



Haematological percent prevalence of anemia among Baiga population of Anuppur district (MP)

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ABSTRACT: Sickle cell anemia and thalassaemia are the major genetic and public health problem in all over the world. Anemia is the emerging one of the most important causes of maternal complications, morbidity and mortality its complicated genetic problem of all the developing countries including India. Patient suffering from sickle cell disease or thalassaemia are generally anemic and are susceptible to infections, untreated infection causes aggration and severity of the sickle cell disease or thalassaemia, leading to birth and death, inadequate availability of oxygen to fetus also leads to abortion, miscarriage or another chronic hemolytic anemia. The issues, that the Inherited disorder of hemoglobin cause high degree of hemolytic anemia. Sickle cell disease is the most common non-communicable genetic disease in India.

Key words: - Thalassaemia, anaemia, Sickle Cell disease.

INTRODUCTION:

Madhya Pradesh falls in the Central India and undivided Madhya Pradesh State harbor largest tribal population in any state of India. This was about 1/4 of the total tribal population of India as well the undivided state.

The term 'Tribal' is not precisely defined in the constitution which however refers to such communities as 'Scheduled Tribe'. In Hindi, the synonym used for the 'Scheduled Tribe' is 'Anusuchit Janjati' and the other words like 'Adivasi', 'Vanvasi' or 'Adimjati' are used as Synonyms of 'Tribal'. The Baigas are known as expert axmen and depend on their axes for their livelihood on forest traditionally they are shifting cultivators, gleaners, hunters and bamboo workers. They could be easily recognized with their long knotted head-tail and the axe that they always carry.

Complete Blood cell Counts (CBC's) are used during diagnosis, treatment, and follow-up to determine the health of the patient. It was done with the help of CBC Counter, an automatic blood cell counter. Many parameters have been taken

into consideration. Alpha-thalassaemia in sickle cell individuals of Madhya Pradesh where the sickle haemoglobin is highly prevalent (Gupta, 2006; Yadav et al., 2016; Singh et al., 2016; Singh et al., 2014 & 2015).

In Madhya Pradesh, tribal population of Baiga Tribes which has a 29% tribal population. District Anuppur is situated in the south-eastern part of Madhya Pradesh. Anuppur district has been formed from the district of Shahdol. The area known as 'BAIGA-CHAK' in Mandla district Total area of newly formed Anuppur district is 3701 sq.

MATERIALS AND METHOD:

Sample Collection: Venous blood is preferred for most haematological examinations. About 3 ml of venous blood is collected in sterile vials containing ethylene diamine tetra acetic acid (EDTA) acid as anticoagulant.

Complete Blood Count CBC:

The complete blood count including total haemoglobin percentage (Hb%) total red blood cell count (TRBC) and red cell indices such as

mean cell volume (MCV), mean cell haemoglobin (MCH), mean cell haemoglobin concentration (MCHC) were measured using an automated blood cell counter (Cellenium 19, China). Complete Blood cell Counts (CBC's) are used during diagnosis, treatment, and follow-up to determine the health of the patient. It was done with the help of CBC counter, an automatic blood cell counter. Many parameters have been taken into consideration. Those parameters and their normal values are as followed-

WBC [White Blood Cell Count]: 4000 to 10800 cells/ μ l

Haemoglobin %:

Men: 13 (or 14) to 18 gms/dl

Women: 12 to 16 gms/dl

Children: 11 to 13 gms/dl

Hematocrit [Packed Cell Volume (PCV)]:

Men: 0.42 – 0.52 [42% - 52%]

Women: 0.37 – 0.47 [37% - 47%]

Children: 0.36 – 0.40 [36% - 40%]

RBC [Red Blood Cell Count]:

Men: 4.5 – 6.2 million cells/ μ l

Women: 4.2 – 5.4 million cells/ μ l

Children: 4.6 – 4.8 million cells/ μ l

MCV [Mean Corpuscular Volume]:

Adult: 86 \pm 10 fl

Infants: 106 fl

Children (3 months): 95 fl

Children (1 year): 78 \pm 8 fl

Children (3-6 years): 81 \pm 8 fl

Children (10-12 years): 84 \pm 7 fl

MCH [Mean Corpuscular Haemoglobin]:

Adult: 29.5 \pm 2.5 pg

Children (3 months): 29 \pm 5 pg

Children (1 year): 27 \pm 4 pg

Children (3-6 years): 27 \pm 3 pg

MCHC [Mean Corpuscular Haemoglobin Concentration]: 32-36 gms/dl

Lymphocytes: 1.3 - 4.00 x 10³ / μ l

Monocytes & Eosinophils Granulocytes [MID]: 0.15-0.70 x10³/ μ l

Granulocytes: 2.5 – 7.50 x 10³ / μ l

Hematocrit (HCT): 36.0 – 48.0 percent

Platelet (PLT): 150 – 400 x 10³ / μ l(or 109 / l)

Mean Platelet volume (MPV): 8.0 – 15.0 fl

RESULT & DISCUSSION:

A total 70 individuals were screened. In general, 63.75% participants were male and 36.25% were females. Even though, the disease is not sex-linked the high proportion of the male patients may be due to commonly prevalent male preferential treatment in the Indian society.

The prevalence of anaemia among Baiga population of Anuppur district is shown in Table 1 the level of haemoglobin. Anemia was graded into three categories i.e. mild, moderate and severe as per the criteria defined by WHO for developing countries. The anemia status is determined for adult male adult female and children.

Over all more than half of the population of Baiga (59%) is affected by anaemia which is categorized into 3 categories i.e. mild, moderate and severe. All the children were showed 50% of adult females and 58% adult males showed anemia mention for makes first followed by females & then by children were mildly anemic followed by adult females 32% and adult males 50%. Overall 16% of Baiga population was moderately anaemic was in 10% of children were moderately anaemic followed by 28% of adult females and adult male (4%). No any adult female individual was seen in the severe category. None of the children were severely anaemic. 4% individual of studied population was severely anaemic (Hb < 7mg/dl). Sickle mutation in homozygous condition is responsible for the commonly observed severe anaemia, whose severity depends on the co-inherited β -thalassaemia mutation (Paul & George, 2007).

Mean haematological parameters of anaemic population in shown in Table -2 Results shown that anaemic population has lower values for

MCH in all the three groups. This is the indicative of microcytosis and iron deficiency. Identification of Iron deficiency is not done in the studied population. The mean haemoglobin level for the adult male is 11.5 ± 2.0 g/dl. It is 10.4 ± 1.2 g/dl for female and 11.2 ± 0.6 g/dl for the children. Children have relatively low indices.

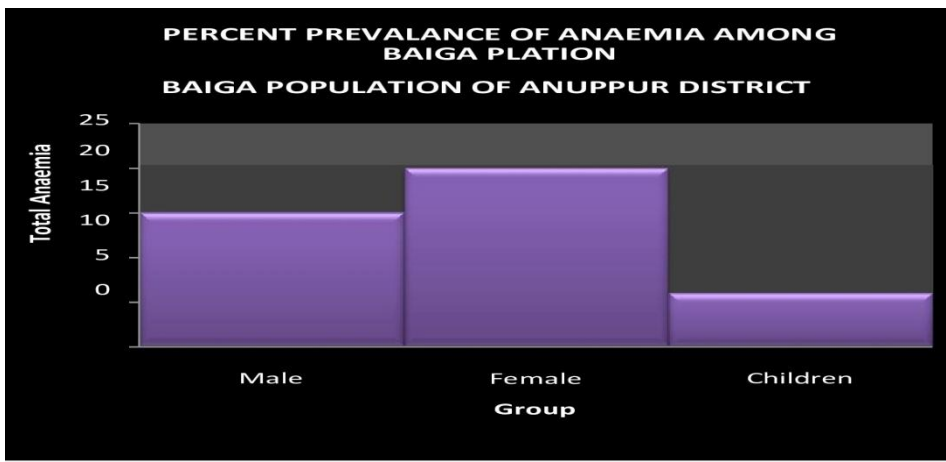
The mean value of MCV is 68.2 ± 7.5 fl in children group and it is 72.6 ± 6.3 for adult male and (68.6 ± 7.1) female. Lower values are observed for MCH in all the three groups.

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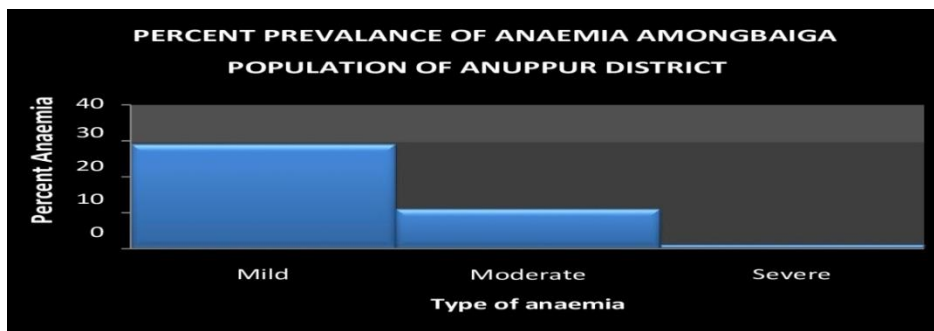
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Table No. 1: Percent prevalence of anaemia among Baiga population of Anuppur District

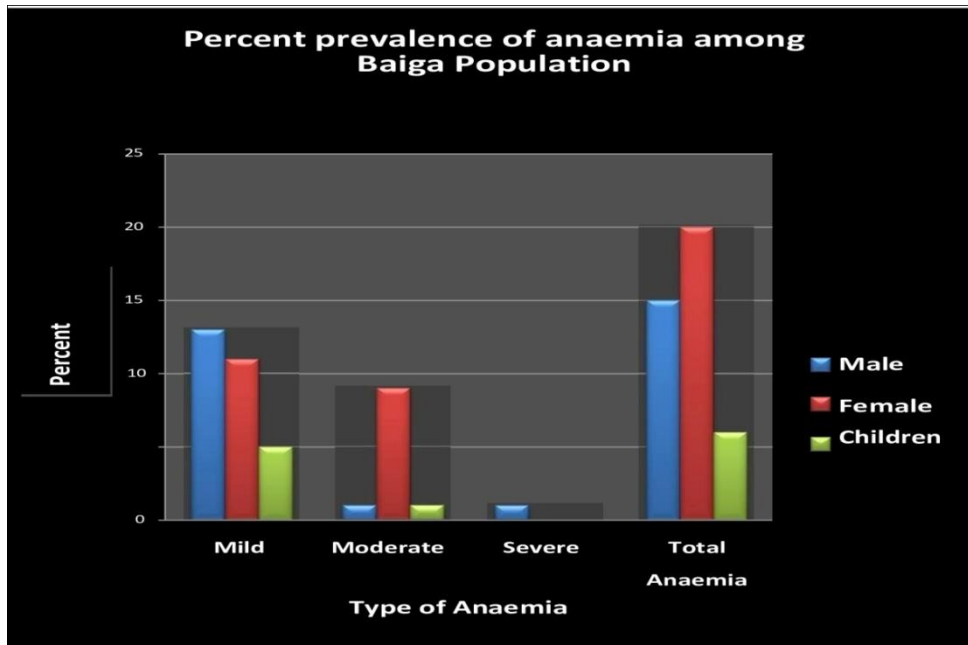
Group	N	Type of anaemia			Total Anaemia
		Mild	Moderate	Severe	
		Mild	Moderate	Severe	15 (58%)
Male	26	13 (50%)	1 (4%)	1 (4%)	20 (59%)
Female	34	11 (32%)	9 (28%)	0	6 (60%)
Children	10	5 (50%)	1 (10%)	0	41 (59%)
Total	70	29 (41%)	11 (16%)	1 (4%)	



Graph 1.1 Percent prevalence of Anaemia among Baiga population



Graph 1.2 Percent prevalence of Anaemia



Graph 1.3: Percent prevalence of anaemia among Baiga population.

Table No. 2 Haematological parameters of anaemic Baiga population of District Anuppur

Group	N	Hb (g/dl)	Hct (%)	TRBC (x10 ⁶ /μl)	MCV (fl)	MCH (pg)	MCHC (g/dl)	HbF (%)	HbF ₂ (%)	WBC (x10 ³ /μl)	PLT (x10 ³ /μl)
Male	15	11.5 ±2.0	33.8 ±4.8	4.6 ±0.9	72.6 ±6.3	25.4 ±2.1	35.1 ±0.9	1.7 ±4.2	2.9 ±0.5	6.9 ±1.8	209.3 ±54.1
Female	20	10.4 ±1.2	29.4 ±2.9	4.3 ±0.5	68.6 ±7.1	24.1 ±2.9	35.2 ±1.3	0.7 ±0.3	2.4 ±0.5	6.5 ±2.0	168.7 ±41.2
Children	6	11.2 ±0.6	31.2 ±1.6	4.8 ±0.4	68.2 ±7.5	23.3 ±2.6	35.9 ±0.8	0.8 ±0.5	2.7 ±0.6	7.6 ±2.4	186.5 ±36.1