Original Research

Prevalence of different grades of anaemia in tribal population of Jharkhand

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ABSTRACT:
Background: Anaemia is one of the most common nutritional deficiency disorders in the world. In Garhwa district (tribal area of Jharkhand) inadequate dietary iron, folate intake, low Vitamin B12 intake due to low vegetables consumption are the major factors responsible for high prevalence of anaemia. This study was done therefore to assess the prevalence of anaemic patients and to classify them according to their age, sex and severity of anaemia. **Materials & methods:** The data of anaemic patients has been obtained from Haematology laboratory of Vananchal Dental College & Hospital, Garhwa, Jharkhand. Age, sex and Haemoglobin (Hb) values of patients who came for routine examination from August 2016 to February 2017 were noted. From the Hb values, presence or absence of anaemia and grading of anaemia was assessed. The grading of anaemia is divided into three types: Mild, Moderate and Severe anaemia. **Results:** Out of total 635 patients reported, 500 (78.7%) were found anaemic. Among the 500 anaemic patients, 314 were females (62.8%) and 186 were males (37.2%). Most of the anaemic patients (52.2%) were in the age group of 21-30 and 31-40 years. Out of 500 patients, 375 patients (75%) had mild (Hb%: 10-12.9%), 93 patients (18.6%) had moderate (Hb%: 7- 9.9%) and 32 patients (6.4%) had severe anaemia (Hb%: <7%). **Conclusion:** Anaemia is commonly prevalent in this tribal region of India. Females as well as people of the age group of 21-30 and 31-40 years are more affected and patients are mainly suffering from Mild and Moderate grades of anaemia.
Key words: Anaemia, Jharkhand

INTRODUCTION

Anemia is a condition in which the hemoglobin level is below normal and insufficient to meet physiologic needs. The World Health Organization (WHO) estimates anemia as a major public health problem with almost 2 billion people having anemia below normal values. One of the most common causes of anemia is due to inadequate supply of nutrients. Poor eating habits play a major role in the development of iron deficiency anemia that is an important indicator of poor health status. Children and adolescent are at increased risk of developing iron deficiency anemia because of their increased demand for iron during growth and puberty. India continues to be one of the countries with very high prevalence. National Family Health Survey (NFHS-3) reveals the prevalence of any anemia to be 55.3%.[1- 5]

To accelerate reductions in anaemia, evidence is needed around factors at individual, household and community levels that explain changes in anaemia prevalence over time. Several studies in India have examined cross-sectional associations between anaemia and its 'determinants', but very few studies have used multiple rounds of data to model the impact of changes in selected factors on changes in anaemia prevalence over time. Given scarce evidence, policy-makers are challenged to understand which investments will have the greatest impact on future anaemia reduction in India.[6- 8] Hence; the present study was conducted for assessing the prevalence of

different grades of anaemia in tribal population of Jharkhand.

MATERIALS & METHODS

The data of anaemic patients has been obtained from Haematology laboratory of Vananchal Dental College & Hospital, Garhwa, Jharkhand. Age, sex and Haemoglobin (Hb) values of patients who came for routine examination from August 2016 to February 2017 were noted. Haemoglobin levels were assessed using Sahli apparatus. From the Hb values, presence or absence of anaemia and grading of anaemia was assessed. The grading of anaemia is divided into three types: Mild, Moderate and Severe anaemia. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

RESULTS

Mean haemoglobin levels of males and females were found to be 10.74 gm % and 9.92 gm % respectively. Overall, haemoglobin levels of the present study population were 10.22 gm %. Mean Haemoglobin levels among the patients of age group of 0 to 10 years, 11 to 20 years, 21 to 30 years, 31 to 40 years, 41 to 50 years, 51 to 60 years, 61 to 70 years and 71 to 80 years was 5.98 gm %, 9.27 gm %, 10.01 gm %, 10.62 gm %, 10.68 gm %, 10.56 gm %, 10.58 gm % and 9.89 gm % respectively. 69 percent, 24 percent and 7 percent of the females had mild, moderate and severe anaemia respectively. 85 percent, 9 percent and 6 percent of the males had mild, moderate and severe anaemia respectively.
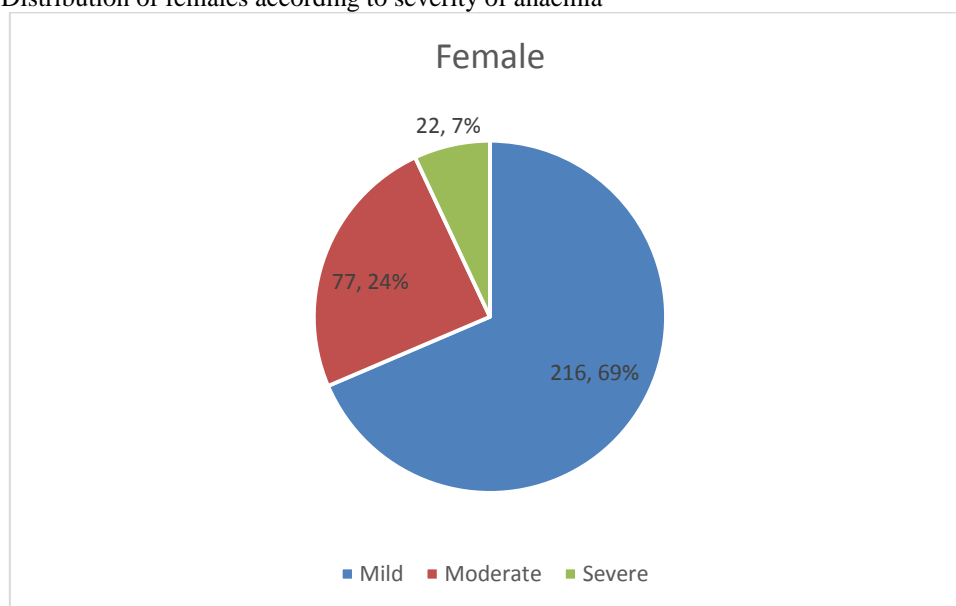
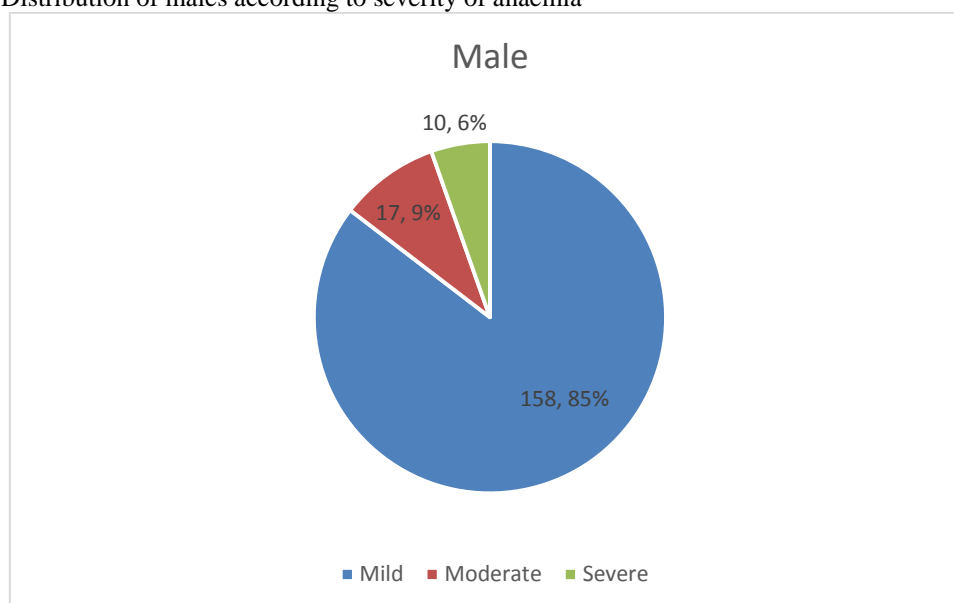**Table 1:** Haemoglobin profile of males and females

Gender	Mean Hb (gm%)
Males	10.74
Females	9.92
Overall	10.22

Table 2: Haemoglobin profile of patients according to different age range

Age range (years)	Average Hb gm %	Number of patients
0-10	5.98	12
11-20	9.27	35
21-30	10.01	146
31-40	10.62	123
41-50	10.68	79
51-60	10.56	57
61-70	10.58	37
71-80	9.89	11

Graph 1: Distribution of females according to severity of anaemia

Graph 2: Distribution of males according to severity of anaemia

Table 3: Correlation coefficient

Variable	Coefficients	Standard Error	t Stat	P-value
Intercept	9.658809182	0.226101366	42.71893343	0.00%
Age	0.026019104	0.00465566	5.588703505	0.00%
Sex	-0.680065271	0.148589824	4.576795708	0.00%

DISCUSSION

Anaemia is the most common nutritional problem in the world. It is one of the leading causes of disabilities. Anaemia at any age has significant negative impact on the health of an individual varying from poor scholastic performance and cognitive impairment in children to one of the major indirect causes of maternal mortalities. The initiative to control anaemia started in India early in 1970 with National Nutritional Anaemia Prophylaxis's programme (NNAPP). It was focused to improve the nutritional anaemia in children aged 1-11 years and women of child bearing age. In 1991, NNAPP was renamed as NNACP with new strategies to control nutritional anaemia. However, many evidences show that anaemia control program is not performing well in the country, due to various reasons.[9-12] Hence; the present study was conducted for assessing the prevalence of different grades of anaemia in tribal population of Jharkhand.

In the present study, Mean haemoglobin levels of males and females were found to be 10.74 gm % and 9.92 gm % respectively. Overall, haemoglobin levels of the present study population were 10.22 gm %. Mean Haemoglobin levels among the patients of age group of 0 to 10 years, 11 to 20 years, 21 to 30 years, 31 to 40 years, 41 to 50 years, 51 to 60 years, 61 to 70 years and 71 to 80 years was 5.98 gm %, 9.27 gm %, 10.01 gm %, 10.62 gm %, 10.68 gm %, 10.56 gm %, 10.58 gm % and 9.89 gm % respectively. A study conducted in 2011 by Joshi had found 95.3% prevalence of anemia in a group of tribal women.

Even the study conducted by Jai Prabhakar and Gangadhar, in 2009 showed a prevalence of 77.1% among the study sample. Balgir et al., had assessed the prevalence of anaemia in Bhuyan and Kharia tribes of Odisha state. Anemia was prevalent among both the tribes; Bhuyan tribe (89.9%) than in Kharia tribe (73.8%).[13-15] Little M et al recruited a sample of men and nonpregnant women aged 20 years and older. Clinical health measures included blood haemoglobin concentration and body mass index. They assessed associations between anemia outcomes and sociodemographic and dietary factors using linear and logistic regression modeling. A total of 753 individuals (412 women and 341 men) participated in this study. The prevalence of anemia was 57.2% among women and 39.3% among men (P<0.001). Prevalence of anemia increased with age among men (P<0.001) but not women (P>0.05). Iron intake was low; 11.7% women and 24.1% of men reported iron intakes above recommended dietary allowances (P<0.001). Factors (OR (95% CI)) associated with mild or moderate anemia among women included television ownership (0.27 (0.13, 0.58)), livestock ownership (0.46 (0.28, 0.75)), refined grain consumption (1.32 (1.02, 1.72)), meat consumption (0.84 (0.71, 0.99)), and commercial agriculture production (mild: 4.6 (1.1, 18.8); moderate: 6.8 (1.98, 23.1)). Factors associated with mild, moderate, or severe anemia among men included rurality (0.50 (0.25, 0.99)), sugar consumption (1.04 (1.01, 1.06)), egg consumption (0.80 (0.65, 0.99)), and high caste (7.3 (1.02, 52.3)).[16]

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In the present study, 69 percent, 24 percent and 7 percent of the females had mild, moderate and severe anaemia respectively. 85 percent, 9 percent and 6 percent of the males had mild, moderate and severe anaemia respectively. Kishore S et al assessed the prevalence of anaemia among the beneficiaries of Anaemia Mukt Bharat and its association with age and gender. A cross-sectional study was conducted in Uttarakhand by AIIMS Rishikesh in a month-long campaign including 5,776 beneficiaries. Camps were organized at the hospital campus, schools, district hospitals, Community Health Centre (CHC), Primary Health Centre (PHC), subcentres (SC), Anganwadi Centres (AWCs), slum areas, adolescent health day celebration sites and Village Health and Nutrition Day (VHND) sites. Data on age and gender along with haemoglobin level using HemoCue Haemoglobinometer was collected.Out of 5,776 participants 53.2% were anaemic. Females (54.6%) were more anaemic than males (45.1%). 33.5% of pregnant females were found to be anaemic. Prevalence of anaemia was very high among the study participants.[17]

CONCLUSION
Anaemia is commonly prevalent in this tribal region of India. Females as well as people of the age group of 21-30 and 31-40 years are more affected and patients are mainly suffering from Mild and Moderate grades of anaemia.

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