. The prevalence and the risk factors of anaemia among pregnant women in Nigeria. *The Open Hematology J*. 2008; 2:14-19.
[3] Govt. of India. *Health information of India*, DGHS, Nirmal Bhawan, New Delhi;1995.
[4] Toteja GS, Singh P, Dhillon BS, Saxena BN, et al. The prevalence of anemia among pregnant women and adolescent girls in 16 districts of India. *Food Nutr Bull*. 2006; 27(4):311-5.
[5] Bentley ME, Griffiths PL. The burden of anemia among women in India. *Europ J Clin Nutr*. 2003; 57:52-60.
[6] Ahmad N, Kalakoti P, Bano R, Syed MMA. The prevalence of anaemia and its associated factors in pregnant women in a rural Indian community. *Aus Med J*. 2010; 3(5):276-80.

[7] Rohra DK, Solangi N, Memon Z, Khan NH, Azam SI, Ahuja KL. The hemoglobin status of pregnant women who visited the tertiary care hospitals of Pakistan. *Pak J Med Res*. 2008; 47(2).
[8] Gautam VP, Bansal Y, Taneja DK, Saha R. The prevalence of anaemia amongst pregnant women and its socio-demographic associates in a rural area of Delhi. *Ind J Com Med*. 2002; 27(4):157-60.
[9] Luwang NC, Gupta VM, Khanna S. Anaemia in pregnancy in a rural community of Varanasi. *Ind J Prev Soc Med*. 1980; 11:83-88.
[10] Rajaratnam J, Abel R, Ganesan C, Amalanjayaseelan S. Maternal anaemia: a persistent problem in rural Tamil Nadu. *The National Med J Ind*. 2000;13(5):242-45.
[11] 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 Biol*. 2011; 1(4):198-201.
[12] Risley HH. *The tribes and the caste of Bengal*. Vol.I and II. (Reprint Vol. 1998).Kolkata,Firma KLM Ltd.;1891.
[13] Barbara JB, Bates I. Basic Haematological techniques. In: *Dacie and Lewis Practical Haematology*. 9th ed. Churchill Livingstone. 2001; 19-48.

AUTHOR(S):
1. Mr. Bikash Mondal
2. Mr. Soumyajit Maiti
3. Dr. Bikramjit Maity
4. Prof. Debidas Ghosh
5. Dr. Shyamapada Paul

PARTICULARS OF CONTRIBUTORS:
1. Bankura Sammilani Medical College & Hospital, Bankura - 722 102, West Bengal, India.
2. Department of Bio-Medical Laboratory Science & Management (U.G.C. Innovative Funded Department), Vidyasagar University, Midnapore - 721 102, West Bengal, India. & Rural Research Institute of Physiology & Applied Nutrition (RRIPAN), 'Gitanjali', Dr. Nilay Paul Road, Midnapore - 721 101, West Bengal, India.
3. Bankura Sammilani Medical College & Hospital, Bankura - 722 102, West Bengal, India.
4. Department of Bio-Medical Laboratory Science & Management (U.G.C. Innovative Funded Department), Vidyasagar University, Midnapore - 721 102, West Bengal, India. & Rural Research Institute of Physiology & Applied Nutrition (RRIPAN), 'Gitanjali', Dr. Nilay Paul Road, Midnapore - 721 101, West Bengal, India.
5. Corresponding Author.

NAME, ADDRESS, E-MAIL ID OF THE 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.
E-mail: paul_shyamapada@rediffmail.com

FINANCIAL OR OTHER COMPETING INTERESTS:
None.

Date Of Submission: **Sep 24, 2011**
Date Of Peer Review: **Dec 25, 2011**
Date Of Acceptance: **Feb 28, 2012**
Date Of Publishing: **Apr 15, 2012**