



PREVALENCE OF UNDERWEIGHT AND ITS RISK FACTORS AMONGST UNDER-FIVE CHILDREN IN A RURAL AREA OF VARANASI DISTRICT IN UTTAR PRADESH, INDIA

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ABSTRACT

Globally more than half of the under-five deaths are attributable to undernutrition. Under-nutrition is a major cause in more than half of under-five deaths. A community-based cross-sectional observational study was done in the rural area of Todarpur Village of Varanasi district of Uttar Pradesh India, which is the field practice area of Rural Health Training Centre under the Department of Community Medicine, Heritage Institute of Medical Sciences. The study period was January-April 2018. The prevalence of underweight was lower in comparison to National and State-based prevalence. Most of the underweight children were infants, females, whose mother was illiterate and those who belong to lower socio-economic status and SCT/ST community. Therefore, this section of the society is the most vulnerable group for malnutrition and appropriate cost-effective strategies and intervention are needed to address the burden of malnutrition in this section of society.

KEYWORDS : Underweight, Prevalence, Risk factors

Introduction

The basic right to protective environment, good nutrition and basic health care can protect children from illness and promote growth and development. Around 7.6 million of under-five children were dying every year. Their nutritional status and mortality rate is a sensitive indicator of community health and nutrition. Globally more than half of the under-five deaths are attributable to under nutrition.¹ Undernutrition is a major cause in more than half of under-five deaths.²

In India, around 43% of under-five children were underweight according to the report of third national family health survey conducted during 2005 – 06. There was huge interstate variation i.e the range was from 19.7% in Sikkim to 60% in Madhya Pradesh.² Socio-demographic variables like age, gender, socio-economic status, maternal literacy status are associated with underweight.^{3,4} Nutritional status of preschool children is very important, since the foundation of healthy life is laid during that period. Malnutrition in early childhood has irreversible chronic sequelae as it impedes sensory-motor, cognitive, social and emotional development.⁵ In order to solve the problem of underweight, it is necessary to measure its burden and understand its risk factors. In this context the present study was conducted to determine the prevalence of underweight and its risk factors amongst under-five children in a rural area of Varanasi district in Uttar Pradesh, India,

Material and Methods

A community based cross-sectional observational study was done in the rural area of Todarpur Village of Varanasi district of Uttar Pradesh India, which is the field practice area of Rural Health Training Centre under the Department of Community Medicine, Heritage Institute of Medical Sciences. The Study period was January-April, 2018. A multistage sampling technique was followed. A list of sub-centres was prepared and one sub-centre was randomly selected. Then a list of village of the sub-centre Todarpur was prepared and one village, was randomly selected. The area was chosen because of better support. A total of 219 under-five children were incorporated in the study. From the Census 2011 data⁶, the population of under-five children in India is 10.7%, Hence in a village of population 1850, number of under-five children will be 198. Therefore the sample size would be 198 but a total of 200 under-five children were considered in the study. During the final survey and enumeration of the population, 8 babies were born and 11 immigrated which are also included in the study and total 219 children of under five years of age are selected finally. All under-five children were considered for the study after having informed consent from parents or caregivers. Study was conducted by house-

to-house visit in study area. Information of the individual and family was collected by pre-designed, pre-tested and semi-structured proforma. A pre-tested structured questionnaire was used to collect the data regarding age, sex, mother's education, socioeconomic status, caste.

The weight (in kg) of the children less than one year of age was measured using Infant weighing scale and the weight (in kg) of the children more than one year of age was measured using Bathroom weighing scale. The children were in minimal clothing and without footwear when measurements were taken. For grading WHO Growth standards (2006) of Malnutrition was used. The data was collected by the undergraduate medical students under the supervision of interns, postgraduates and faculty. Data was entered in the MS Excel 2007 and analysis was done in SPSS 16.0. Results were expressed in frequencies and Proportions. Chi-square test was used as the test of significance to find the difference in the distribution of underweight prevalence amongst the various socio-demographic variables. P value of < 0.05 was considered as statistically significant.

Ethical Consideration: The study was given ethical clearance from the Institution Ethical Review Committee. Parents/guardians of the children were informed about the study and invited to participate in the study. Informed verbal consent was obtained from the parents/guardians. Children identified with unhealthy conditions/diseases were examined and treated by the investigator under the guidance of Expert. Participants who required further management and follow up were referred to the higher centre.

Results

We found that more than half of the children enrolled were females (56.16%) compared to males (43.84%). Nearly one fourth of the children were infants (0-11 months) and one fourth were 4-5 year old. Majority of the Infants were females (78.9%). (Table-1) Prevalence of underweight amongst under-five children was found to be 31.5%. Based on WHO Growth Standards (2006) most of them were mild-moderate Underweight (<-2SD to ≥-3SD) (30.1%). Only three children were found to be severely underweight (< -3SD). (Table-2) Almost half of the children in 0-11 months (49.1%) and more than half of the children in 12-23 months (59.3%) were found underweight. Almost half of the females (43.9%) were found to be underweight whereas less than one-fifth of the males (15.6) were found underweight. Majority of the children belonging from SC community (62.9%) and ST community (76.9%) were found underweight. Majority of the children belonging to the poorest socio-economic class (Class V) (85% were underweight. More than

half of the children whose mothers were illiterate (51.2%) were found to be underweight. The difference in the distribution of the socio-demographic factors with the prevalence of underweight was found to be statistically highly significant. (Table-3)

Table 1: Age & sex wise distribution of the study population (n = 219)

Age (In months)	Male		Female		Total	
	No.	%	No.	%	No.	%
0 – 11	12	5.48	45	20.54	57	26.02
12 – 23	18	8.22	9	4.11	27	12.33
24 – 35	21	9.59	21	9.59	42	19.18
36 – 47	15	6.85	24	10.96	39	17.81
48 – 59	30	13.70	24	10.96	54	24.66
Total	96	43.84	123	56.16	219	100

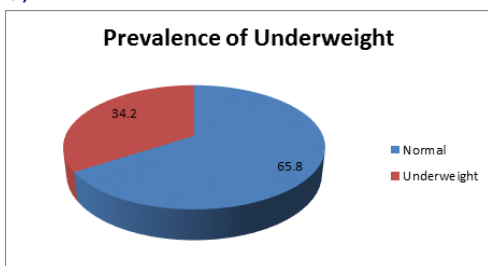
Table-2 Prevalence of Underweight among Under Five Children as per WHO growth standards (2006) (n = 219)

Prevalence of Underweight	Frequency	Percentage
Normal	150	68.5
Underweight	69	31.5
WHO Growth Standard (2006)		
Normal ($\geq -2SD$)	150	68.5
Underweight($< -2SD$ to $\geq -3SD$)	66	30.1
Severe Underweight ($< -3SD$)	3	1.4

Table-3 Prevalence of underweight amongst under-five children in relation to selected bio-social factors (n=219)

Variables	Sub category	Total children In sub-category	Underweight children	Chi-square test with p Value
Age (months)	0-11	57	28(49.1)	$\chi^2 = 15.00$ 0.005
	12-23	27	16(59.3)	
	24-35	42	10(23.8)	
	36-47	39	8(20.5)	
	48-59	54	17(31.5)	
Gender	Male	96	15(15.6)	$\chi^2 = 10.85$ 0.001
	Female	123	54(43.9)	
Caste	General	158	29(18.3)	$\chi^2 = 22.22$ 0.000
	SC	27	17(62.9)	
	ST	26	20(76.9)	
	OBC	8	3(37.5)	
SE Class	II	33	8(24.2)	$\chi^2 = 12.38$ 0.006
	III	87	19(21.8)	
	IV	79	25(31.6)	
	V	20	17(85.0)	
Mothers' Literacy Status	Illiterate	82	42(51.2)	$\chi^2 = 13.47$ 0.009
	Read and write	74	13(17.6)	
Status	Primary	35	5(14.3)	
	Secondary	15	5(33.3)	
	High school and above	13	4(30.8)	

Figure-1 Prevalence of Underweight in the study population (n=219)



Discussion

Underweight is the most widely used indicator for assessment of undernutrition. Under-nutrition is the most important single cause of illness and death globally, accounting for 12% of all deaths and 16% of disability-adjusted life years lost.⁷ Our study reported a prevalence of underweight of 31.5% amongst the under-five children. According to the NFHS-4 fact sheet the prevalence of underweight amongst under-five children for the year 2015-2016 is 35.7% for India and 39.5% for Uttar Pradesh.^{8,9} Levels of malnutrition vary widely across Indian states. Punjab, Kerala, Jammu & Kashmir, and Tamil Nadu account for the lower proportions of underweight children (22.9- 29%); whereas Sikkim, Manipur, and Nagaland report lowest proportions (19.7-22.1%). Bihar, Chhattisgarh, Jharkhand, and Madhya Pradesh, Uttar Pradesh report the maximum proportion (47-60%) of underweight children.¹⁰

In our study, the prevalence of underweight was higher among the infants and 1-2 years age group compared to other age groups. Females were more underweight than males. Our findings are in line with a study from Tamil Nadu.⁵ However a study from West Bengal didn't found any role of gender.¹¹ As, per the reports of NFHS-4 of India and Uttar Pradesh role of gender is absent or minimal. However the level of education of mother and socio-economic status strongly influences the development of underweight amongst the under-five children.^{12,13} Children of mothers who were illiterate or were able to read and write only were found to be underweight. Again this finding was in line with study from Tamil Nadu.⁵ Majority of the children belonging to lowest socio-economic status (Class V) were mostly underweight compared to children from higher SE class who were better nourished. This association between nutritional status of children and socioeconomic status was similar to the findings of previous studies.^{5,14} Majority of the children coming from SC and ST communities were found to be underweight. The study from Tamil Nadu differs from our study with respect to caste-based differences observed.⁵ We recommend conducting higher level studies with large sample size in the future.

Conclusion

In conclusion, the prevalence of underweight was lower to National and state-based prevalence. Most of the underweight children were infants, females, whose mother was illiterate and those who belong to lower socio-economic status and SCT/ST community. Therefore, this section of the society is the most vulnerable group for malnutrition and appropriate cost-effective strategies and intervention are needed to address the burden of malnutrition in this section of society.

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