

Unseen Struggles: Assessing Symptoms of Nutritional Deficiencies among Under-Five Children in Tribal Regions.

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ABSTRACT

Background: Nutritional deficiencies among under-five children remain a significant public health concern, particularly in tribal regions where socio-economic and environmental factors contribute to poor health outcomes. The present study titled “Unseen Struggles: Evaluating Symptoms of Nutritional Deficiencies among Under-Five Children in Tribal Regions” was conducted to assess the symptoms of nutritional deficiencies and their association with selected socio-demographic variables.

Methods and Material: A quantitative approach with a pre-experimental research design was adopted for the study. The study was conducted in selected tribal areas of Nashik district, Maharashtra. A total of 102 undernourished children aged between 1 and 5 years were selected using a probability cluster random sampling technique. Data were collected using a structured assessment checklist to evaluate the symptoms of nutritional deficiencies. Ethical approval was obtained from the Institutional Ethics Committee, and informed consent was secured from the parents or guardians of the participants.

Result: The findings revealed that 64.71% of children had less symptoms of nutritional deficiency, while 35.29% had moderate symptoms, and none of the children exhibited severe symptoms. The mean score of symptoms was 4.38 ± 1.58 , with a mean percentage of 17.53%, indicating an overall low level of nutritional deficiency symptoms. The study also found no statistically significant association between nutritional deficiency symptoms and selected socio-demographic variables such as age and education of parents, occupation, income, type of family, and religion ($p > 0.05$).

Conclusion: The study concludes that although severe nutritional deficiencies were not observed, a considerable proportion of children exhibited mild to moderate symptoms, indicating a potential risk for future health complications. The findings emphasize the need for early identification, regular screening, and implementation of community-based nutritional interventions to improve the health and nutritional status of under-five children in tribal regions...

Keywords: Nutritional deficiency, under-five children, tribal population, malnutrition, symptoms, socio-demographic variables..

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INTRODUCTION

Nutrition is a fundamental pillar for the growth, development, and survival of children, especially during the first five years of life. Adequate nutrition during early childhood is essential for optimal physical growth, cognitive development, and immune function. Under-five children are particularly vulnerable to nutritional deficiencies due to their rapid growth rate, increased nutritional requirements, and dependence on caregivers for feeding practices¹. Nutritional deficiencies during this critical period can lead to irreversible consequences, including stunted growth, impaired brain development, increased susceptibility to infections, and even mortality².

Globally, malnutrition remains a major public health concern, particularly in low- and middle-income countries. According to the World Health Organization, malnutrition is associated with nearly 45% of deaths among children under five years of age³. Nutritional deficiencies may manifest as protein-energy malnutrition (PEM), micronutrient deficiencies such as iron deficiency anemia, vitamin A deficiency, iodine deficiency disorders, and other related conditions⁴. These deficiencies often present with observable clinical signs and symptoms such as underweight, wasting, stunting, pallor, edema, hair changes, skin lesions, and delayed developmental milestones⁵. In India, despite significant improvements in healthcare services, child malnutrition continues to be a persistent challenge. Data from the National Family Health Survey

(NFHS-5) indicates that a substantial proportion of under-five children are underweight, stunted, or wasted⁶. The burden is disproportionately higher among children living in rural and tribal areas, where poverty, illiteracy, food insecurity, and limited access to healthcare services contribute to poor nutritional outcomes⁷. Tribal populations often face unique socio-cultural and geographical barriers that further exacerbate the risk of nutritional deficiencies among children⁸.

Nutritional deficiency is not only a consequence of inadequate food intake but is also influenced by various factors such as improper feeding practices, recurrent infections, poor sanitation, and lack of maternal knowledge regarding child nutrition⁹. In tribal regions, traditional beliefs and practices related to child feeding, delayed initiation of complementary feeding, and reliance on low-nutrient-density foods further increase the vulnerability of under-five children to malnutrition¹⁰. Additionally, limited awareness regarding balanced diets and nutritional requirements often leads to delayed identification and management of deficiency symptoms¹¹.

Some study highlights the importance of adequate nutrition—especially protein intake—and good health status in promoting normal linear growth.¹² Their success hinges on community engagement, culturally appropriate education, and integration with existing health programs. There is a strong need to scale such interventions nationally with continuous support and monitoring.¹³

Therefore, assessing the symptoms of nutritional deficiencies among under-five children in tribal regions is essential to understand the magnitude of the problem and to identify children at risk. This will help in planning appropriate interventions, improving maternal awareness, and strengthening community-based nutritional programs. The present study, titled “*Unseen Struggles: Evaluating Symptoms of Nutritional Deficiencies among Under-Five Children in Tribal Regions,*” aims to contribute to this important area by systematically assessing the clinical manifestations and associated factors of nutritional deficiencies in this vulnerable population.

Methods

A pre-experimental research design with a quantitative approach was adopted to evaluate the symptoms of nutritional deficiencies among under-five children in selected tribal regions. The study was conducted in the tribal areas of Nashik district. The study population consisted of undernourished children aged between 1 and 5 years. A total sample of 102 children was selected using a probability cluster random sampling technique. Children aged 1–5 years who were identified as malnourished and whose parents or guardians were willing to provide consent were included in the study, whereas children who were critically ill or whose parents or guardians did not consent were excluded. Ethical approval for the study was obtained from the Institutional Ethics Committee of Teerthanker Mahaveer University. Written informed consent was obtained from the parents or guardians prior to participation, and confidentiality and anonymity of the participants were strictly maintained throughout the study.

Results

The findings are presented under the following sections: assessment of symptoms of nutritional deficiencies, and association between symptoms of nutritional deficiencies and selected socio-demographic variables. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to summarize the data, while inferential statistics, particularly the chi-square test, were applied to determine the association between variables.

Table No. 1. Assessment of levels of Symptoms of Nutrition deficiency.

Sr. No.	Assessment of Symptoms of Nutrition deficiency	Range of score	No. of respondent	percentage
1	No Symptoms of Nutrition deficiency	0	0	0.00
2	Less Symptoms of Nutrition deficiency	1 to 5	66	64.71
3	Moderate Symptoms of Nutrition deficiency	6 to 15	36	35.29
4	Severe Symptoms of Nutrition deficiency	16 to 25	0	0.00

The above table depicts the distribution of under-five children according to the assessment of symptoms of nutritional deficiency. The findings reveal that the majority of the children, 66 (64.71%), exhibited less symptoms of nutritional deficiency with a score range of 1 to 5. A considerable proportion, 36 (35.29%), showed moderate symptoms with a score range of 6 to 15. Notably, none of the children (0%) fell under the categories of no symptoms (score 0) or severe symptoms (score range 16 to 25).

Overall, the results indicate that while a large proportion of under-five children in the selected tribal region are experiencing mild to moderate symptoms of nutritional deficiency, no cases of severe deficiency were observed in the study sample.

Table No. 2. Assessment of mean and SD scores of Symptoms of Nutrition deficiency

Sr. No.	Variable	Mean	SD	Mean Percentage
1	Symptoms of Nutrition deficiency	4.38	1.58	17.53

The above table presents the mean, standard deviation, and mean percentage of symptoms of nutritional deficiency among under-five children. The findings show that the mean score of symptoms of nutritional deficiency was 4.38 with a standard deviation of 1.58, indicating a moderate level of variability among the participants. The mean

percentage was 17.53%, which suggests that the overall level of nutritional deficiency symptoms among the children was relatively low. Overall, the results indicate that most of the under-five children exhibited mild symptoms of nutritional deficiency, with limited variation in scores across the study population.

Table No. 3. Association between levels of symptoms of nutritional deficiency with selected socio demographic variables of under five children.

Sr. No	Socio demographic variables	Category	Symptoms of Nutrition deficiency				Total	Chi square value	p value
			Less Symptoms of Nutrition deficiency		Moderate Symptoms of Nutrition deficiency				
			f	%	f	%			
1	Age of Father	Below 25 years	7	63.64	4	36.36	11	1.161	0.762
		25 to 30 years	23	60.53	15	39.47	38		
		31 to 35 years	29	70.73	12	29.27	41		
		Above 35 years	7	58.33	5	41.67	12		
2	Age of Mother	Below 25 years	8	53.33	7	46.67	15	2.129	0.546
		25 to 30 years	27	61.36	17	38.64	44		
		31 to 35 years	25	71.43	10	28.57	35		
		Above 35 years	6	75.00	2	25.00	8		
3	Educational status of Father	No formal education	10	71.43	4	28.57	14	6.122	0.190
		Primary education	10	52.63	9	47.37	19		
		Secondary education	10	66.67	5	33.33	15		
		Higher secondary education	11	50.00	11	50.00	22		
		Graduate and above	25	78.13	7	21.88	32		
4	Educational status of Mother	No formal education	23	60.53	15	39.47	38	2.880	0.578
		Primary education	9	69.23	4	30.77	13		
		Secondary education	12	63.16	7	36.84	19		
		Higher secondary education	14	60.87	9	39.13	23		
		Graduate and above	8	88.89	1	11.11	9		
5	Occupation of father	Daily wages	17	68.00	8	32.00	25	7.054	0.316
		Self Employed	16	61.54	10	38.46	26		
		Agriculture	9	64.29	5	35.71	14		
		Private employee	11	50.00	11	50.00	22		

		Government employee	7	87.50	1	12.50	8		
		Retired employee (pensioner)	5	100.00	0	0.00	5		
		Business	1	50.00	1	50.00	2		
6	Occupation of Mother	Home maker	20	52.63	18	47.37	38	4.738	0.192
		Self Employed	12	66.67	6	33.33	18		
		Agriculture	18	69.23	8	30.77	26		
		Private employee	16	80.00	4	20.00	20		
		Government employee	0	0	0	0	0		
		Retired employee (pensioner)	0	0	0	0	0		
		Business	0	0	0	0	0		
7	Per capita Monthly income	Upper class (Rs. 8220 and above)	9	56.25	7	43.75	16	2.787	0.594
		Upper middle class (Rs. 4110 – 8219)	19	76.00	6	24.00	25		
		Middle class (Rs. 2465 – 4109)	26	59.09	18	40.91	44		
		Lower middle class (Rs. 1230 – 2464)	10	71.43	4	28.57	14		
		Lower class (Rs <1230)	2	66.67	1	33.33	3		
8	Type of family	Nuclear	50	64.10	28	35.90	78	0.053	0.818
		Joint	16	66.67	8	33.33	24		
9	Number of family members	Less than 3	6	50.00	6	50.00	12	1.485	0.686
		4	24	68.57	11	31.43	35		
		5	27	64.29	15	35.71	42		
		6	9	69.23	4	30.77	13		
		7	0	0	0	0	0		
		More than 7	0	0	0	0	0		
10	Religion	Hindu	39	69.64	17	30.36	56	2.182	0.336
		Christian	15	65.22	8	34.78	23		
		Muslim	12	52.17	11	47.83	23		
		Any other (specify)	0	0	0	0	0		

The above table shows the association between symptoms of nutritional deficiency among under-five children and selected socio-demographic variables. The analysis reveals that there was no statistically significant association found between the level of nutritional deficiency symptoms and any of the selected variables, as all the p-values were greater than 0.05.

Variables such as age of father ($\chi^2 = 1.161$, $p = 0.762$) and age of mother ($\chi^2 = 2.129$, $p = 0.546$) did not show any

significant association. Similarly, educational status of father ($\chi^2 = 6.122$, $p = 0.190$) occupation of father ($\chi^2 = 7.054$, $p = 0.316$), occupation of mother ($\chi^2 = 4.738$, $p = 0.192$), per capita monthly income ($\chi^2 = 2.787$, $p = 0.594$), type of family ($\chi^2 = 0.053$, $p = 0.818$), number of family members ($\chi^2 = 1.485$, $p = 0.686$), and religion ($\chi^2 = 2.182$, $p = 0.336$) and educational status of mother ($\chi^2 = 2.880$, $p = 0.578$) were not significantly associated with the symptoms of nutritional deficiency.

Overall, the findings indicate that the symptoms of nutritional deficiency among under-five children in the selected tribal region were not significantly influenced by the selected socio-demographic variables in this study.

DISCUSSION

The present study aimed to evaluate the symptoms of nutritional deficiencies among under-five children in selected tribal regions and to determine their association with selected socio-demographic variables. The findings of the study revealed that the majority of children 66 (64.71%) had less symptoms of nutritional deficiency, while 36 (35.29%) exhibited moderate symptoms, and none of the children had severe symptoms. This indicates that although severe malnutrition was not observed, a considerable proportion of children were still affected by mild to moderate nutritional deficiencies. These findings are consistent with previous studies, which reported that under-five children in tribal areas commonly experience mild to moderate malnutrition due to inadequate dietary intake and poor feeding practices.

The mean score of nutritional deficiency symptoms was 4.38 ± 1.58 , with a mean percentage of 17.53%, suggesting that the overall level of nutritional deficiency symptoms among the study participants was relatively low. However, even mild deficiencies during early childhood can have long-term effects on growth, cognitive development, and immunity. Similar findings have been reported in other studies, where the majority of children showed mild clinical signs but were still at risk of developing more severe conditions if timely interventions were not implemented.

The present study also assessed the association between nutritional deficiency symptoms and selected socio-demographic variables such as age and education of parents, occupation, income, type of family, and religion. The results indicated that none of the variables showed a statistically significant association with the symptoms of nutritional deficiency ($p > 0.05$). This suggests that nutritional deficiencies in the studied population may be influenced by multiple interrelated factors rather than any single socio-demographic characteristic. These findings are supported by earlier research, which highlighted that in tribal communities, widespread poverty, cultural practices, and limited access to healthcare services contribute collectively to malnutrition, reducing the impact of individual demographic variables.

Although parental education and income are generally considered important determinants of child nutrition, the lack of significant association in this study may be due to the relatively homogeneous nature of the tribal population, where most families share similar socio-economic conditions. Additionally, factors such as traditional feeding practices, food availability, maternal knowledge, and environmental conditions might play a more critical role in influencing the nutritional status of children in these regions.

The findings of this study emphasize the need for early identification and management of nutritional deficiency symptoms among under-five children. Community-based interventions, nutritional education for mothers, and strengthening of existing health programs such as Anganwadi services can help in improving the nutritional status of children in tribal areas. Regular screening and monitoring of children for early signs of deficiency are essential to prevent progression to severe malnutrition.

CONCLUSION:

The study highlights that while most children exhibited mild to moderate symptoms of nutritional deficiency, the absence of severe cases does not eliminate the risk. Continuous efforts are required to address underlying causes and to promote adequate nutrition and health practices among tribal populations to ensure optimal child growth and development..

REFERENCE

1. Black, R. E., et al. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, 382(9890), 427–451.
2. UNICEF. (2019). *The State of the World's Children*.
3. World Health Organization. (2021). *Malnutrition Fact Sheet*.
4. Park, K. (2021). *Park's Textbook of Preventive and Social Medicine* (26th ed.).
5. Ghai, O. P. (2019). *Essential Pediatrics*.
6. National Family Health Survey (NFHS-5). (2019–21). *India Fact Sheet*.
7. International Institute for Population Sciences (IIPS). (2021). *NFHS-5 Report*.
8. Ministry of Tribal Affairs, India. (2020). *Tribal Health in India*.
9. WHO. (2018). *Infant and Young Child Feeding Guidelines*.
10. UNICEF. (2020). *Improving Child Nutrition in Tribal Areas*.
11. Sharma, S., & Nagar, S. (2017). Nutritional status among tribal children. *Indian Journal of Public Health*.
12. Mahantesh Dasyal, S. P. Subashini. A cross sectional study Assess the prevalence and its associate factors of Nutritional status among under five children in selected rural area. *JOURNAL OF APPLIED BIOANALYSIS*, November 2025 p. 1018-1021 <http://doi.org/10.53555/jab.v11si12.2874> (ISSN 2405-710X) Vol. 11, No.12s 1018.
13. Mahantesh Dasyal, S. P. Subashini, (2025) "Nursing Interventions And Their Role In Combating Childhood Malnutrition: A Systematic Review". *Journal of Neonatal Surgery*, 14 (32s), 2911-2913..