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Original Research Article

A cross-sectional study on undernutrition among under-5 children living in the rural area of Hyderabad

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ABSTRACT

Background: Undernutrition is a silent emergency and one of the most common causes of morbidity and mortality among under-5 children throughout the world. A serious public health concern and can have significant effect on child's overall growth and development. The prevalence of undernutrition is two folds higher among rural area compared with urban area, therefore present study aims to study the prevalence of undernutrition and associated factors among under-5 children living in rural area of Hyderabad.
Methods: A community based cross-sectional study was conducted between April 2023 to June 2023 in rural field practice area of a medical college in Hyderabad. A total of 364 under-5 children residing in study area were selected by simple random technique. Data about socio-demographic variables were collected by questionnaire and anthropometrics were measured using standard techniques.
Results: In the present study, about 33% of under-5 children are underweight and 35% are stunted. The under-5 children belonged to lower socioeconomic class were significantly more likely to be underweight (40%) and stunted (42%). Family size >6 members were significantly underweight (48%) as well as stunted (47%). Children with low birth weight i.e. <2.5 kg had significantly higher rates of underweight (43%) as well as stunting (45%). Among the children with weaning age less than 6 months, 47% were underweight and 45.6% were stunted.
Conclusions: Socio economic status, family size, birth weight, and weaning age are important determinants of undernutrition.

Keywords: Anthropometry, Stunting, Under-5, Undernutrition, Underweight

INTRODUCTION

Undernutrition is a serious public health concern and can have significant adverse effects on child's overall growth and development. It is the major cause of child morbidity and mortality. The prevalence of malnutrition is two folds higher among rural area compared with urban area. India has one of the worst rates of child undernutrition in the world, with one third of undernutrition children globally are Indian. Undernutrition is a health condition characterized by a lack of adequate nutrition, which can result from insufficient food intake, poor dietary quality, or the body's inability to absorb and utilize nutrients effectively. Nutritional status in the children can be inferred by their growth. Under nutrition is one form of malnutrition, measured by anthropometric indicators like low height for age (stunting), low weight for height (wasting), low weight for age (underweight).[1] Mortality rates of children under five are higher among rural population than urban poor in India, therefore my study aims to study the prevalence of undernutrition among under-5 children living in the rural areas of Hyderabad. Causes of undernutrition: inadequate, contaminated or unsafe food, socioeconomic factors: poverty, large family size, unemployment, lack of education, gender inequality,

inadequate health services, unsafe water, poor sanitation and recurrent infections.[2] Globally, around 45% of deaths among children under 5 years of age are linked to undernutrition One in six children (100 million) in developing nations is underweight and one in four of the world's children is stunted.[3] According to NFHS-5 Telangana data, nutritional status of children less than 5 years living in the rural area of Telangana has prevalence of underweight as 35% and stunting as 35.7%.[4] Objectives of the study were to estimate the prevalence of underweight and stunting among under-5 children living in rural area of Hyderabad. To determine the factors associated with underweight and stunting among under-5 children.

METHODS

A cross-sectional survey was conducted in rural areas of Hyderabad, from April to June 2023. Data were collected from 364 children aged 6 months -59 months. Oral informed consent was taken from child's mother. Children with major congenital anomalies like cleft lip and cleft palate, skeletal defects, and severe malnutrition due to chronic diseases are excluded from the study.

Sample size for the study was estimated as 364 based on National Family Health Survey (NFHS-5) Telangana Data 35% as the prevalence, with confidence level 95%, 5% absolute allowable error. A simple random sampling was done from list of randomly selected households with under-5 children. The details of household, child and mother characteristics were obtained by anthropometric measurements, observation and personal interviews with mothers. A semi-structured interview schedule was developed based on the caregiver and household determinants of child health and nutrition reported in the literature. All interviews were conducted in the area wise local languages.

Weight and height/length measurements of children and mothers were made following standard techniques. The nutritional status of children was determined by the height/length for age Z scores (HAZ) and weight for age Z scores (WAZ) from the WHO reference population median, respectively. The WHO cut-off is used to estimate malnutrition in communities, this is based on mean value less two standard deviations (<2 SD) in the WHO Growth Chart.[1,3]

The independent variables considered for analysis included the socio economic and demographic factors of child, mother and household. The data thus collected is entered as tables in microsoft excel sheet and analyzed using version 23 of the statistical package for social sciences software packages (SPSS). All the categorical data like age, sex expressed as proportion. Chi-square test was done for categorical values to find out any statistical significance. Statistically ssignificant variables at (p value<0.05) were observed.

RESULTS

In this study, it was found that out of 364, 190 (52.2%) children were aged 2 to 5 years, 200 (54.9%) were female, 253 (69.5%) households were crowded and were having family size of >4 or more persons in single room. 171 (46.9%) children living in the rural areas were belonging to class 3 socio-economic status according to BG Prasad classification and 106 (29.1%) were from class 4.90 (24.7%) had birth weight less than average birth weight from (Table 1).

Table 1: Descriptive statistics (n=364).

Category	Class interval	No (%)
Age in years	<1	37 (10.2)
	1-2	137 (37.6)
	>2-5	190 (52.2)
Gender	Male	200 (54.9)
	Female	164 (45.1)
Family size	<4	18 (5)
	4-6	253 (69.5)
	>6	93 (25.5)
SES	Class 1	12 (3.5)
	Class 2	50 (13.7)
	Class 3	171 (46.9)
	Class 4	106 (29.1)
	Class 5	25 (6.8)
Birth weight	<2.5	90 (24.7)
	2.5 - 3.5	262 (71.9)
	>3.5	12 (3.3)
Weaning age in months	<6	57 (15.6)
	At 6	165 (45.3)
	>6 months	142 (39.1)
Total		n=364

The prevalence of undernutrition measured as underweight and stunting is described in Table 2. Among children less than 1 year of age, 38% were underweight and 54% were stunted. In majority female children are 41% underweight and 43% are stunted when compared to male children who are 27% underweight and 28% stunted.

The under-5 children belonged to lower socioeconomic class were significantly more likely to be underweight (40%) and stunted (42%) majority of the rural population belonging to the class 3 had prevalence of underweight and stunting highest i.e. (44.6%) and (47.2%). Families accommodating more than 6 members had higher prevalence of underweight which was 48.3% and also higher prevalence of stunting was found about 47.3%.

Children with high birth weight i.e. >3.5 kg were less likely to be underweight (16.7%) and stunted (16%) than low birth weight i.e. <2.5 kg [underweight (43%), stunting (45%)]. Under – 5 children living in the rural area, exclusive breastfeeding for ≥6 months have lower

prevalence of underweight i.e.28% and 33% were underweight and 36% and 18% were stunted at 6 months and more than 6 months of weaning age respectively. In comparison to the weaning age less than 6 months had higher prevalence of underweight as (47.3%) and stunting as (45.6%) among the under-5 children living in rural area of Hyderabad.

Table 2: Association of socio-economic, demographic and predictors of undernutrition in children with underweight and stunting – using Chi-square test for analysis.

Variable	Underweight n=121 (33%)		P value	Stunting n=127 (35)		P value
	Frequency	Percent		Frequency	Percent	
Age in years						
<1	14	38	*0.02	20	54	*0.03
1-2	34	25	X^2=7.0	43	31	X^2 = 6.8
>2-5	73	38	Df=2	64	34	Df =2
Gender						
Male	53	27	*0.002	56	28	*0.002
Female	68	41	X^2= 9.0 Df =1	71	43	X^2=9.2 Df=1
SES						
Class 1	1	0.8		2	1.5	
Class 2	13	10	*0.04	10	7.8	*0.05
Class 3	54	44.6	X^2=9.6	60	47.2	X^2=9.6
Class 4	40	33	Df=4	45	35.4	Df =4
Class 5	13	10		10	7.8	
Family size						
<4	3	16.7	*0.0008	3	16.7	*0.006
4-6	73	29	X^2= 14	80	31.6	X^2=10.13
>6	45	48.3	Df =1	44	47.3	Df=2
Birth weight						
<2.5	39	43.3	*0.03	41	45.5	*0.02
2.5 – 3.5	80	30.5	X^2=6.4	84	33	X^2=7.1
>3.5	2	16.7	Df =2	2	16	Df = 2
Weaning age						
<6 months	7	47.3	*0.03	58	45.6	*0.03
At 6 months	47	28.4	X^2=6.8	46	36.2	X^2=6.5
>6 months	47	33	Df = 2	23	18	Df = 2

*(p value<0.05) = Statistically significant

Present study found that, a total of 33% of under-5 children are underweight and total of 35 % are stunted from Figure 1 and Figure 2.

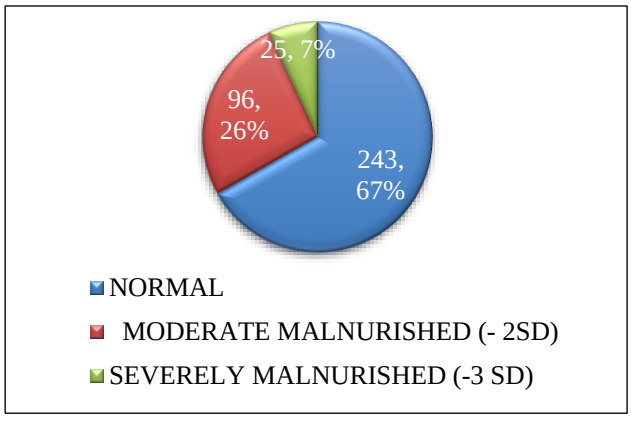

Figure 1: Showing prevalence of underweight.

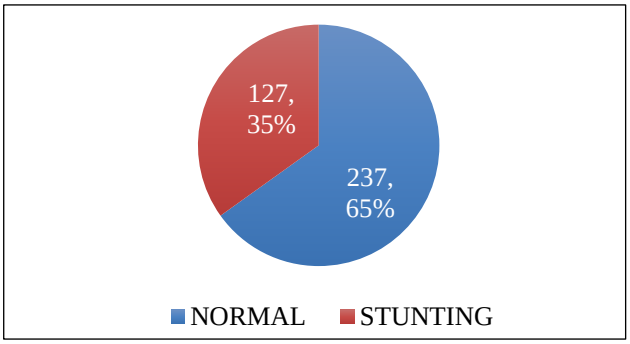

Figure 2: Showing prevalence of stunting.

DISCUSSION

This study is unique in providing information about undernutrition and its determinants at the community level in under-5 children living in the rural areas of Hyderabad. In the current study it was measured that the

total prevalence of underweight was 33% and found that prevalence of stunting as 35%, similar to the Nation level (National Family Health Survey-NFHS 5) data statistics.[4] In the similar study done by Gothankar et al to find out the prevalence in rural area of Maharashtra showed that among under-5 children 45.9% were stunted and 35.4% were underweight which is reflecting the similar prevalence as our study.[6]

Current study demonstrates undernutrition is linked to a number of sociodemographic determinants of the children in a household. Factors like gender of the child, birth weight of the child, family size, exclusive breastfeeding, age at weaning, mother's education and occupation, family income, socioeconomic class showed statistically significant association with underweight and stunting. In our study low socioeconomic status reflects the higher rate of prevalence of undernutrition. out of total 364 children, 171 (46.9%) children living in the rural areas were belonging to class 3 socio-economic status according to BG Prasad classification and 106 (29.1%) were from class 4 similar to a study done by Sarkar et al in Hyderabad.[6]

Most of the studies in Southeast Asia corroborate female children to be more prone to undernutrition than male children which is holds true in our study, as 41% female child were underweight and 43% were stunted which was similar background with a study done by Peter et al.[5]

Present study found that low birth weight which is less than the average birth weight i.e. <2.5 kg was shown more prevalence of underweight (43%) and stunting (45%). In one of the studies done among children in rural area of Kerala Sanghvi et al, showed similar results, where low maternal socioeconomic status is associated with a three-fold increase in the risk of low birthweight as compared to high socioeconomic status.[7]

Early weaning age, child being despaired of exclusive breastfeeding had adverse affect on under- 5 children nutrition strongly associated with underweight and stunting both; similar to a study by Ahsan et al done in the Tharparkar district area, a rural setting of Sindh.[8,10]

This study has few limitations. This study is done in a small area; it could have included a larger area and a more diverse set of participants. Children less than six months of age are not included in our study group. Other factors like dietary survey have not been taken in our study which could have given in depth understanding of quality and quantity of food affecting nutrition of an under-5 child.

CONCLUSION

Factors such as low socioeconomic status, large family size, low birth weight and early weaning age were identified as important determinants of malnutrition in this study and all contribute significantly to undernutrition. The practice of early weaning has led to poor nutritional status of children. The fact that these well-established determinants are still relevant should be cause for concern because it suggests that access to measures that have been used to combat malnutrition over time is ineffective or difficult. By synthesizing findings from related studies, researchers can develop a comprehensive understanding of malnutrition in this population and tailor interventions to meet their needs, specific needs of children living in rural Hyderabad. Implement enhanced education and communication programs on malnutrition with a focus on maternal education and access to health services such as POSHAN Abhiyaan - a flagship program of the Ministry of Women and Youth Development children of the Government of India will reduce stunting and underweight. Advice on using contraceptives, birth spacing, and appropriate prenatal care advice for mothers before giving birth to prevent low birth weight and premature babies. Improve economic growth-increase community participation, establish job training centres for people of low socioeconomic status so they can access nutritious food and health care.

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