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Nutritional Status of the Children Below 3 Years of Age in Tribal Villages of Chikhli Taluka, Gujarat

* Shriya A.Seksaria ** Dr. Mini K. Sheth

* Research Scholar, Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India.

** Associate Professor, Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara

ABSTRACT

Malnutrition among young children continues to persist in spite of constant efforts. A cross sectional study was conducted to determine the nutritional status of 536 children between 6-36 months of age and its association with various factors in tribal villages of Gujarat. Structured questionnaire was administered to the mothers to assess the socio economic status of the family. Anthropometric measurements were taken using standard methods and instruments and children were further classified as underweight, wasted or stunted based on WHO growth standards. Chi square analysis was used to describe the relationships between potential risk factors and undernutrition. Results revealed high prevalence of malnutrition with 51.9% underweight, 54.7% stunted and 27% wasted children. Age of the child, socio economic status of the family and type of house in which the family resided were found to be significantly associated with undernutrition among the children. .

Keywords : nutritional status, tribal children

BACKGROUND

Adequate and appropriate nutrition is the key to proper growth and development during the initial years of life. Since childhood is the most vulnerable phase in the life of human being, nutritional inadequacies during this period will result in the hampering of the development of the body.

In India, 20% children under the age of five years are wasted, 43% are underweight and 48 % are stunted due to chronic under nutrition. Under nutrition is substantially higher in rural than in urban areas [1]. Tribal population has the poorest nutritional status on almost every measure with 55% underweight, 54% stunted and 28% wasted children [2].

According to statistics in 2007-08, 46.9% tribal children between 1-5 years in Gujarat were underweight, 53.8% were stunted and 23.8% were wasted [3]. The present study was carried out to view the present nutritional status of children between the age of 6-36 months residing in the tribal villages of *Chikhli taluka* of Gujarat state and its possible causes.

METHODS

Locale of study

The study was carried out in the tribal villages of *Chikhli taluka*, Navsari District of Gujarat, India. Gujarat has 33 districts and Navsari district comprises of 6 talukas which includes 389 urban, rural and tribal villages. *Chikhli*, a tribal *taluka* of Navasri district has 86 villages [4]. As per the 2001 India census [5] Chikhli had a population of 6949. With 51% males 49% females. Ten percent of the population is under 6 years of age.

Sampling

Multi stage sampling technique was used to select one *taluka* of Navsari district. From this *taluka,* out of 86 villages, 17 villages were selected using the convenience sampling procedure keeping in view the ease of availability of public transport for the researcher. From these villages households having children between 6-36 months were enrolled for the study using purposive sampling.

Sample Size

Under the Integrated Child Development Scheme (ICDS) of Government of India*, Chikhli taluka* has about 400 functional *anganwadis* (community centre). Taking an average of 10 children between the age group 6- 36months enrolled in each *anganwadi,* it was assumed that there are approximately 4000 children between 6-36 months in *Chikhli.* A 10% population will consist of 400 children; therefore a minimum sample of 400 was required to represent the population under study. However a sample of 536 was selected.

Data collection

A structured questionnaire was used to assess the socio economic status of the families according to criteria developed by Agrawal et al [6]. Nutritional status of the children was assessed through anthropometry using standard methods. WHO growth standards 2007 [7] were used to classify children under different grades of nutritional status.

Statistical analysis

Epi Info software (Version 2000). was used for test of significance (Pearson's Chi- square test) to find out the association of nutritional status of the children with various factors like child's age, SES, mothers education, household facilities etc.p values <0.05 were considered significant.

RESULTS

Background information of the child and family is presented in Table 1. The enrolled subjects had almost equal percentage of males and females Majority of the families (88.2%) were Hindus.

Only a small number of families, 2.1% belonged to the upper high SES group with majority of families 43.7% belonging to

lower middle group. Almost 75% families were non vegetarians. With respect to their literacy status only a small percentage (16%) of mothers were illiterate.

Table 1: Background information of the child and family				
			No. of Subjects	%
1.	Sex	Males	285	53.2
		Females	251	46.8
2.	Religion	Hindus	473	88.2
		Muslims	61	11.4
		Christians	2	0.4
3.	Socio economic status (SES)	Upper High	11	2.1
		High	53	9.9
		Upper Middle	200	37.3
		Lower Middle	234	43.7
		Poor	37	6.9
		Very Poor	1	0.2
4.	Type of Family	Nuclear	170	31.7
		Joint	193	36.0
		Extended	173	32.3
5.	Type of food consumed	Vegetarian	132	24.6
		Ovo vegetarian	4	0.7
		Non vegetarian	400	74.6
6.	Educational qualification of mother	Illiterate	84	15.7
		Primary to Higher secondary (Grade 1 to 10)	126	23.5
		Higher senior secondary (Grade 11 and above)	326	60.8

Household information of the families

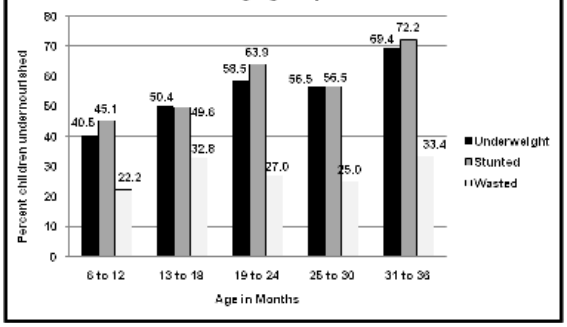
The household information of the families is summarized in Table 2. More than half the families, 60.6% resided in semi *pakka* houses and open drainage system was found in 64.4% households. Hand pump or borehole was the main source of drinking water for majority (47.9%) of the families.

Table 2: Household information of the families				
			Number	%
1.	Type of house	Kaccha (temporary roof and walls)	62	11.6
		Semi Pakka (concrete walls but temporary roof)	325	60.6
		Pakka (concrete roof and walls)	149	27.8
2.	Drainage facility	Open	345	64.4
		Close	191	35.6
Water source				
3.	Drinking	Municipal supply	83	15.5
		Open well	6	1.1
		Handpump	257	47.9
		Bottled	59	11.0
4.	Cooking	Municipal supply	118	22.0
		Open well	11	2.1
		Handpump	348	64.9
		Bottled	59	11.0
5.	Other household activities	Municipal supply	164	30.6
		Handpump	372	69.4

Nutritional status of the children

According to WHO standards (2007) that classifies the children into various grades of nutritional status, a high prevalence of under nutrition was observed among children below 3 years. Of the total 536 children investigated 278 (51.9 %) were moderate to severely underweight, 293 (54.7%) were stunted and 27.1 were wasted. Figure 1 shows the prevalence of under nutrition at different ages among the children.

Figure 1: Percent Undernutrition in different age groups



Association of nutritional status with various parameters:

Table 4 shows the parameters with which the nutritional status of the children was associated. Weight for age and length for age were significant with age the chid, SES of the family and type of house in which the families resided. Weight for length was not associated with any of the parameters.

Table 4: Association of nutritional status with various parameters				
S. No	FACTOR	WFA	LFA	WFL
	Age	15.5**	22.2***	NS
	Sex	NS	NS	NS
	SES	27.8***	13.2**	NS
	Religion	NS	NS	NS
	Type of family	NS	NS	NS
	Mothers education	NS	NS	NS
	Type of food consumed	NS	NS	NS
	Type of house	13.0***	7.12*	NS
	Drainage	NS	NS	NS

NS: Not significant *: p< 0.05
****: p<0.001 ***: p<0.0001**

CONCLUSION

India has experienced a rapid economic boom in the past two decades. However, this economic growth has not translated into improved nutritional status among young Indian children and under nutrition continues to persist and remain a great cause of concern for the Indian government. As per NFHS-3 data, 43% of children under age five years are underweight for their age and 48% were stunted which indicates that half of the country's children are chronically malnourished [8]. Nandy et al also pointed out that under nutrition continues to be a primary cause of ill-health and premature mortality among children in developing countries [9].

Anthropometric analysis of the children revealed high levels of undernutrition. These results are slightly highly than the state figures of 2007-08 which categorized 46.9% children as underweight, 53.8% stunted and 23.8% as wasted [3]. Laxmaiah et al who conducted a similar study in the tribal areas of Khammam District of Andhra Pradesh and other found that 65.4% children between 1-5 years were underweight [10]. Findings of the present study on the epidemiology of growth faltering are consistent with the literature. Previous studies have reported higher prevalence of stunting than wasting within populations [11-13]. Similarly rural and tribal children of Rajasthan and West Bengal had high levels of undernutrition [14-16].

Results of the present study show that the nutritional status of the children deteriorated with increasing age from 6 months to 36 months with 69.4% children being underweight, 72.2% stunted and 33.4% wasted at 36 months of age. Bhavsar et al [17] in their study in conducted in urban slums of Mumbai and other researchers [18-20] also observed the same pattern in the nutritional status of children. Goel et al attributed it to the fact that older children more frequently eat outside home and are at a greater risk of diarrhoeal and other food or water borne disease [19].

Under nutrition is a complex problem generated by factors operating at several levels and cannot be attributed only to lack of food [21]. According to UNICEF socio economic status of the family affects the nutritional status of the child to a very great extent [22]. In the present study also the SES of the family was significantly associated with WFA ($p< 0.0001$) and LFA ($p< 0.001$). It has been well established that better family income translates into improved purchasing power in turn enhancing the nutritional intake and betterment of living conditions. All these factors are closely related to the nutritional status of a child in a family. Bhattacharya and co workers [23] and Osei et al [24] have also reported that household-level poverty is predictive of malnutrition among children.

The NFHS-3 data have revealed that, mother's education has a direct impact on the nutritional status of the children. High malnutrition of all types prevailed among children in the group of illiterate mothers and mothers with less than 5 year's education [8]. This finding was in contrast with the results of the present study where in spite of 61% mothers being educated upto higher senior secondary or above, high degree of undernutrition prevailed amongst the children. Bhavsar et al [17] and Kumar and Singh [25] also emphasised the importance of maternal education on child's nutritional status.

Household information of the families show majority of families resided in semi pakka houses and this was significantly associated with the WFA and LFA of the children. In a similar study conducted in Gwalior district of Madhya Pradesh the prevalence of underweight was higher among children from families living in kutcha houses (61%), compared to those living in semi-pucca house (57%) or pucca houses (47%), although not statistically significant. The prevalence of stunting and wasting was significantly ($p<0.01$) higher among children from families living in kutcha houses (72% & 27% respectively), compared to those living in semi-pucca house (65% & 22%) or pucca houses (52% & 8% respectively) [26].

In the present study socio economic status has emerged out to be an important factor in determining the nutritional status of the children. High prevalence of under nutrition was observed in spite of mothers being educated and availability of safe drinking water. Past researches have enlisted these factors apart from dietary intake, episodes of illness and its management, environmental conditions, infant and young child feeding practices, use of available health care facilities as contributors to child's nutritional status. Since these factors were not investigated in the present study it is likely that these might have contributed to the poor nutritional status of the children.

In spite of Gujarat governments various initiatives like Chiranjeevi Yojana, Bal Bhog Yojana, Vitamin Yukta Poshan Ahar, Nirogi Balak Yojna which are aimed at improving children's nutritional status, high prevalence of undernutrition prevails in Chikhli taluka. This points towards urgent need to take the call for aggressive awareness campaigns along with improved health care facilities with special privileges for the weaker sections of the society.

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