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Grades of Malnutrition among Gadaba Tribal Children of Koraput, Odisha

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Abstract: ***Nutritional status is a major determinant of the health and well-being amongst children. Developing countries like India accounts for about 40% of the undernourished children in the world and are largely due to the result of dietary inadequacy in relation to their needs. More than half of the children in India are unable to grow to their full physical and mental potential owing to their malnutrition. Under nutrition is characterized by mental and physical starvation, low weight in relation to height or other skeletal indices, diminished skin fold, exaggerated and skeletal prominences and loss of elasticity of skin. The etiology of under nutrition is associated with several related consistent factors termed as poverty syndrome. This research study aims to determine the nutritional status of Gadaba tribal children in the remote district of Koraput, Odisha and make suggestion for their wellbeing.***

Keywords: nutrition, tribal children, deficiency, malnutrition, IAP

1. Introduction

In India malnutrition remains a silent emergency, though the Govt. of India has made significant progress in the past several decades in improving the health and well-being of its people. According to the World Bank report in the last 40 yrs in India the mortality has declined by half and fertility by two fifths, but malnutrition has only come down by about one fifth. While under nutrition remains a major concern area for tribal people however tribal children are the most vulnerable segment for under nutrition and their nutritional status has been considered as an important indicator for progress in efforts to combat under nutrition and associated ill health for tribal (ICMR, 2013).

Nutritional status is a major determinant of the health and well-being amongst children. Developing countries like India accounts for about 40% of the undernourished children in the world and are largely due to the result of dietary inadequacy in relation to their needs. More than half of the children in India are unable to grow to their full physical and mental potential owing to their malnutrition. Under nutrition is characterized by mental and physical starvation, low weight in relation to height or other skeletal indices, diminished skin fold, exaggerated and skeletal prominences and loss of elasticity of skin. The etiology of under nutrition is associated with several related consistent factors termed as poverty syndrome.

Orissa, the most picturesque state in eastern India, occupies a unique place in the tribal map of the country having largest number of tribal communities (62 tribes including 13 primitive tribes) with a population of 8.15 million constituting 22.3% of state's population (Census, 2011). The primitive tribal communities have been identified by the Govt. of India in 15 states/union territories because of (a) pre agricultural level of technology (b) extremely low level of literacy; and (c) small, stagnant, or diminishing population (Basu, 1994).

Keeping this fact in view and realizing the importance of nutritional status of the population, more particularly of the children, the researcher has taken an attempt to study the nutritional study of the tribal children. As the state of Odisha has the higher number of tribal populations of eastern India, the study was designed and planned to be within the geographical limits of the state, in the district of Koraput.

Objectives of the Study:
The objectives framed to undertake the research study is described below:

- To determine the grades of under nutrition among the Gadaba tribal children as per IAP classification.

2. Methodology

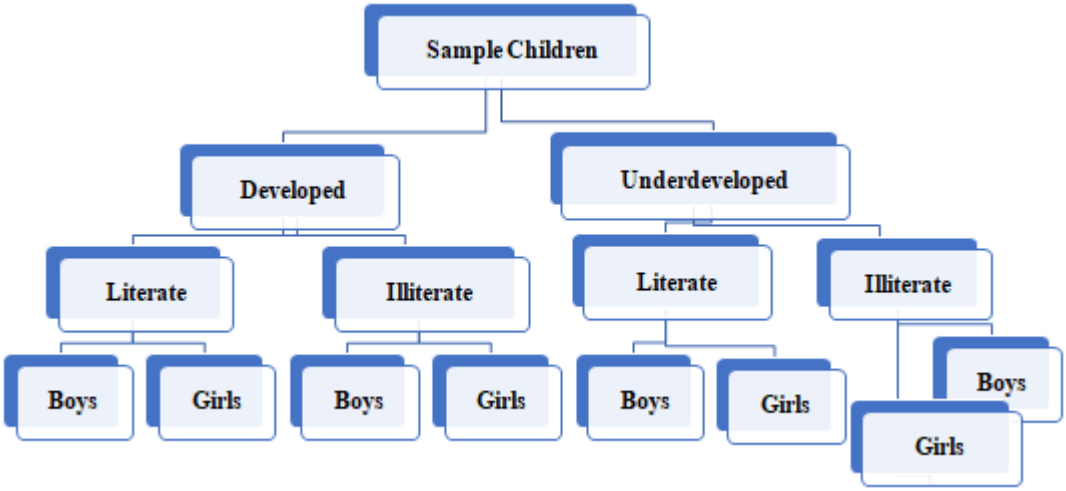
The plan and procedure for achieving the objectives of this study are designed in conformity with the methodology/ procedure adopted for a *'Normative Study'*. The details of the methodology are confined to the three basic principle of the normative study, viz.

a) Selection of Tools/Techniques
b) Selection of the Sample, and,
c) Collection and Analysis of Data

The interview schedule was designed in such a way that the hypothesis for the study could be tested and a near accurate result could be obtained. The schedule was also pretested within a small group of identical community in a nearby area and redesigned as per the results obtained thereof. Each aspect of the interview schedule was examined carefully and was finalized and used for the study purpose.

The sample villages of the selected block are divided into two categories, viz., ***Developed and Underdeveloped.*** The required secondary information to categorize the villages is collected from the secondary source and the indicators on the basis which the division is made are shown below:

Organizational Chart Showing Different Strata Selected for the Study



A total number of 312 sample children of age 6 – 14 yrs are identified for the study and are regrouped into the following strata.

- **Developed and Underdeveloped:** This has been taken as a synonym for urban and rural. As discussed earlier the villages located within 4-5 kms. of the block headquarters are being identified as 'developed' and the villages beyond this limit are being considered as 'underdeveloped'.
- **Literate and Illiterate:** The standard norm for literate and illiterate (defined by the Government) is used to regroup the children who live in the developed and underdeveloped villages.
- **Boys and Girls:** As usual to estimate and examine the difference in the nutritional status of the boys and girls both the categories are added into the strata.

The Pottangi Block of the Koraput district of Orissa has been selected as the sample block and as per our purpose some villages of the block are being identified. The villages of the block were divided into two categories, viz., Developed and Underdeveloped. Out of these strata some villages were selected from these two categories with the help of stratified sampling method. Thus, the villages selected are; *Badliguda, Nilampadu and Chintaguda,* which are considered as the developed villages and those villages are located within 4-5 kms of the Pottangi block. On the other hand, the villages, viz., *Podapadar, Mulaguda, Sisaguda*and *Ghodaghati,* which are located beyond the above limit and located within a distance of 15-17 kms from the block head quarterare taken up for our research purpose as the underdeveloped villages.

Nutritional Status of the Sample Children

Furthermore, as per the methodology described earlier in this chapter –among various available methods the following two methods were preferred to be used; ***a) Anthropometric Measurements and b) Dietary Assessment*** for the purpose of estimation of the related data collected through the questionnaire. It is also mentioned above –in detail-that the 'Anthropometric Measurement is based on the height-for age and the weight-for age, and the Dietary Assessment is based on the comparison of the Recommended Dietary Allowance (RDA) and the observed food intake of the Gadaba children. All those data, estimation and corresponding analysis are being presented in the sections below.

a) Anthropometric Measurement.

In developing countries like India anthropometry measurement is used for assessing nutritional status in the community (Ghosh et. al, 2001 and Khongsdier et. al, 2005). The Body Mass Index (BMI) is widely accepted as one of the best indicators of nutritional status (James, 1988; Ferro-Luzzi, 1992 and Shetty, 1994). Thus, the use of BMI as an anthropometric indicator of nutritional status may be more appropriate in a country with diverse ethnic groups like India (Naidu and Rao, 1994; Bailey and Ferro-Luzzi, 2005).

The IAP classification is based on weight only and currently used by the Integrated Child Development Scheme (ICDS) sponsored by the Govt. of India for selecting beneficiaries and growth monitoring. According to this classification if a child's weight is greater than equal to 80% or more of NCHS standard weight then he/she as classified as normal weight. If it is between 70 %-79.9% then it's classified as Grade I under nutrition, similarly 60 %-69.9% as Grade II under nutrition, 50%-59.9% Grade III under nutrition, and < 50% as Grade IV under nutrition. (IGNOU, 1996)

Nutritional Status of 6 Year Children as per IAP Classification

Sl. No.	Indicator	Literacy Level	Sex	Grade of Under nutrition				
				Normal	I	II	III	IV
1	Developed	Literate	Boys		16.52			
			Girls			13.64		
		Illiterate	Boys			14.45		
			Girls				11.67	
2	Under Developed	Literate	Boys		15.41			
			Girls			13.61		
		Illiterate	Boys				12.39	
			Girls				11.63	

An examination for the 6-year-old child indicates that all the sample suffer from under nutrition irrespective of their locality. Only the literate boys come under Grade I under nutrition whereas all others come under Grade II and Grade III. A close introspection at the result reveals a phenomenon of the girl children being severely undernourished who come under Grade III.

Nutritional Status of 7 Yrs Children According to IAP Classification

Sl. No.	Indicator	Literacy Level	Sex	Grade of Under nutrition				
				Normal	I	II	III	IV
1	Developed	Literate	Boys		18.30			
			Girls			15.21		
		Illiterate	Boys				13.70	
			Girls					10.88
2	Under Developed	Literate	Boys		18.28			
			Girls			15.23		
		Illiterate	Boys				13.72	
			Girls					10.86

The data provided above indicates the high prevalence of under nutrition among the 7-year sample Gadaba children. It shows that boys have better nutritional status than girls further it can be identified that the literate boys irrespective of their locality lives in a better nutritional status than their counterparts and other sample children whereas under nutrition is more prevalent among the illiterate girl child who comes under Grade IV. This depicts the fact that education plays an important role in determining the health and nutritional status.

Nutritional Status of 8 Yrs Children According to IAP Classification

Sl. No.	Indicator	Literacy Level	Sex	Grade of Under nutrition				
				Normal	I	II	III	IV
1	Developed	Literate	Boys		20.19			
			Girls			17.32		
		Illiterate	Boys				15.15	
			Girls					12.37
2	Under Developed	Literate	Boys		20.17			
			Girls			14.85		
		Illiterate	Boys			15.13		
			Girls					12.35

Further analysis indicates an usual scenario that no children in this age group belongs to a normal healthy category. All the boys and girls of this age irrespective of their level of origin (developed / underdeveloped) and level of literacy suffer from malnutrition as well as under nutrition.

And the most important fact is that all the children of this age group suffer from all types of under nutrition i. e. from Grade I to Grade IV in which literate boys portrays a better nutritional status as compared to their counterparts. The illiterate girls are the most vulnerable group who comes under Grade IV under nutrition.

Nutritional Status of 9 Yrs Children According to IAP Classification

S. No.	Indicator	Literacy Level	Sex	Grade of Under nutrition				
				Normal	I	II	III	IV
1	Developed	Literate	Boys		22.45			
			Girls			19.94		
		Illiterate	Boys		22.43			
			Girls				17.08	
2	Under Developed	Literate	Boys		22.44			
			Girls			19.93		
		Illiterate	Boys			19.66		
			Girls				17.06	

An examination of the above data indicates that all children in this group suffer from some form of under nutrition i. e., Grade I to Grade III. No child is in a normal state of health as per IAP classification. Further it shows that boys who come under Grade I are in a better nutritional status as compared to girls who come under Grade II and Grade III. The illiterate girls again demonstrate miserable nutritional condition and are categorized under Grade III under nutrition.

Nutritional Status of 10 Yrs Children According to IAP Classification

S. No.	Indicator	Literacy Level	Sex	Grade of Under nutrition				
				Normal	I	II	III	IV
1	Developed	Literate	Boys		25.10			
			Girls			22.74		
		Illiterate	Boys		25.07			
			Girls			22.72		
2	Under Developed	Literate	Boys		25.05			
			Girls				19.47	
		Illiterate	Boys			21.96		
			Girls				19.44	

The data for the 10 Yrs old sample children shows almost all the same trend as per the nine year old sample children. All the sample children in this age group are undernourished and again boys have better nutritional status as compared to girls who are under Grade II and Grade II. Girls from the developed category are positioned slightly better i. e. Grade II as compared to the underdeveloped girls who are in Grade III.

Nutritional Status of 11 Years Children According to IAP Classification

S. No.	Indicator	Literacy Level	Sex	Grade of Under nutrition				
				Normal	I	II	III	IV
1	Developed	Literate	Boys		25.68			
			Girls			23.53		
		Illiterate	Boys		25.63			
			Girls				20.18	
2	Under Developed	Literate	Boys			22.51		
			Girls				20.16	
		Illiterate	Boys				19.30	
			Girls					16.83

The data given above shows that the sample children irrespective of each stratum falls under all forms of under nutrition which infers a very poor nutritional status scenario among the Gadaba children. The boys from the developed area irrespective of their literacy levels exhibit better nutritional status as compared to the other categories of sample. This can directly be related to the awareness of their parents. Further we can infer that majority of the girl children are under alarming under nutritional status and are categorized under Grade III and Grade IV.

Determination of Nutritional Status of 12 Yrs Children According to IAP Classification

Sl. No.	Indicator	Literacy Level	Sex	Grade of Under nutrition				
				Normal	I	II	III	IV
1	Developed	Literate	Boys		29.57			
			Girls			26.99		
		Illiterate	Boys			25.88		
			Girls				23.17	
2	Under Developed	Literate	Boys			22.18		
			Girls				23.15	
		Illiterate	Boys				22.19	
			Girls					19.35

It can be observed from the above table that majority of the sample children fall under Grade II and Grade III. The only exception to this table is the developed literate boys who falls under the Grade I category. This again shows that underdeveloped illiterate girls are the worst victim of Grade IV under nutrition.

Nutritional Status of 13 Yrs Children According to IAP Classification

S. No.	Indicator	Literacy Level	Sex	Grade of Under nutrition				
				Normal	I	II	III	IV
1	Developed	Literate	Boys		32.68			
			Girls			30.76		
		Illiterate	Boys			28.61		
			Girls				26.37	
2	Under Developed	Literate	Boys			28.59		
			Girls				26.35	
		Illiterate	Boys				24.51	
			Girls					21.98

An examination of the above data for 13 yrs sample children above also reveals the same trend as that of 12 yrs old sample Gadaba children irrespective of their place of stay or level of literacy they suffer from some form of under

nutrition starting from Grade I to Grade IV. These adolescent children are unable to meet the daily dietary requirements when the growth of the body is rapid.

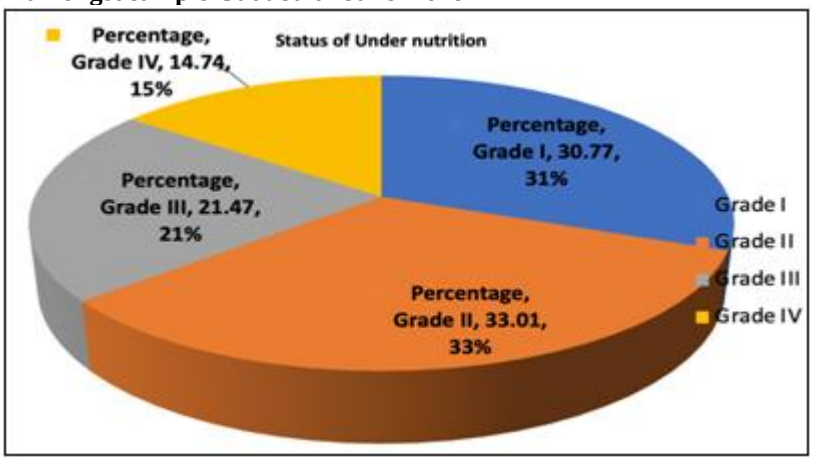
Nutritional Status of 14 Yrs Children According to IAP Classification

Sl. No.	Indicator	Literacy Level	Sex	Grade of Under nutrition				
				Normal	I	II	III	IV
1	Developed	Literate	Boys		37.58			
			Girls			33.54		
		Illiterate	Boys			32.86		
			Girls				28.65	
2	Under Developed	Literate	Boys			32.81		
			Girls				28.61	
		Illiterate	Boys				28.17	
			Girls					23.96

The above table 5.24 of 14 yrsGadaba children intune with the IAP classification indicates the same trend as that of the 12 and 13 Yrs old irrespective of their place of stay and level odliteracy and gender discrimination not a single child leads a normal healthy life or gets normal nutritional intake for the body. Hence all the children in this age group suffer from various forms of malnutrition and placed in various under nutrition category. This may be due to inadequate diet, poor unhygienic condition, lack of awareness etc.

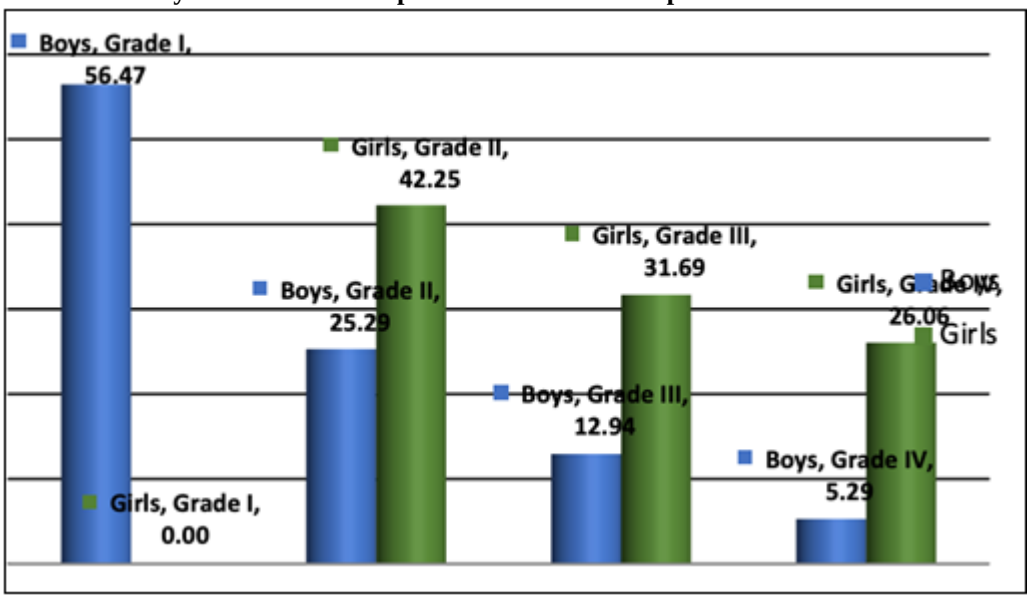
The percentage distributions of sample children across the IAP grades of under nutrition are represented in the chart below:

Status of Under nutrition amongst sample Gadaba tribal children



The percentage distribution of the sample children as per the IAP grades goes like, Grade I (30.77%), Grade II (33.01%), Grade III (21.47%), Grade IV (14.74%) which shows that Grade II under nutrition is the most prevalent.

Percentage distribution of Boys and Girls of Sample Gadaba children as per IAP



Further segregation of the results infers that none of the girls come under Grade I owing to their severe under nutritional status they come under Grade II, III and IV. Majority of girl children (42.25%) fall under Grade II followed by Grade III (31.69%) and Grade IV (26.06%). Majority of boys come under Grade I (56.47%) followed by Grade II (25.29%), Grade III (12.94%), Grade IV (5.29%).

Analyzing all the observed data from Table1 to Table14 as per IAP Grades of Under nutrition signifies one most important factor that all the sample Gadaba children in the study area suffer from some form of under nutrition. This factor can be taken up as a highly warning note for the long-term survival of the Gadaba tribe in Pottangi block.

3. Conclusion

Efforts to reduce under nutrition depend on reducing poverty, eradication of illiteracy, providing better sanitation, increasing access to clean drinking water, maternal and child health services. Such programs would be beneficial in not only reducing the rates of CED, but also it helps reducing morbidity and mortality.

This study demonstrated that the nutritional status of the Gadaba children, especially during the 6 – 14 yrs age is very critical. There is an immediate requirement for appropriate steps to be taken to improve nutritional status of this ethnic group. Moreover, it must be mentioned here that similar studies should be undertaken among children of other tribal populations of not only Orissa but also in other parts of India. Since various tribal groups constitute a sizeable portion of India's population, improvement of their nutritional status is of paramount importance from the national public health perspective.

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