

Evaluation of Anaemia in Children in Adivasi Population of Jharkhand

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Abstract

Original Research Article

Background: In developing countries, anaemia is a major global health problem. India is among the countries with high prevalence of anaemia. India's Adivasi scheduled tribe population are socially and economically vulnerable thus having higher incidence of anaemia. Early detection and treatment of anaemia in young children play a major role in promoting the mental and physical growth and development. **Material and Methods:** This is a prospective study which included 100 children below 14 years of age. Blood samples were collected for haematological investigations. **Results:** Out of the total 100 cases, 55% were girls and 45% were boys. The most common type of anaemia seen was microcytic hypochromic followed by normocytic normochromic anaemia. **Conclusion:** Anaemia is a common problem in adivasi children. Most anaemia in children is diagnosed with the blood tests. Its early diagnosis and treatment may help to reduce the rate of complications and thus improve the quality of life.

Keywords: Anaemia, children, adivasi, jharkhand, microcytic, normocytic.

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INTRODUCTION

Constitution of India under Article 366 (25) defines scheduled tribes as: "such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under Article 342 to be Scheduled Tribes for the purposes of this constitution"[1]. Scheduled tribes in India comprise about 8.6% of the total population as per the 2011 Census [2]. These tribal people are commonly called "Adivasis" literally meaning original inhabitants, a term for diverse ethnic and tribal groups considered as India's indigenous population. In total, there are 573 communities that are recognized as scheduled tribes [3]. All tribes predominantly reside in the rural areas (93.9%) [4]. Adivasis constitute one fourth of the population being counted to the poorest wealth decile and they are the least educationally developed [5]. They are found to live on very low incomes, most of them working as day labourers or with minor landholdings [6]. Only a few tribal children receive qualified medical treatment which is mainly due to physical remoteness to health facilities and also due to disbelief in conventional medicine providers [7]. Under-five-mortality rates are higher in Adivasis by 25% as compared to non-Adivasi children as they are socially and economically vulnerable[5].

Anaemia is a major health problem worldwide especially in paediatric age group and females in reproductive age group [8]. Anaemia is defined as a reduction in haemoglobin concentration below the level, which is expected for healthy persons of same age and sex and in the same environment. Iron deficiency is the most common cause of nutritional anaemia worldwide followed by folic acid and vitamin B12 deficiency anaemia [9]. The various causes of anaemia are low socio economic status, poor dietary habits, illiteracy, and poverty, loss of appetite and poor health status of mothers during pregnancy [8]. Fetal development is greatly influenced by maternal nutrition and therefore maternal iron deficiency during pregnancy is associated with fetal growth retardation, intra uterine growth retardation, inadequate weight gain, low birth weight and poor mental growth and development. On the basis of size of RBC which in turn is measured by the mean corpuscular volume (MCV), anaemia is classified morphologically into microcytic (MCV<80 fl), normocytic (MCV 80 – 100fl) or macrocytic (MCV> 100fl)[10]. According to haemoglobin value, anemia is divided as per WHO criteria into mild (9-11gm/dl), moderate (7-9gm/dl) and severe (less than 7gm/dl).

MATERIAL AND METHODS

This is a prospective study done at General Hospital, Brambe, Ranchi, and Jharkhand. The aim of the study is to evaluate anaemia in children on the basis of morphological pattern. This is an observational study in which 100 cases were included who had Hemoglobin 11g/dl or less. Under aseptic precautions, venous blood was collected in a vacutainer containing EDTA. Haemoglobin (Hb) estimation, hematocrit (PCV), mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), mean corpuscular haemoglobin concentration (MCHC) values were obtained by using Sysmex five part differential automated cell counter. Peripheral blood smear was done for every patient.

RESULTS

A total of 100 cases were included in our study, out of which 55% were girls and 45% were boys (Table

1). The age varied from 6 months to 14 years. Majority of the patients were in the age group of 2-6 years (43%) followed by the age 11 to 14 years which constituted 23% of the cases. According to haemoglobin value, majority of the cases (47%) had moderate anaemia i.e. Hb 7-9g/dl followed by mild anaemia in 41% cases (Hb 9-11g/dl) whereas severe anaemia was found only in 12% cases i.e. Hb less than 7g/dl (Table 2). The most common type of anaemia based on MCV was found to be microcytic hypochromic anaemia (40%), followed by normocytic normochromic anaemia in 37% and macrocytic anaemia in 18% cases. Only 5% cases had dimorphic anaemia. Among the girls, microcytic hypochromic anaemia was most common followed by normocytic normochromic anaemia whereas Normocytic normochromic was the most common type of anaemia among boys followed by microcytic hypochromic anaemia (Table 3, 4).

Table-1: Demography

GENDER		No. OF CASES	PERCENTAGE (%)
	MALES		45
FEMALES		55	55
AGE(In Years)	≤ 1	14	14
	2-6	43	43
	7-10	20	20
	11-14	23	23
	TOTAL	100	100

Table-2: Anaemia severity

SEVERITY	No. OF CASES	PERCENTAGE (%)
MILD	41	41
MODERATE	47	47
SEVERE	12	12
TOTAL	100	100

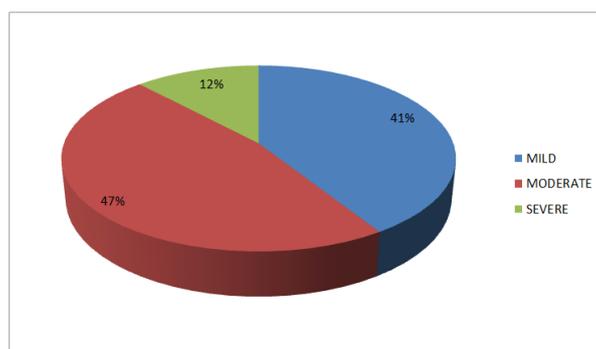


Fig-1: Severity of Anaemia

Table-3: Morphological classification of anaemia

TYPE OF ANAEMIA	FEMALES	MALES	TOTAL
Microcytic Hypochromic (MCV <80 fl)	28	12	40
Normocytic Normochromic (MCV 80 – 100fl)	16	21	37
Macrocytic (MCV > 100fl)	7	11	18
Dimorphic	4	1	5
TOTAL	55	45	100

DISCUSSION

In our study, anaemia was commonly observed in female patients (55%) as compared to male. Our results were in concordance with the study done by Kapur *et al.* and Gandhi S *et al.* [11, 12]. In the studies done by Rathna *et al.* and Stiller *et al.* males were more common as compared to females [13, 14]. In our study, majority of the patients were in the age group of 2-6 years which was similar to the study done by Stiller *et al.* on santhali (adivasi) children and another Indian study done by Prakash *et al.* [14,9]. In our study, majority of the cases (47%) showed moderate anaemia followed by mild and severe anaemia in 41% and 12% respectively. These findings were in concordance to the studies done by Rathna *et al.* Jain *et al.* and Stiller *et al.* [13, 15, 14]. Stiller *et al.* did their study on Santhali (tribe) children of West Bengal. Jharkhand being adjacent state to West Bengal, the demographic pattern, composition of tribal population and their manner of living are almost similar. The most common type of anaemia in our study was microcytic hypochromic (40%). The study done by Prakash *et al.* yield similar results. In females, microcytic hypochromic anaemia was most common followed by normocytic normochromic anaemia whereas Normocytic normochromic was the most common type of anaemia among boys. Our findings were similar to the study done by Rathna *et al.* [13].

CONCLUSION

Anaemia is a major health problem especially in individuals who are socially and economically vulnerable. It leads to impairment and delay the growth and development in young children. To build trust and remove disbelief between medical expert and Adivasis for bringing sustainable change, preventive and medical action have to be taken in cultural and sensible way. Early diagnosis and treatment of anemia may help to reduce the rate of complications and thus improve the quality of life.

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