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Original Research Article

Study on nutritional status among children up to five years at tertiary care hospital, HIMS, Sitapur, Uttar Pradesh

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ABSTRACT

Background: Undernutrition makes children in particular much more vulnerable to disease and death; around 45% of deaths among children up to 5 years of age are linked to undernutrition and these mostly occur in low and middle-income countries. Malnutrition increases health care costs, reduces productivity, and slows economic growth, which can perpetuate a cycle of poverty and ill-health. Objective of the study was to assess the prevalence of underweight (weight-for-age), sociodemographic profile and to determination of differences exist by gender.
Methods: The present study was hospital based descriptive cross-sectional study conducted from June 2019 to December 2019. The sample size calculated was 410, and accounting for 10% nonresponsive, the sample size calculated was 451. The data obtained were compiled and entered in MS-excel 2010 and analysed by using institutional SPSS (22.0).
Results: Male children 230 (51.0%) was observed higher proportion as compared to female children 221 (49.0%) and same preponderance difference was found among underweight children. Literate fathers belong to 332 (73.6%) children and illiterate fathers belong to 96 (53.0%) underweight children. literate mother belongs to highly significant 283 (62.8%) children and illiterate mothers belong to highly significant 105 (58.0%) underweight children. Majority of father occupation belongs to other type job 294 (65.2) whereas labour occupation mostly belongs to underweight children 109 (60.2%) highly significant and most of the housewives belong to normal children 361 (80.1%) and underweight children 119 (65.8%) highly significant.
Conclusions: Health education on nutrition to parents would be beneficiary for underweight children.

Keywords: Underweight, Undernutrition, Children, Mothers

INTRODUCTION

Children with low weight-for-age are known as underweight. Undernutrition makes children in particular much more vulnerable to disease and death; around 45% of deaths among children up to 5 years of age are linked to undernutrition and these mostly occur in low and middle-income countries. Poverty amplifies the risk of malnutrition, and people who are poor are more likely to be affected by different forms of malnutrition. Also, malnutrition increases health care costs, reduces productivity, and slows economic growth, which can perpetuate a cycle of poverty and ill-health. Unhealthy diet and poor nutrition are among the top risk factors for these diseases globally, every country in the world is affected by one or more forms of malnutrition and combating malnutrition in all its forms is one of the

greatest global health challenges. On 1 April 2016, the United Nations (UN) General assembly proclaimed 2016-2025 the United Nations decade of action on nutrition. The decade is an unprecedented opportunity for addressing all forms of malnutrition. It sets a concrete timeline for implementation of the commitments made at the second international conference on nutrition (ICN2) to meet a set of global nutrition targets and diet-related NCD targets by 2025. The developmental, economic, social, and medical impact of the global burden of malnutrition is serious and long lasting, for individuals and their families, for communities and for countries.

Objective

Objective of the current study was to assess the prevalence of underweight (weight-for-age), socio-demographic profile and to determination of differences exist by gender.

METHODS

The study was conducted among mothers having children between 0-5 years of age group in OPD hours at malnutrition clinic situated in Hind hospital. It consists of mainly village population from nearby talukas-blocks and most of the men are labors and female housewives. The present study was hospital based descriptive cross-sectional study conducted from June 2019 to December 2019. According to NFHS-4 underweight population up to 5 years age group was 39.5%, sampling unit was the children up to 5 years and sample size was calculated based on the universal formula;

$$n = z2pq/d^2$$

Where, z=1.96, (at 95% confidence levels), p=39.5 (prevalence of underweight), q(100-p)=60.5, absolute precision 'd' taken at 10%=3.9. The sample size calculated using the above formula was 410, and accounting for 10% nonresponsive, the sample size calculated was 451.2, therefore, sample size of the study was finalized to 451 children up to five years.

Ethical clearance was taken from the institutional ethical committee prior to the conduction of the study. To conduct this study, a structured questionnaire was developed, and all the questions were framed according to objectives of the study. Data were collected using systemic random sampling preformed questionnaire, which includes general information, sociodemographic factors and anthropometry measurement in which exclude those children whose parents were not willing to participate in study and those severely ill. Written informed consent was taken from parents or family head and age of children was confirmed either by parents stated or available records. An anthropometric measurement like weight was recorded with minimum clothes, using weighing machine. The index of nutritional status like 'weight for age' was compared with the WHO growth charts for particular age and sex. Mainly used under nutrition indicators was underweight used to evaluate the growth status of children. The data obtained were compiled and entered in MS-excel 2010 and analysed by using institutional SPSS (22.0) software for chi square statistical test, presented in percentages (%) and proportions form, 95% confidence level was used for the study and $p \leq 0.05$ was considered significant.

RESULTS

Total 451 children were enrolled in the study and the study period shown 40.1 prevalence of underweight. The data presented shows sociodemographic characteristics up to 5 years children (Table 1). Male and female children was reported 230 (51.0%) and 221 (49.0%) in which underweight 94 (51.9%) and 87 (48.1%) respectively in present study. Age group 1-3 years of underweight children 80 (44.2%) has higher proportion followed by 3-5 years 65 (35.9%) and <1 year 36 (19.9%). Underweight children 108 (59.7%) belong to the Hindu religion, underweight children 126 (69.6%) belong to others cast and underweight children 103 (56.9%) belong to a nuclear family. Underweight children 118 (65.2%) reside in kachcha house, parents had no agriculture land belong to underweight children 80 (44.2%) and family size >4 belong to underweight children 124 (68.5%). The majority of the family belongs to class IV 180 (39.9%) socioeconomic status according to modified B.G. Prasad classification including underweight 73 (40.3%) children. Literate fathers belong to 332 (73.6%) children and illiterate fathers belong to 96 (53.0%) underweight children beside literate mothers belong to 283 (62.8%) children and illiterate mothers belong to 105 (58.0%) underweight children. The majority of father occupation belongs to other types of job 294 (65.2) and labor occupation belongs to underweight children 109 (60.2%) whereas most of the housewives belong to normal children 361 (80.1%) and underweight children 119 (65.8%).

The gender-wise distribution of underweight (weight for age) up to 5 years children for sociodemographic characteristics is depicted in (Table 2). The majority of male 41 (43.6%) and female 176 (39.0%) children belong to age group 3-5 years and 1-3 years respectively. Female children 53 (60.9%) belong to the Hindu religion, male children 64 (78.1%) belong to others cast and female children 52 (59.8%) belong to a nuclear family. Female children 62 (71.3%) reside in kachcha house and parents had no agriculture land belong to 42 (48.3%) female children, family size >4 belong to 60 (69.0%) female children and male children 38 (40.4%) belong to class IV socioeconomic status. Illiterate fathers belong to 56 (59.6%) male children and illiterate mothers belong to 55 (63.2%) female children. Female children belong to laborer fathers 59 (67.8%) and housewives 65 (74.7%).

Table 1: Nutritional status of children as per sociodemographic characteristics.

Variable	Normal N (%)	Underweight (weight for age) N (%)	Total N (%)	Chi square test	P value
Gender					
Male	136 (50.4)	94 (51.9)	230 (51.0)	$\chi2=0.0526$ d.f.=1	0.8185
Female	134 (49.6)	87 (48.1)	221 (49.0)		
Age (years)					
<1	81 (30.0)	36 (19.9)	117 (25.9)	$\chi2=6.411$ d.f.=1	0.0405
1-3	96 (35.6)	80 (44.2)	176 (39.0)		
3-5	93 (34.4)	65 (35.9)	158 (35.0)		
Religion					
Hindu	165 (61.1)	108 (59.7)	273 (60.5)	$\chi2=0.0436$ d.f.=1	0.8345
Others	105 (38.9)	73 (40.3)	178 (39.5)		
Cast					
General	123 (45.6)	55 (30.4)	178 (39.5)	$\chi2=0.1755$ d.f.=1	0.6753
others	147 (54.6)	126 (69.6)	273 (60.5)		
Family type					
Joint	118 (43.7)	78 (43.1)	196 (43.4)	$\chi2=0.0009$ d.f.=1	0.9751
Nuclear	152 (56.3)	103 (56.9)	255 (56.4)		
Type of house					
Kachcha	151 (55.9)	118 (65.2)	269 (59.6)	$\chi2=3.491$ d.f.=1	0.0617
Pucca	119 (44.1)	63 (34.8)	182 (40.4)		
Landowner (Bigha)					
Nil	106 (39.2)	80 (44.2)	186 (41.2)	$\chi2=1.131$ d.f.=2	0.5681
<5	97 (35.9)	61 (33.7)	158 (35.0)		
>5	67 (24.9)	40 (22.1)	107 (23.8)		
Family size					
4	101 (37.4)	57 (31.5)	158 (35.0)	$\chi2=1.416$ d.f.=1	0.2340
>4	169 (62.6)	124 (68.5)	293 (65.0)		
Socioeconomic status					
Class I	0	0	0		
Class II	54 (20.0)	36 (19.9)	90 (19.9)	$\chi2=0.0354$ d.f.=3	0.9982
Class III	69 (25.6)	45 (24.9)	114 (25.3)		
Class IV	107 (39.6)	73 (40.3)	180 (39.9)		
Class V	40 (14.8)	27 (14.9)	67 (14.9)		
Father education					
Illiterate	23 (8.5)	96 (53.0)	119 (26.4)	$\chi2=108.29$ d.f.=1	<0.0001
Literate	247 (91.5)	85 (47.0)	332 (73.6)		
Mother education					
Illiterate	63 (23.3)	105 (58.0)	168 (37.2)	$\chi2=54.274$ d.f.=1	<0.0001
Literate	207 (76.7)	76 (42.0)	283 (62.8)		
Father occupation					
Labour	48 (17.8)	109 (60.2)	157 (34.8)	$\chi2=84.158$ d.f.=1	<0.0001
others	222 (82.2)	72 (39.8)	294 (65.2)		
Mother occupation					
Working	28 (10.4)	62 (34.2)	90 (19.9)	$\chi2=37.216$ d.f.=1	<0.0001
Housewives	242 (89.6)	119 (65.8)	361 (80.1)		

DISCUSSION

The present study identifies certain sociodemographic factors that were observed in children with underweight compared to normal children. Male children were shown slight preponderance as compared to female children and same pattern was observed among underweight children. Underweight age group 1-3 years of children observed significant difference as compared to others age group, nearly three-fifth of underweight children belong to Hindu religion.

Table 2: Gender wise underweight (weight for age) children as per sociodemographic characteristics.

Variable	Male N (%)	Female N (%)	Total N (%)	Chi square test	P value
Age (years)					
<1	19 (20.2)	17 (19.5)	36 (19.9)	$\chi2$=6.096 d.f.=2	0.0475
1-3	34 (36.2)	46 (52.9)	80 (44.2)		
3-5	41 (43.6)	24 (27.6)	65 (35.9)		
Religion					
Hindu	55 (58.5)	53 (60.9)	108 (59.7)	$\chi2$=0.0381 d.f.=1	0.8584
Others	39 (41.5)	34 (39.1)	73 (40.3)		
Cast					
General	30 (31.9)	25 (28.7)	55 (30.4)	$\chi2$=0.9170 d.f.=1	0.7620
others	64 (78.1)	62 (71.3)	126 (69.6)		
Family type					
Joint	43 (45.7)	35 (40.2)	78 (43.1)	$\chi2$=0.3580 d.f.=1	0.5496
Nuclear	51 (54.3)	52 (59.8)	103 (56.9)		
Type of house					
Kachcha	56 (59.6)	62 (71.3)	118 (65.2)	$\chi2$=2.230 d.f.=1	0.1353
Pucca	38 (40.4)	25 (28.7)	63 (34.8)		
Landowner (Bigha)					
Nil	38 (40.4)	42 (48.3)	80 (44.2)	$\chi2$=2.499 d.f.=2	0.2939
<5	31 (33.0)	30 (34.5)	61 (33.7)		
>5	25 (26.6)	15 (17.2)	40 (22.1)		
Family size					
4	30 (31.9)	27 (31.0)	57 (31.5)	$\chi2$=.01623 d.f.=1	0.8986
>4	64 (68.1)	60 (69.0)	124 (68.5)		
Socioeconomic class as per modified B.G. Prasad classification					
Class I	00	00	00		
Class II	23 (24.5)	13 (14.9)	36 (19.9)	$\chi2$=3.168 d.f.=3	0.3664
Class III	21 (22.3)	24 (27.6)	45 (24.9)		
Class IV	38 (40.4)	35 (40.2)	73 (40.3)		
Class V	12 (12.8)	15 (17.3)	27 (14.9)		
Father education					
Illiterate	56 (59.6)	47 (54.0)	96 (53.0)	$\chi2$=0.3640 d.f.=1	0.5463
Literate	38 (40.4)	40 (46.0)	85 (47.0)		
Mother education					
Illiterate	50 (53.2)	55 (63.2)	105 (58.0)	$\chi2$=1.476 d.f.=1	0.2244
Literate	44 (46.8)	32 (36.8)	76 (42.0)		
Father occupation					
Labour	41 (43.6)	59 (67.8)	109 (60.2)	$\chi2$=9.745 d.f.=1	0.0018
others	53 (56.4)	28 (32.2)	72 (39.8)		
Mother occupation					
Working	40 (42.5)	22 (25.3)	62 (34.2)	$\chi2$=5.239 d.f.=1	0.0221
Housewife	54 (57.5)	65 (74.7)	119 (65.8)		

More than two-third underweight children belong to others cast, nearly three-fifth underweight children belong to a nuclear family, same results were reported by Shukla et al, Ansuya et al, Meshram et al, Gondikar et al, Vyas et al, Tubachi et al and reverse finding was observed in Gondikar et al study.[4-9] Nearly three-fifths of children reside in kachcha house whereas less than one third reside in kachcha house reported by Meshram II et al above two-fifths of parents had no agriculture land where same finding no agriculture land among 4397 (39.1%) parents reported by Meshram et al family size >4 belong to nearly two-third children whereas Meshram et al reported 7081 (62.9%).[6] Two-fifth of the family belongs to class IV socioeconomic status according to modified B.G. Prasad classification where similar finding reported by Tiwari et al Gondikar et al, Ebenezer et al study.[3,7,10] Nearly three fourth literate fathers belong to normal children where similar finding reported by Shukla et al, Vyas et al, Ebenezer et al and illiterate father belongs to more than half of underweight children observed highly significant

difference among education of fathers where similar finding detected in Meshram et al, Vyas et al study.[4,6,8,10] Above three-fifth of literate mothers belong to normal children and illiterate mothers belong to nearly three-fifths of underweight children observed highly significant difference among education of mothers where similar finding detected by Shukla et al, Meshram et al, Vyas et al, Ebenezer et al study.[4,6,8,10] Nearly two-third of father occupation belongs to other types of job and three-fifth of labor occupation belongs to underweight children whereas four-fifth of the housewives belong to normal children and nearly two-third to underweight children observed highly significant difference among a job of parents where similar finding reported by Vyas et al study.[8]

Limitation

Limitation of this hospital-based study was that the effect prevalence of undernutrition and effect of associated factors cannot be applied on up to 5-years of children, therefore, the community-based study needed for a more precise assessment.

CONCLUSION

The results of the study indicate that undernutrition is an important public health problem among children up to 5 years and, are associated with low socio-economic class, parental literacy and, job profile. Improvement in socio-economic class by income generating jobs and level of education can uplift status of family in society. Literate parents can easily introduce a new feeding practice which helps to improve the nutritional status of their children. Therefore, health education session on nutrition to parents would be beneficiary for underweight children.

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