

# NUTRITIONAL DEFICIENCY OF THE HILL KORWA CHILDREN OF SARGUJA DISTRICT CHHATTISGARH: AN ANTHROPOLOGICAL ASSESSMENT FROM SOMATOSCOPIC OBSERVATIONS

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## **ABSTRACT**

*Hill Korwa tribe declared as one of the Particularly Vulnerable Tribal Groups (PVTGs) of Chhattisgarh, based on their pre-agriculture technology, low literacy, and stagnant population. The present study was carried out to study the nutritional deficiency of Hill Korwa children of Sarguja district, Chhattisgarh, with the help of somatoscopic observations. Through somatoscopic observations, the clinical symptoms of various deficiencies were estimated. In a purposive random sampling, twenty six villages were selected from Lundra, Batauli, and Sitapur blocks of Sarguja district. A total of 1029 Hill Korwa children (599 boys, and 430 girls) aged 0 to 6 years were taken as studied population. In the studied population, about 26.6% of the total children (0-6 years) are suffering from different nutritional problems. The study shows that nutritional status of Hill Korwa tribal children is very poor, it may be due to lack of nutritional diet and non-availability of health services and it was worst in remote inaccessible areas.*

**Key Words:** Clinical assessment, Nutritional Status, Hill Korwa Children, Chhattisgarh.

## **INTRODUCTION**

Health and nutritional status are two crucial interlinked aspects of human development, which in turn interact with demographic variables in important ways. Malnutrition (a condition that occurs due to the intake of inadequate amount of nutrients leading to insufficient nourishment) continues to be a problem of considerable magnitude in most of the developing countries of the world (Das, 2011). Malnutrition is an impairment of health from either a deficiency or excess or imbalance of nutrients. In other words, malnutrition refers to both under-nutrition and over nutrition. Under-nutrition means a deficiency or lack of one or more nutrients. For example, vitamin 'A' deficiency and PEM (Protein Energy Malnutrition) are common problems in India. Over nutrition means excess of one or more nutrients. Malnutrition is a prevalent issue in all developing countries (UNICEF, 1993; Black et al., 2003). In India, this is further aggressive and critical because of 8% ethnic share in 70% of rural population as reported by NNMB (1978) taking unbalanced diet

because of poverty stress. The 18% of Indian population constitutes 170 million children below age six years (Rao et al., 2005) and one third of this bulk is malnourished. The main health problems of the tribal areas according to studies are due to poverty, illiteracy, malnutrition, absence of safety drinking water, and unhygienic living surroundings. Poor maternal, and child health services and ineffective coverage of national health and nutritional services have been traced out in several studies as possible contributory factors to dismal health conditions prevailing among the tribal population in India (Srinivas, 2012).

Clinical examination is the oldest and the most practical and relatively cheaper method of assessing the nutritional status of individuals. Clinical examination has always been a vital method for practically assessing the nutritional status of an individual. It may be necessary to increase these methods by certain physical test. The main advantage of this method is that it is based on observation of physical signs. Clinical assessment can give very valuable and approximate information to the public health worker. It is an effective tool where severe malnutrition prevails.

In this present research, somatoscopic observations for clinical examination was adopted to record the presence and absence of deficiency signs in General appearance, Hair, Eyes, Lips, Tongue, Skin, and Nails. The WHO designed structured schedule was used to assess the subjects physically from head to foot.

## OBJECTIVES

- To identify the general appearance of the Hill Korwa children
- To study the assessment of nutritional deficiency of Hill Korwa children by somatoscopic observations for clinical examination

## METHODOLOGY

The present study was carried out to study the nutritional deficiency of Hill Korwa children of Sarguja district, Chhattisgarh. All the subjects were examined clinically for the presence of signs of nutritional deficiency. The somatoscopic observations for clinical examination were taken as per Jelliffe's (1966) WHO Monograph Series No. 53 entitled "*The Assessment of the Nutritional Status of the Community*". Twenty-six villages were selected from Lundra, Batauli, and Sitapur blocks of Sarguja district. A total of 1029 Hill Korwa children (599 boys, and 430 girls) aged 0 to 6 years were taken as studied population. Researcher took proper care for recording the observations. For the clinical assessment; General appearance, Hair, Eyes, Lips, Tongue, Skin, and Nails are included.

## AREA AND PEOPLE

Hill Korwa a sub group of Korwa tribe was identified as PVTG during the fifth five year plan based on their pre-agriculture technology, low literacy, and stagnant population. According to anthropological description of family, they belong to Austro-Asiatic family. They are medium to short height having a dark brown or black skin (Shrivastav, 2001). Generally most of the Hill Korwas were having nuclear families. Hill Korwa are divided into Five totemistic endogamous clan, viz; *Hansadwar, Samar, Edigwar, Ginnur & Renla* (Daltan, 1872). The religion of the Hill-Korwa is confined to ancestral worship and to the worship of few Gods and deities. Their important Gods are *Sigri Dev, Gauria Dev, Mahadev, and Parvati*; and main deity is *Khudia Rani* (Vashnav, 2008). They are distributed in Sarguja, Jashpur, Balraampur, Shankargarh, and Korba districts of Chhattisgarh and their total population is 34,122 (TRTI, 2006).

## ANALYSIS AND RESULTS

**Table-1: Distribution of general appearance of the Hill Korwa children**

General Appearance (Total Population=1029)	Boys (N = 599)		Girls (N = 430)		Total (N = 1029)	
	No.	%	No.	%	No.	%
Normal built	479	79.97	349	81.16	828	80.47
Thin built	106	17.70	62	14.42	168	16.33
Sick	14	2.34	19	4.42	33	3.21
Total	599	100.0	430	100.0	1029	100.0

This table-1 shows the nutritional status of both the boys and girls based on general appearance. The total percentages of the studied children are 1029. Among the total percentage of boys, 79.97% are having normal built general appearance; while 81.16% of the girls have normal built general appearance. Among the boys, 17.7% of the boys are thin appearance while 14.42% of the girls are in thin appearance. Around 2.34% of the boys and 4.42% of the girls are in sick appearance.

**Table-2: Distribution of clinical symptoms of Hair of the Hill Korwa children**

Hair (Total Population=1029)	Boys (N = 599)		Girls (N = 430)		Total (N = 1029)	
	No.	%	No.	%	No.	%
Lack of luster	50	8.3	54	12.6	104	10.1
Thinness and sparseness	33	5.5	25	5.8	58	5.6
Straightness	3	0.5	5	1.2	8	0.8
Dyspigmentation of the proximal part of the hair	15	2.5	15	3.5	30	2.9
Flag sign	2	0.3	1	0.2	3	0.3

Easy pluckability	24	4.0	16	3.7	40	3.9
Normal	546	91.2	388	90.2	934	90.8

The present table-2 shows the nutritional status based on clinical symptoms of hairs on the people of Hill Korwa. About 90.8% of the children have normal hair, among which 91.2% of the boys and 90.2% of the girls have the normal hair. Among the total percentage of children, 10.1% has the symptom of Lack of luster. Total 8.3% boys and 12.6% girls are in the symptom of Lack of luster. Total 5.6% of the children have thinness and sparseness forms of hairs. For boys it is 5.5% and for girls it is 5.8%. Total 0.8% of the children have straight hairs. For boys it is 0.5% and for girls it is 1.2%. There are 2.9 % of the children have depigmentation in the proximal part of the hair, but for boys it is 2.5% and for girls it is 3.5%. Only 0.3% of the children have flag sign in their hairs, but for boys it is 0.3% and 0.2% girls have flag sign in their hairs. 4.0% of the total boys have easily pluckable hairs while 3.7% of the girls have the same problem.

**Table-3: Distribution of clinical symptoms of Eyes among the Hill Korwa children**

Eyes	Boys (N = 599)		Girls (N = 430)		Total (N = 1029)	
	No.	%	No.	%	No.	%
Pale conjunctiva	18	3.0	11	2.6	29	2.8
Bitot's spots	24	4.0	13	3.0	37	3.6
Conjunctival xerosis	28	4.7	15	3.5	43	4.2
Normal	570	95.2	414	96.3	984	95.6

In the present table-3, clinical symptoms of eyes are reflected. Among the total 1029 children, about 95.6% are normal, while there are other children who are facing several types of eye problems. About 2.8% of the children are facing pale conjunctiva, for boys it is 3.0% and for girls it is 2.6%. Out of total 1029 children, 3.6% are facing the problem of Bitot's spot, for boys it is 4.0% and for girls it is 3.0%. About 4.2% of the total children of the studied population are facing conjunctiva xerosis problem, where boys it is 4.7% and for girls it is 3.5%.

**Table-4: Distribution of clinical symptoms of Lips among the Hill Korwa children**

Lips (Total Population=1029)	Boys (N = 599)		Girls (N = 430)		Total (N = 1029)	
	No.	%	No.	%	No.	%
Angular stomatitis	17	2.8	11	2.6	28	2.7
Angular scars	21	3.5	3	0.7	24	2.3
Chellosis	5	0.8	3	0.7	8	0.8
Normal	577	96.3	419	97.4	996	96.8

In the present table-4, clinical symptoms of lips among Hill Korwa people in three developmental blocks are shown. There are 96.8% of the children who are normal, where for boys it is 96.3% and for girls it is 97.4%. There are 2.7% of the total percentages of children are facing Angular Stomatitis, whereas for boys it is 2.8% and for girls it is 2.6%. Among the total 2.3% of the children who are suffering from Angular scars there

are 3.5% are of boys and 0.7% of girls are in this problem. The total percentages of children who are facing Chellosis are 0.8%, where for boys it is 0.8% and for girls it is 0.7%.

**Table-5: Distribution of clinical symptoms of Tongue among the Hill Korwa children**

Tongue (Total Population=1029)	Boys (N = 599)		Girls (N = 430)		Total (N = 1029)	
	No.	%	No.	%	No.	%
Oedema of tongue	3	0.5	2	0.5	5	0.5
Scarlet and raw tongue	10	1.7	7	1.6	17	1.7
Magenta tongue	5	0.8	5	1.2	10	1.0
Atrophic papillae	5	0.8	4	0.9	9	0.9
Normal	588	98.2	422	98.1	1010	98.2

Clinical symptoms of tongue problems among children of three developmental blocks are shown in the present table-5. Among the total 1029 children, there are 98.2% children are normal; and for boys it is 98.2% and for girls it is 98.1%. Rest of the children are facing different problems of tongue. 0.5% of the total percentage of the children are facing Oedema of tongue, for boys and for girls it is also 0.5% respectively. There are 1.7% of the total population are facing Scarlet and raw tongue problem, where for boys it is 1.7%, and for girls it is 1.6%. Around 1% studied children are suffering in Magenta tongue, where for boys it is 0.8% and for girls it is 1.2%. In the case of Atrophic papillae, there are 0.9% of the children, who are facing such problem, but for boys it is 0.8% and for girls it is 0.9%.

**Table-6: Distribution of clinical symptoms of Skin among the Hill Korwa children**

Skin (Total Population=1029)	Boys (N = 599)		Girls (N = 430)		Total (N = 1029)	
	No.	%	No.	%	No.	%
Xerosis	43	7.2	25	5.8	68	6.6
Follicular hyperkeratosis	26	4.3	20	4.7	46	4.5
Normal	556	92.8	404	94.0	960	93.3

Present table-6 shows the amount of children who are suffering from different skin problems. Among the studied children, 93.3% are normal, and for boys it is 92.8% and for girls it is 94.0%. About 6.6% of the children are suffering from Xerosis whereas it is for boys are 7.2% and for girls it is 5.8%. There are 4.5% of the children who are suffering from Follicular Hyperkeratosis; where for boys it is 4.3%, and for girls it is 4.7%.

**Table-7: Distribution of clinical symptoms of Nails among the Hill Korwa children**

Nails (Total Population=1029)	Boys (N = 599)		Girls (N = 430)		Total (N = 1029)	
	No.	%	No.	%	No.	%
Koilonychia	20	3.3	16	3.7	36	3.5
Grooving of nails	13	2.2	7	1.6	20	1.9
Normal	579	96.7	414	96.3	993	96.5

The distribution of clinical symptoms of nail problems among the children of Hill Korwa is shown in present table-7. Among the total 1029 children, there are 96.5% who are normal and not suffering from any nail problem whereas, for boys it is 96.7% and for girls it is 96.3%. Rest of the children population are suffering from different problems related to nails. Koilonychia is suffering by about 3.5% of the children population, where 3.3% are boys and 3.7% are girls. About 1.9% of the children are suffering from grooving of nails problem, which is 2.2% for boys and 1.6% for girls.

**Table-8: Distribution of clinical symptoms of Muscular and Skeletal deformities among the Hill Korwa children**

Muscular and skeletal systems (Total Population=1029)	Boys (N = 599)		Girls (N = 430)		Total (N = 1029)	
	No.	%	No.	%	No.	%
Muscular wasting	8	1.3	3	0.7	11	1.1
Winged scapula	1	0.2	0	0.0	1	0.1
Frontal and parietal bossing	1	0.2	1	0.2	2	0.2
Normal	591	98.7	427	99.3	1018	98.9

Distribution of clinical symptoms of muscular and skeletal problems on the children of the studied area is shown in the present table-8. It shows that among 1029 people, there are 98.9% people who are normal, but it is 98.7% for boys and 99.3% for girls. Rest of the children are suffering from some muscular and skeletal problem. Among the children there are 1.1% who are suffering from Muscular wasting, whereas it is for boys is 1.3% and for girls it is 0.7%. There are 0.1% of the children, who are suffering from winged scapula and all boys are suffering from this problem. Around 0.2% of the children are suffering from frontal and parietal bossing, where it is 0.2% for both the boys and girls.

**Table-9: Clinical examination of nutritional deficiency for Vitamins and minerals among the Hill Korwa children (0-6 years)**

Nutritional deficiency	Clinical Signs	Boys (N = 599)	Girls (N = 430)	Total (N = 1029)
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		No.	%	No.	%	No.	%
<b>Vitamin A Deficiency</b>	Xerosis of Skin	43	7.2	25	5.8	68	6.6
	Follicular hyperkeratosis, type1	26	4.3	20	4.7	46	4.5
	Xerosis conjunctive	28	4.7	15	3.5	43	4.2
	Bitot's spots	24	4	13	3.0	37	3.6
<b>Riboflavin Deficiency</b>	Angular stomatits	17	2.8	11	2.6	28	2.7
	Angular scars	21	3.5	3	0.7	24	2.3
	Magenta Tongue	5	0.8	5	1.2	10	1
	Oedema	3	0.5	2	0.5	5	0.5
<b>Niacin Deficiency</b>	Scarlet and raw tongue	10	1.7	7	1.6	17	1.7
<b>Vitamin C Deficiency</b>	Follicular hyperkeratosis, Type2	26	4.3	20	4.7	46	4.5
	Spongy and bleeding gums	20	3.3	12	2.8	32	3.1
<b>Vitamin D Deficiency</b>	Frontal and Parietal bossing	1	0.2	1	0.2	2	0.2
<b>Iron Deficiency</b>	Koilonychia	20	3.3	16	3.7	36	3.5
	Atrophic lingual papillae	5	0.8	4	0.9	9	0.9

The present table-9 shows and describes the percentage of children who are suffering from different vitamin deficiencies. Among the total percentage of children there are maximum 6.6% of the children who are suffering from different diseases which happened due to the deficiency of vitamin-A. Maximum about 2.7% of the children are suffering from different problems caused by vitamin-B (Riboflavin) deficiency. 1.7% children are suffering from Niacin Deficiency. Maximum about 4.5% are suffering from different problems related to vitamin-C deficiency. Total 0.2% are suffering from vitamin-D deficiency and lastly maximum about 3.5% of the children are suffering from Iron deficiency problems. Total 39.2% of the total percentages of the children are suffering from different diseases caused by the deficiency of some vitamins and iron and rest of the 60.8% are normal.

**Table-10: Overall presence of nutritional deficiency among the Hill Korwa children (0-6 years)**

S.No.	Nutritional Grade (Total Population =1029)	No.	%
1	Protein-Energy Malnutrition	58	5.6
2	Vitamin A Deficiency	68	6.6

3	Riboflavin Deficiency	28	2.7
4	Thiamine Deficiency	19	1.85
5	Niacin Deficiency	17	1.7
6	Vitamin C Deficiency	46	4.5
7	Vitamin D Deficiency	2	0.2
8	Iron Deficiency	36	3.5
<b>Total</b>		<b>274</b>	<b>26.6</b>

In the present table-10, children who are suffering from different nutritional problems are reflected. About 26.6% of the total 1029 children are suffering from different nutritional problems, while rest 73.4% of the children is normal. 5.6% of the children are suffering from protein energy malnutrition. 6.6% of the children are suffering from vitamin A deficiency problems. 2.7% are suffering from Riboflavin deficiency, 1.85% children are suffering from Thiamine deficiency, 1.7% is suffering from Niacin Deficiency, 4.5% are suffering from vitamin C deficiency, about 0.2% is suffering from Vitamin D deficiency, and lastly 3.5% of the children are suffering from Iron deficiency.

## CONCLUSION

Nutritional Status of Hill Korwa tribal children in interior inaccessible regions of Sarguja district is very poor due to lack of nutritional awareness and non-availability of health services. In the studied population, about 26.6% of the total children (0-6 years) are suffering from different nutritional problems, while 5.6% of the children are suffering from protein energy malnutrition. 6.6% of the children are suffering from vitamin A deficiency problems. 2.7% are suffering from Riboflavin deficiency, 1.85% children are suffering from Thiamine deficiency, 1.7% is suffering from Niacin Deficiency, 4.5% are suffering from vitamin C deficiency, about 0.2% is suffering from Vitamin D deficiency, and lastly 3.5% of the children are suffering from Iron deficiency. The government may take effective steps to improve the nutritional status of Hill Korwa preschoolers by monitoring and improving the existing supplementary feeding programmes. The Government or any other organisations immediately may take initiation to provide safety drinking water and facilitate medical services to their residence through mobile medical services.

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