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Status of Anaemia among the Tribal Women in Manipur

H. Sorojini Devi[1*]

[1]Department of Anthropology, D. M. College of Science, Imphal, 795001, Manipur, India.

Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Background: Anaemia is the most common nutritional deficiency disorder in the world. It is becoming a very common problem affecting both genders of all the ages and affects children, adolescents and women of reproductive age worldwide.
Objective: To examine the status of anaemia among the tribal women of reproductive age (15-49 years).
Setting: The study was conducted in seven villages of Chandel, Kangpokpi and Churachandpur district in Manipur.
Design: A Cross-sectional study.
Subject and Methods: A cross-sectional data of 282 women of reproductive age (15-49 years) were randomly chosen from Chothe, Vaiphei and Kom tribal women of Manipur. Haemoglobin estimation in gram per decilitre of each subject was estimated by acid Hematin (Sahli's method) using haemoglobinometer.
Results: Anaemia prevalence of 38.95% (Vaiphei) 32.29% (Kom) and 17.58% (Chothe) in the mild and moderate grades were observed among the women. Mean values of haemoglobin of different age groups indicated that the age group 15-25 years in each case shows the lowest haemoglobin values with 12.82% g/dl, 11.87% g/dl and 11.83% g/dl as compared to higher age groups. Range

**Corresponding author: Email: sorojinihijam@yahoo.in;*

values of the present study indicated that the higher haemoglobin ranges were found among the Chothes than the Vaiphei and Kom women. The highest literacy rate was also found among the Chothe women (58.24%) and the lowest percentage was represented by the Vaiphei women (48.24%). Small sections of the women had an idea about anaemia, but the majority of them remained as ignorant about this problem.

Keywords: Anaemia; tribal women; Manipur.

1. INTRODUCTION

Anaemia is the most common nutritional deficiency disorder in the world. It is becoming a common problem affecting both genders of all the ages and affects children, adolescents and women of reproductive age worldwide. Anaemia is defined as "a haemoglobin level of less than <12 g/dl in females and <13 g/dl in males is an indication of either dietary deficiency or an underlying pathologic process or disease" [1]. The World Health Organization (WHO) estimates anaemia as a major public health problem with almost 2 billion people having anaemia below normal values [2]. According to the National Family Health Survey (NFHS)-(III), more than half of women in India (55%) have anaemia, including 39% with mild anaemia, 15% with moderate anemia and 2% with severe anaemia [3].

Haemoglobin is an important respiratory pigment of blood and performs an important function of carrying oxygen and it also takes part in carbon dioxide transport. Haemoglobin synthesis requires an adequate supply of iron. The low dietary intake of iron and folic acid coupled with a poor bioavailability of iron is the major factor responsible for the very high prevalence of anaemia in the country [4]. Although it is the main cause of anaemia in most settings, anaemia may be the result of other nutrient deficiencies such as vitamin B12 and folate (B9) as well as non-nutritional causes such as malaria, genetic abnormalities such as thalassemia, abnormal haemoglobin and chronic disease [5]. Vitamin B9 helps the body to create red cells and produce DNA, while B12 helps to mature the cells. According to WHO, women of childbearing age need to absorb 2-3 times the amount of iron required by men or older women [6].

In Punjab, 70.57% young girls and women were anaemic and poor nutrition profile of the women was positively correlated with the haemoglobin level [7]. Among the tribal women of Bangwar district of Rajasthan, the anaemia grades were 33.33% (mild), 53.33% (moderate) and severe with 3.33% [8]. Madhuri and Preeti [9] also reported anaemia rate of 64.28% among the women of Uttarakhand, India in which majority of them were in the moderate (58.33%), but mild (37.5%) and severe (4.16%) were in the lesser magnitude. North Indian rural women had 50% anaemia with higher prevalence (55%) in younger females (<30 years) [10].

The prevalence of anaemia in females (20-50 years) was 70.1% (48.7%, 19.9% and 1.5% for mild, moderate and severe cases respectively) who belonged to a lower socio-economic, lower socio-demographic and a low activity lifestyle [11]. The tribal women of reproductive age (15-49 years) in Udupi Taluk, Karnataka suffered from 55.9% in which 6 (3.5%) of women were severely anaemic, 33 (19.4%) were moderately anaemic and 56 (32.9%) were mildly anemic [12]. Reports of anaemia among the women of Manipur are rare. Hence, an effort has been made to highlight the prevalence of anemia among the tribal women of reproductive age (15-49 years) of three communities in Manipur. These tribes are recognized scheduled tribes of Manipur. The Chothe claimed themselves belonging to Naga group. They are distributed in Chandel and Bishnupur districts of Manipur. The Vaipheis and Koms are identified as Kuki group and mostly distributed in the Churachandpur district of Manipur. Some Vaiphei group settled in the Kangpokpi district, Manipur.

2. MATERIALS AND METHODS

A total of 282 women (Chothe=91, Vaiphei=95 and Kom=96) were selected randomly aged 15-49 years from different Chothe (Chandel district), Vaiphei (Kangpokpi district) and Kom (Chrachandpur district) villages of Manipur. Pregnant and lactating women whose babies are within the age 1 year were excluded in the data of the present study because the cut off haemoglobin level for pregnant and lactating women is different from those of normal women.

2.1 Estimation of Haemoglobin

Haemoglobin estimation in gram per decilitre of each subject was done by acid Hematin (Sahli's method) using haemoglobinometer [13]. The mild grade was defined as haemoglobin level of 10.0-11.9 g/dl, moderate anaemia as haemoglobin level 7.0-10.0 g/dl and severe anaemia as haemoglobin level < 7.0 g/dl. The haemoglobin status less than 12 g/dl is diagnosed with anaemia [9].

2.2 Statistical Methods

Mean haemoglobin values were computed using SPSS version 16 and one-way analysis of variance was computed by Excel.

3. RESULTS

Table 1 highlights the various grades of anaemia of Chothe, Vaiphei and Kom women of reproductive age (15-49 years). It is observed that among the three comparing groups, the Vaiphei women have the highest anaemia prevalence with 38.95% in which 34.74% of women are mildly anaemic and 4.21% of women are moderately anaemic. The next highest is observed among the Kom women with 32.29% (26.04% in the mild and 6.25% in the moderate) whereas the Chothe women have revealed a least percentage of 17.58%. Amongst them, 14.29% of the women have mild anaemia and 3.3% of women are moderately anaemic. In all three groups, the severe form of anaemia is not prevalent. Amongst them, the Vaipheis are the most affected group with 39.94% and followed by the Kom women (32.29%), while the Chothe indicates the better group with less percentage (17.58%).

WHO suggested the following cut off points to determine the magnitude of (iron deficiency anaemia) IDA among populations [14].

Table 1. Distribution of grades of anaemia in women

Anaemia grades	Chothe (n=91)		Vaiphei (n=95)		Kom (n=96)	
	N	p.c	N	p.c	N	p.c
Severe	-	-	-	-	-	-
Moderate	03	3.30	04	4.21	06	6.25
Mild	13	14.29	33	34.74	25	26.04
Total anaemia	16	17.58	37	38.95	31	32.29
Normal	75	82.42	58	61.05	65	67.71
Total	91		95		96	

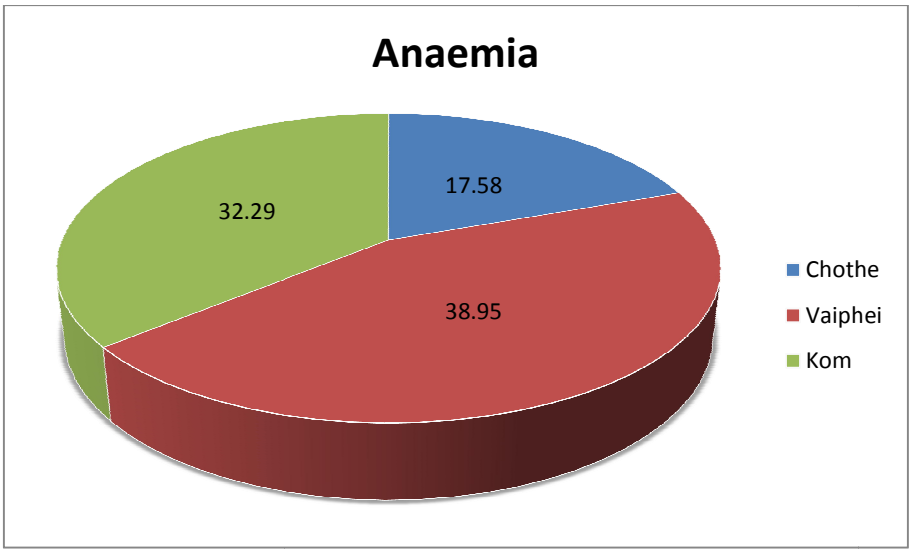

Fig. 1. Distribution of anaemia among the three tribal women

Findings of present work specified that the problems of anaemia among the women understudied communities are under the moderate magnitude.

Table 3 represents mean and range values of haemoglobin level of different age groups of women. From the various range patterns it is observed that, in general, mean Hb values increases with higher age groups of women (35-49 years) in each case with 13.13 g/dl, 12.17 g/dl and 12.11g/dl. On the other hand, lower Hb means are observed in the younger age groups of all women groups whose respective means are12.82 g/dl, 11.87 g/dl and 11.83 g/dl, but the Chothe women have a comparatively higher mean (12.82 g/dl) than the Vaiphei and Kom women. While observing the Hb range values, the Chothe women show higher haemoglobin range values of 12.82 g/dl, 12.92 g/dl and 13.13 g/dl than the Vaiphei (11.87 g/dl, 11.96 g/dl and 12.17 g/dl) and Kom women (11.83 g/dl, 12.09 g/dl and 12.11 g/dl). It is also apparent that the younger age group of 15-25 years has more number of anaemic women as compared to later age group women in each case. Analysis of variance indicates significant differences in haemoglobin levels in all age groups of women (all $P<0.05$) that is in 15-25 years ($F=11.936$, $P<0.05$), 25-35 years ($F=7.50$, $P<0.05$) and 35-49 years ($F=4.973$, $P<0.05$).

Table 4 represents the distribution of number of women as per educational status. It is observed that the literacy rate is the highest among the Chothe women (58.24%) and the lowest for the Vaiphei women (48.42%). The higher study levels of graduate and postgraduate/technical are a few i.e 8.79%, 7.37% and 6.26% for Chothe, Vaiphei and Kom respectively in the present study.

Table 5 highlights the number of women having knowledge about the causes anaemia. Although the term anaemia is very common, the knowledge about its causes is not known by many. A few of them have an idea about this problem, but vague due to either lack of interest or proper education. Thus, only 15.38% 15.79% and 13.54% of women have an idea about this causes of anaemia.

Table 2.

Sl. no.	Prevalence	Public health problem
1.	< 5 %	Not a problem
2.	5-14.9%	Law magnitude
3.	15-39.9%	Moderate magnitude
4.	40%	High magnitude

Table 3. Range and mean values of haemoglobin (g/dl) in different age groups of women

Sl. no.	Age group (years)	Chothe (n=91)		Vaiphei (n=95)		Kom (n=96)		F ratio
		Hb range (g/dl)	Mean Hb (g/dl)	Hb range (g/dl)	Mean Hb (g/dl)	Hb range (g/dl)	Mean Hb (g/dl)	
1.	15-25	10.0-14.0 (9)	12.82	10.0-13.2 (15)	11.87	9.0-14 (12)	11.83	11.936
2.	25-35	11.0-15.6 (4)	12.92	10.2-14.0 (13)	11.96	10.0-14.0 (11)	12.09	7.500
3.	35-49	10.0-16.2 (3)	13.13	11.2-14.0 (9)	12.17	10.4-14.0 (8)	12.11	4.973
	Total	16		37		31		

Note: $F_{0.05}$ (2, 86=3.10; 2, 96=3.09; 2, 89=3.09), numbers in the parentheses indicate proportion of anaemic women in each age category

Table 4. Educational status of women

	Literate		Illiterate		Total	
	N	p.c	N	p.c	N	p.c
Chothe (n=91)	53	58.24	38	41.76	91	100
Vaiphei (n=95)	46	48.42	49	51.57	95	99.99
Kom (n=96)	49	51.04	47	48.96	96	100
Total	148		134		282	

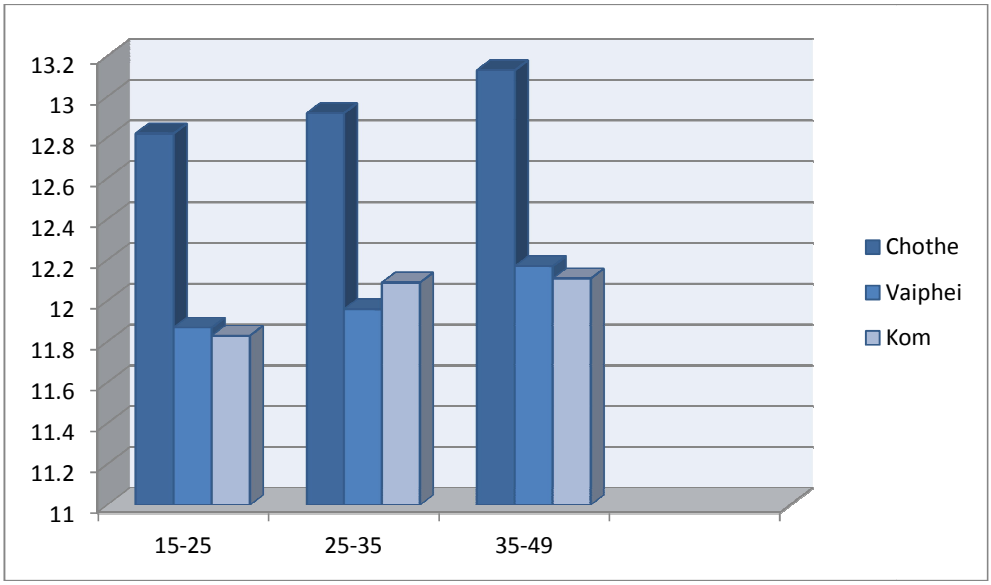

Fig. 2. Haemoglobin mean values in different age groups of women

Table 5. Distribution of number of women having knowledge about anaemia

	Yes		No		Total	
	N	p.c	N	p.c	N	p.c
Chothe (n=91)	14	15.38	77	84.62	91	99.99
Vaiphei (n=95)	15	15.79	80	84.21	95	100
Kom (n=96)	13	13.54	83	86.45	96	99.99
Total	45		237		282	

4. DISCUSSION

The present study is a community based study of 282 women of reproductive age (15-49 years). The results have indicated that out of 282 women, 38.95 % 32.29% and 17.58% represents for Vaiphei, Kom and Chothe women respectively who are mildly anaemic by the majority of them and a few women are in the moderate grade. The prevalences of anaemia were 30.5 %, 55.9 % and 10 % in the mild, moderate and severe grades respectively among the tribal women of Wynad district in Kerela [15] and in another study also higher moderate rate (58.33%) than mild (37.5%) and severe (4.16%), was reported [9], but the least anaemia rate in the moderate grade of the present study is contrary to other earlier studies, which indicates better haemoglobin status as compared to other women.

While observing mean and range values of haemoglobin level, it is clear that age groups of 15-25 years have lower Hb mean values in each case as compared to the higher age group of 35-49 years. In the lower age group of 15-25 years, adolescent girls who married before the completion of their growth period are also included. Iron is essential for the growth of skeleton [16] and iron is also lost during menstruation. The loss is not replaced from the foods, women suffer more from anaemia than men WHO [17]. Therefore, lower Hb mean values of the age group 15-25 years would be due to menstrual lost. The distribution of range values shows that the Chothes have better haemoglobin status than the other two groups.

Furthermore, the highest literacy rate (58.24%) is indicated by the Chothe women and the lowest for the Vaiphei women (48.24%). However, the higher study level of graduate and postgraduate/ technical are a few i.e. 8.79% (Chothe), 7.37% (Vaiphei) and 6.26% (Kom) in the present study. Regarding the awareness about the causes of anaemia, a few of them have an idea about this problem, but vague due to either lack of interest or higher educational status. Thus, only 15.38% (Chothe), 15.79% (Vaiphei) and 13.54% (Kom) women have an idea about anaemia and majority of them remained ignorant.

5. CONCLUSION

From the above results and discussion, it has led to the conclusion that the anaemia status of the present women ranges from 17.58% to 38.95%. This indicates that as anaemia is prevalent in other tribal women of other states of India, this problem also remained among these tribal women of three communities who are living in different ecological settings in Manipur. Although there are some other causes of anaemia, iron deficiency would be the main cause of anaemia because iron is not contained in rich amount in all foodstuffs. Due to lack of our knowledge, we do not consume iron containing foods such as such as sheep liver, egg yolks, lentils, cowpea, amaranth, lotus stem, mint, wheat, hand pounded rice etc. regularly to meet the daily requirements of 30 mg/day for an adult woman. Although people consume either raw milled or hand pounded rice every day, it contains iron only 0.7mg/100g (milled rice) and 3.7 mg/100g (hand pounded rice); and many people do not eat some particular food items that contain higher amount of iron daily. Moreover, other factors also inhibit iron absorption in the body. As such, the body can not get the daily iron requirement for synthesising normal amount of haemoglobin (11 g/dl) in women.

CONSENT

The author declares that "consent was obtained from the subjects under study for data collection and publication of this study".

ETHICAL APPROVAL

The author hereby declares that methods have been examined and approved by institutional ethics committee as per ICMR (Indian Council of Medical Research) guidelines.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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