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Research Article

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A Prevalence of Malnutrition and its Risk Factors Among Under-5 Children of an Urban Slum Area Under the Field Practice Area of Urban Health & Training Center of A Tertiary Care Hospital

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ABSTRACT

INTRODUCTION: Children under five years constitute the one of the most vulnerable group of a country. Their nutritional status and mortality rate is a sensitive indicator of community health services and nutritional status of that community. In developing countries, the nutritional status of children depends on socioeconomic status, immunization status, breastfeeding practices awareness of diseases such as diarrhea and acute respiratory tract infection, educational status of mother and availability of safe drinking water etc. **OBJECTIVES**: To study the prevalence of malnutrition among the under -5 children in an urban slum area under urban field practice area of tertiary care hospital &to study the various risk factors affecting malnutrition among them. **MATERIAL & METHODS**: A Community based descriptive Cross-Sectional Study was conducted on 175 Children under 5 years of age in a slum area under Urban field practice area of a tertiary care hospital during 1st November 2021 to 31st December 2021. Anthropometric measurements were taken using shakir's tapes and calibrated weighing machine. **RESULTS**: Present study shows that the overall prevalence of malnutrition is 63.99% in under-5 children out of which 26.28% study subject was moderately malnourished and majority i.e. 37.71% study subjects was severely malnourished. Out of various risk factors studied, age and socioeconomic status was found significant with p value of 0.04 and 0.003 respectively. **CONCLUSION**: Nearly one third of children were underweight (32%), half of the children were stunted (51.42%) & one fifth of children were wasted (16.57%). Thus chronic malnutrition was more prevalent in the urban slum area.

Key Words: *Malnutrition, under five children, risk factors, wasting, stunting*

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INTRODUCTION

Early childhood, that is the first five to six years constitutes the most crucial period in life, when the foundations are laid for cognitive, social and emotional language, physical/motor development and cumulative lifelong learning[1]. The United Nations Sustainable Development Goal 3 is dedicated to health, have specific goals towards improving maternal and child health which also includes focus on slum populations[2]. USAID stated in the India's health status indicators study that India ranks among the top 5 "at-risk" countries when calculating absolute numbers of maternal and child mortality. However, it also states that India has made some progress to improve those statistics [3-4].

Children under five years constitute the one of the most vulnerable group of a country. Their nutritional status and mortality rate is a sensitive indicator of community health services and nutritional status of that community. Globally more than half of the under-five deaths are related to under-nutrition[5]. At national level NFHS-4 data revealed the under-five mortality rates (U5MR) is 50 per 1000 live births, which includes 34 in urban and 56 in rural area[6-8].

In developing countries, the nutritional status of children depends on socioeconomic status, awareness of diseases such as diarrhea and acute respiratory tract infection, educational status of mother and availability of safe drinking water[9]. Undernourished children are prone to infections. Statistically underweight children succumb to various infectious diseases such as diarrhea, measles, and malaria and respiratory infections. Under-nutrition in young children has long-term negative effects on physical growth as well as cognitive development[10].

Despite India's growth in the economy, the child mortality rate due to under-nutrition is still high in both urban and rural areas. Hence assessment of nutritional status among the under five children is critical in framing health policies[8]. The majority of previous studies on under-nutrition or malnutrition were carried out either in the rural area or in the urban area, while few earlier studies focus only on chronic under-nutrition i.e. stunting. With above references present study was conducted to determine prevalence of malnutrition and its risk factors among under -5 children of an urban slum area.

OBJECTIVES

- To study the prevalence of malnutrition among the under -5 children in an urban slum under urban field practice area of urban health & training center of a tertiary care hospital.
- To study the various risk factors affecting malnutrition among them.

MATERIAL & METHODS

A Community based descriptive Cross-Sectional Study was conducted on 175 Children under 5 years of age in a slum area under Urban Health & training center of a tertiary care hospital during 1st November 2021 to 31st December 2021.

Sampling method: Simple random sampling method

From 9 Anganwadi centers in the urban slum area, number of under 5 children were noted first and then by PPP (Proportion Population probability) method, required number of children for sample was taken by simple random sampling. The selected children's houses were visited and the data was collected through interview of mother or care taker of the children using structured questionnaire. Written informed consent was obtained from of mother or care taker of the children in their local language. Institutional Ethical committee permission was taken before conducting study.

Study tools:

Anthropometric measurements were taken using shakir's tapes and calibrated weighing machine. Prevalence of malnutrition was based on WHO child growth standards 2006 generated for boys and girls aged 0 to 60 months separately, Z score curves (height for age, weight for age and weight for height). Data compilation and its analysis were done using Microsoft excel sheet, WHO Anthro Plus App and appropriate statistical test.

Sample size:

Sample size was calculated using formula, $n = 4pq/L^2$ where, p=Prevalence of malnutrition, q= 1-p, L= Absolute error, n=Sample size, p=30%**[11]**, q=(1-p)=70%, At 95% confidence interval Z (constant) =1.96 =2 and L=Absolute error=7%

So, sample size came out was approximate 175.

Inclusion criteria:

Children under 5 years of age and those children whose parent gave the informed verbal consent were included in the study.

Exclusion criteria:

1. Those who were not present at the time of visit were excluded from the study.
2. Children having cerebral palsy, congenital malformation or any chronic morbidity or serious illness were excluded from the study.
3. Those families not willing to participate in the study.

RESULTS

Out of total 175 study subjects, 109 (62.28%) were males and 66 (37.72%) were females. Majority of study subjects i.e. 66 (37.71%) belongs to 13 -24 months of age groups with Mean age ±SD in months was 29.12 ±14.56 for boys and 26.51 ±13.57 for girls. Most of them were Muslims 75 (42.85%) followed by buddha 62(35.42%). Most of the mothers of study subjects 104 (59.42%) were educated up to SSC .Most of the children were from SES Class IV and V as 88 (52%). 135 (77.14%) children were fully immunized, only 9 (5.15%) children was non-immunized. 105 children (60%) were living in semi pucca house. About 146 (83.42%) study subjects was exclusively breast feed. Majority i.e. 157(89.72) study subjects was from nuclear family. (Table 1 & 2)

Table 1: Distribution of study subjects according to their Socio-demographic Characteristics (N=175)

Variables	Characteristics	N=175(100%)
Gender of the child	Male	109 (62.28%)
	Female	66 (37.72%)
Age	0-12	21 (12.o2%)
	13-24	66 (37.71%)

	25-36	38 (21.71%)
	37-48	32 (18.28%)
	49-60	18 (10.28%)
Religion	Hindu	38 (21.73%)
	Muslim	75 (42.85%)
	Buddha	62 (35.42%)
Socioeconomic status	Class-1	3 (1.71%)
	Class-2	30 (17.14%)
	Class-3	54 (30.85%)
	Class-4	65 (37.14%)
	Class-5	23 (13.16%)
Exclusive Breast Feeding	Yes	146 (83.42%)
	No	29 (16.58%)
Birth weight in kg.	<2.5	67 (38.28%)
	≥2.5	108 (61.72%)
Mother's Education	Illiterate	18 (10.28)
	Primary School	17 (9.71%)
	S.S.C	104 (59.42)
	Graduate	36 (20.59%)
Father's Education	Illiterate	25 (14.28%)
	Primary School	10 (5.71%)
	S.S.C	104 (59.42%)
	Graduate	36 (20.59%)
Occupation of Mother	House Maker	168 (96%)
	Not Working	7 (4%)
Occupation of Father	Labour worker	158 (90.28%)
	Not working	17 (9.72%)
Immunization status	Fully immunized	135 (77.14%)
	Partially immunized	31 (17.71%)
	Non-immunized	9 (5.15%)
Type of House	Puccha	34 (19.42%)
	Semipuccha	105 (60.01%)
	Kaccha	36 (20.57%)
Type of Feeding	Liquid	19 (10.85%)
	Semisolid	156 (89.15%)
Type of Family	Nuclear Family	157(89.72)
	Joint Family	18(10.28)

Table 2: Distribution of study subjects according to Gender and Age group.

Age groups (months)	Male N(%)	Female N(%)	Total N(%)
0-12	15 (13.8)	6 (9.1)	21(12)
13-24	38 (34.9)	28(42.4)	66 (37.7)
25-36	18 (16.5)	20 (30.3)	38 (21.7)
37-38	26 (23.9)	6 (9.1)	32 (18.3)
49-60	11 (10.1)	7 (10.6)	18 (10.3)
Total	109 (100)	66 (100)	175 (100)
Mean ±SD	**29.12 ±14.56**	**26.51 ±13.57**	**28.14±14.25**

Present study shows that the overall prevalence of malnutrition is 63.99% in under 5 children out of which 26.28% study subject was moderately malnourished and majority i.e. 37.71% study subjects was severly malnourished. On different aspects of malnutrition, 32% were underweight, 51.43% were stunted and 16.57% were wastwd.(Fig.1)

Using mid upper arm circumference for classification of malnutrition, it is found that only 10 study subjects were malnourished out of 175, from which 7 was moderately malnourished and 3 was severely malnourished.(Fig.2)

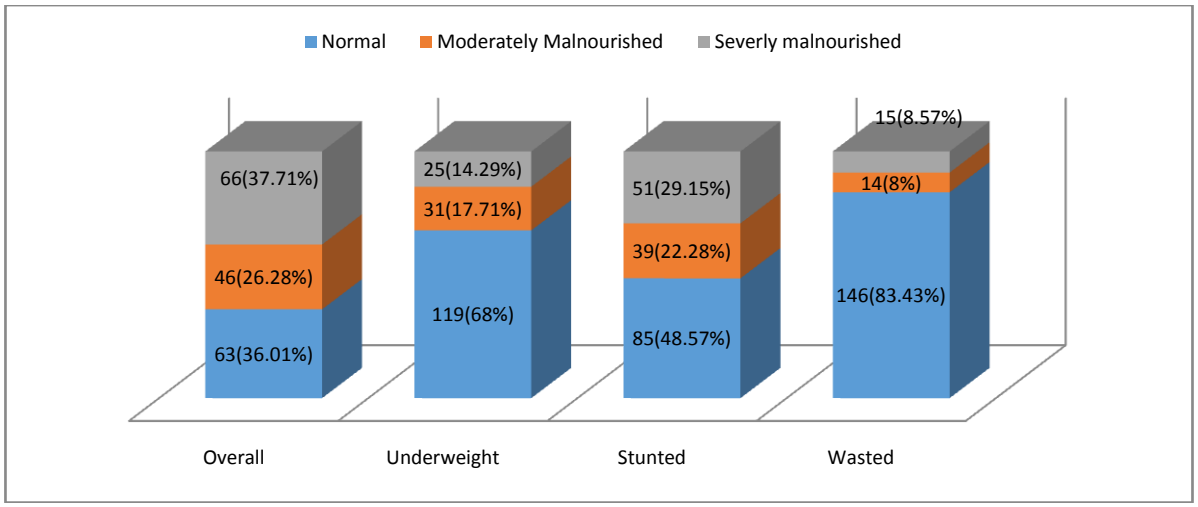

Fig.1 Distribution of the study subjects according to their malnutrition status (N=175)

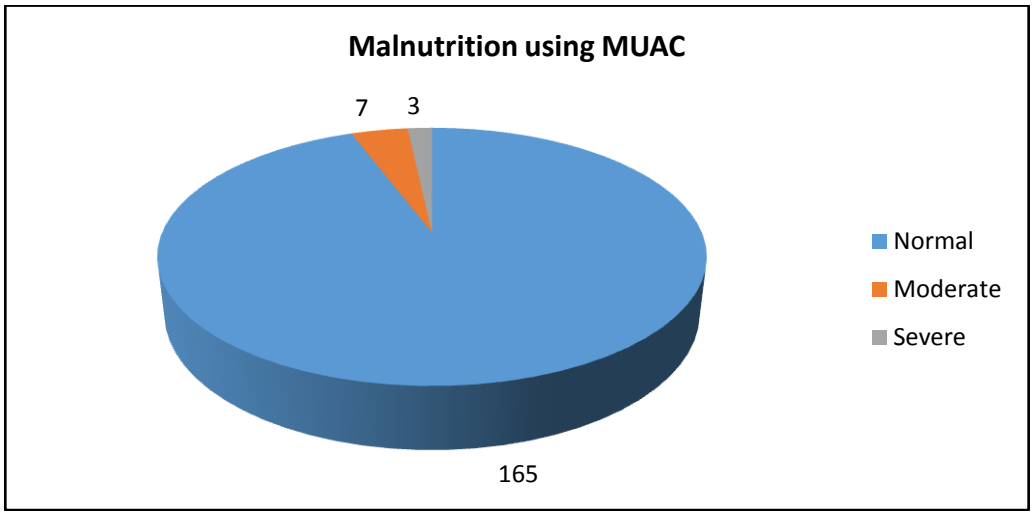

Fig.2 Distribution of malnutrition status of children by their MUAC (Mid Upper Arm Circumference)

Various risk factors studied was age in months, gender, birth weight, immunization status, mother's education socioeconomic status, exclusive breast feeding and religion. Out of which age and socioeconomic status was found significant with p value of 0.04 and 0.003 respectively.(Table 3)

Table 3: Association between risk factors and malnutrition

Risk factors	Category	Normal N(%)	Malnourished N (%)	X^2(Chi square value), df(degree of freedom), p(value of significance)
Age (months)	0-24	24(28.57)	60(71.42)	**X^2=3.8, df=1, p=0.04 (Significant)**
	25-60	39 (42.85)	52 (57.14)	
Gender	Male	40 (36.69)	69 (63.30)	**X^2=0.06,df=1, p=0.8**
	Female	23 (34.84)	43 (65.15)	
Birth weight	<2.5	20 (29.85)	47 (70.14)	**X^2=1.782, df=1, p=0.18**
	>2.5	43 (39.81)	65 (60.18)	
Immunization status	Fully immunized	53 39.25)	82 (60.74)	**X^2=2.7, df=1, p=0.09**
	Partially/Not immunized	10 (25)	30 (75)	
Mothers education	Illiterate	9 (50)	9 (50)	**X^2=1.707, dg=1, p=0.19**
	Literate	54 (34.39)	103(65.60)	
Socioeconomic status	Class I,II,III	31(35.63)	56 (64.36)	**X^2=0.01, df=1, p=0.003 (Significant)**
	Class IV,V	32 (36.36)	56 (63.63)	

Exclusive breast feeding	Yes	53 (36.30)	93 (63.69)	**X^2=0.03,df=1, p=0.8**
	No	10 (34.48)	19 (65.51)	
Religion	Hindu	15 (39.47)	23 (60.52)	**X^2=0.46, df=2, p=0.7**
	Muslim	25 (33.33)	50 (66.66)	
	Buddha	23 (37)	39 (62.90)	

DISCUSSION

Present study shows that the overall prevalence of malnutrition is 63.99% in under 5 children out of which 26.28% study subject was moderately malnourished and majority i.e. 37.71% study subjects was severly malnourished. Similar finding was found in study done by **Shreyaswi Sathyanath M et al**[12] that overall prevalence of under-nutrition in under-5 was at 63.16%. Also study of rural Bangalore by **Bobby Joseph et al**[13] among 256 rural children aged 12-60 months which found showed about 70% of the children were malnourished (wasting, stunting, or both).

In present study, on different aspects of malnutrition found that, 32% were underweight, 51.43% were stunted and 16.57% were wasted.(Fig.1) Slightly similar finding was shown in study done by **Chowdhury A et al**[4], stunting in 39.7% of the study population of which 29.5% were moderately stunted and 10.2% were severely stunted, whereas 34% of the children were underweight.

Various risk factors studied was, age in months, gender, birth weight, immunization status, mother's education, socioeconomic status, exclusive breast feeding and religion. Out of which age and socioeconomic status was found significant with p value of 0.04 and 0.003 respectively. Similar risk factors was studied in studies conducted by **Chowdhury A et al**[4] , **Popat CN et al**[11] **and Shreyaswi Sathyanath M et al**[12] and found important for malnutrition or under-nutrition in under-five children.

CONCLUSION

Majority of the children were males, fully immunized, of muslim community, of 13-24 months age group, living in semi pucca house belonging lower socio economic class. More than half of the study population had malnutrition and the risk factors associated with malnutrition were age of the children, SES, low birth weight, lack of exclusive breast feeding, immunization status of the child. Nearly one third of children were underweight (32%), half of the children were stunted(51.42%) & one fifth of children were wasted(16.57%). Thus chronic malnutrition was more prevalent in the urban slum area. Malnutrition is more prevalent in the form of stunting & underweight as compare to wasting. MUAC was not a sensitive indicator & detected only few children as malnourished.

RECOMMENDATION

Importance of exclusive breast feeding & proper weaning should be promoted by explaining to mother properly. Community awareness on proper nutrition, parental education & improved living conditions for reducing malnutrition among under5 children will help to decrease the prevalence of malnutrition. This study may be helpful for policy makers for planning various health services for under-5 children to prevent the malnutrition. This study suggest further research on various accepts of malnutrition and other risks factors.

LIMITATIONS

Study has all the limitations of the cross sectional study. A Cross sectional study can't establish cause and effect relationship between various socio-demographic factors and malnutrition. The study does not distinguish between types of malnutrition like acute or chronic in children. Study findings may not be generalized to the entire population.

CONFLICT OF INTEREST: None declared
SOURCE OF FUNDING: None
ETHICAL CONSIDERATIONS: Written informed consent was obtained from of mother or care taker of the children in their local language. Institutional Ethical committee permission was taken before conducting study.

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