



PREVALENCE OF UNDER-NUTRITION AMONG CHILDREN AND ITS ASSOCIATION WITH EDUCATIONAL AND OCCUPATIONAL STATUS OF MOTHERS IN AN URBAN AREA OF HARYANA.

Community Medicine

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ABSTRACT

Background: Undernutrition refers to a pathological state resulting from a relative or absolute deficiency of one or more essential nutrients. The term undernutrition encompasses wasting, stunting and underweight. As per National Family Health Survey IV (2015-16), prevalence of stunting, wasting and underweight among under-five children in India is 38.4%, 21% and 35.7% respectively.

Methods: This cross-sectional study was conducted in an urban area of district Rohtak from July 2016 to June 2017 among 400 children (1-5 years of age) which were randomly selected from 14 anganwadi centers. The anthropometric measurement and nutritional status categorization among children was done using WHO guidelines.

Results: The prevalence of stunting, wasting and underweight to be 33.8%, 21.5% and 34.5% respectively. Undernutrition rates were found to be higher in children whose mothers were illiterate and working.

Conclusion: It was revealed in this study that the prevalence of undernutrition was unacceptably high among the children. Every endeavor should be made to combat the undernutrition in children through multi-sectoral and multipronged approach.

KEYWORDS

undernutrition, children, urban, nutrition

INTRODUCTION

Nutrition is defined as science of food and its relationship to health. It is concerned mainly with the part played by nutrients in body growth, development and maintenance.¹ Undernutrition refers to a pathological state resulting from a relative or absolute deficiency of one or more essential nutrients. Undernutrition signifies an imbalance between the supply of calories and the body's demand for them to ensure optimal growth and function.² The term undernutrition encompasses wasting, stunting and underweight. Wasting is inadequate weight for height and it reflects acute undernutrition. Stunting is inadequate height for age and it reflects chronic undernutrition. Underweight is inadequate weight for age and is a composite measure of stunting and wasting. It can result from either acute or chronic or both. Early childhood, that is the first 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.³

The United Nations Children Fund (UNICEF) conceptual framework of the determinants of child undernutrition defines the multifactorial causality of undernutrition. Nutritional status is influenced by three broad factors i.e. food, health and care. Food, health and care are affected by social, economic and political factors. The combination and relative importance of these factors differ from country to country.⁴ Globally, prevalence of underweight, stunting and wasting among under-five children is 14.4%, 22.9% and 7.7% respectively.^{5,6} One in every three malnourished children of the world lives in India.⁷ As per National Family Health Survey IV (2015-16), prevalence of stunting, wasting and underweight among under-five children in India is 38.4%, 21% and 35.7% respectively (corresponding to 48%, 19.8% and 42.5% respectively in NFHS III). In Haryana as per National Family Health Survey IV, 34%, 21.2%, 29.4% and 9% of children below five years suffer from stunting, wasting, underweight and severe wasting respectively (corresponding figure for NFHS III was 45.7%, 19.1%, 39.6% and 5% respectively).^{8,9}

AIM AND OBJECTIVES

To estimate the prevalence of undernutrition among children (1-5 years) using anthropometric measurements and to determine its association with educational and occupational status of mothers.

MATERIAL AND METHODS

STUDY AREA:

This study was carried out in urban field practice area of the Department of Community Medicine, Pt. B.D Sharma PGIMS, Rohtak. A total of 14 anganwadi centers were there under this area.

STUDY DESIGN: descriptive study of cross-sectional design.

STUDY PERIOD: July 2016 to June 2017.

STUDY POPULATION:

The study population consisted of children 1-5 years of age, registered at respective anganwadi centers and residing in the study area for more than six months, along with their mothers.

SAMPLE SIZE DETERMINATION:

In Haryana, the prevalence of underweight among under-five children was 29.4% (NFHS-4)²⁹. The optimal sample size was 398 on the basis of 30% prevalence (approximate) of underweight children using the following formula, $n = (1.96)^2 p(1-p) / d^2$, where n = sample size, p = prevalence, d = allowable error i.e. 15% of p . [$n = (1.96)^2 * 0.3 * 0.7 / 0.045^2$]. For the purpose of the study, a sample size of 400 subjects was taken.

EXCLUSION CRITERIA:

1. Those children whose mothers were not willing to give consent.
2. Children with known congenital anomalies.
3. If the subject could not be contacted on three consecutive visits.

SAMPLING TECHNIQUE:

The total population of the study area, as per household survey conducted by MPH with assistance of anganwadi workers, was 25077 (as on March 2015). A total of 14 anganwadi centers come under the area being served by the 3 Urban Health Posts. All the 14 anganwadi centers were selected for the study. From each selected anganwadi center, a list of 1-5 years of age children was prepared using anganwadi registers and 25 to 30 children were picked up from each anganwadi center, by simple random sampling (SRS) technique, to make a sample size of 400.

DATA COLLECTION

A pre-designed, pre-tested and semi-structured interview schedule was used to collect information from the child's mother after taking informed consent. Weight of the children was measured by Salter's weighing scale with minimum clothing and without shoes. Height of the children was measured with the help of a non-flexible measuring tape, by making the child, after removing the shoes to stand on a flat surface with feet parallel and with heels, buttocks, shoulders and back of head touching the wall. The head was placed in Frankfurt's horizontal plane with arms hanging at sides in natural manner. The children were classified according to their nutritional status using WHO Child Growth Standards.

UNDERNUTRITION INDICES:¹⁰

- **Underweight:** If Z-score of children for a given weight for age is

- less than -2 SD from median of the WHO Child Growth Standards.
- **Stunting:** If Z-score of children for a given height for age is less than -2 SD from median of the WHO Child Growth Standards.
- **Wasting:** If Z-score of children for a given weight for height is less than -2 SD from median of the WHO Child Growth Standards.
- **Moderate undernutrition:** If Z-score of children for a given weight for age or height for age or weight for height are in between -3 SD or below -2 SD of the median of the WHO Child Growth Standards.
- **Severe undernutrition:** If Z-score of children for a given weight for age or height for age or weight for height are below -3 SD of the median of the WHO Child Growth Standards.

DATAANALYSIS:

The data was entered in the MS EXCEL spread sheet, coded appropriately and cleansed for any possible typing error and then the data was analysed by chi-square statistical test using SPSS 20 (Statistical package for social sciences) software as per study objective. If the P value in Chi-square test was found <0.05 then the result was considered as significant.

RESULTS

The present study was carried out in urban field practice area of the Department of Community Medicine, Pt. B.D Sharma PGIMS, Rohtak and a total of 14 anganwadi centers are there under this area. All the 14 anganwadi centers were selected for the study. A sample size of 400 children were selected from these anganwadi centers using simple random sampling.

24% of the mothers were illiterate while 39% and 22.8% of mothers were having educational status of primary or middle school and high school or senior secondary respectively. 14.2% of mothers were graduate or higher educational status. Only 18.5% of mothers were working. (table 1)

Table 1: Distribution of children by mothers' educational and occupational status.

Characteristics	Frequency (N=400)	Percentage
Educational status of mother		
Illiterate	96	24.0
Primary or middle school	156	39.0
High school or senior secondary	91	22.8
Graduate or diploma or above	57	14.2
Occupation of mother		
Housewife	326	81.5
Working	74	18.5

The prevalence of stunting was found to be 33.8% (moderate stunting being 24.8% and severe wasting being 9.0%), prevalence of wasting was 21.5% (moderate wasting being 13.5% and severe wasting being 8.0%) and prevalence of underweight was 34.5% (moderate underweight being 25.3% and severe underweight being 9.2%). (Table 2)

Table 2: Prevalence of undernutrition among children using WHO child growth standards

Characteristics	Boys (N=235)	Girls (N=165)	Total (N=400)	
	Frequency (%)	Frequency (%)	Frequency (%)	
Height for age				$\chi^2 = 0.005$ df= 2 p=0.997
No stunting	156 (66.4)	109 (66.1)	265 (66.2)	
Moderate stunting	58 (24.7)	41 (24.8)	99 (24.8)	
Severe stunting	21 (8.9)	15 (9.1)	36 (9.0)	
Weight for height				$\chi^2 = 0.049$ df= 2 p = 0.976
No wasting	185 (78.7)	129 (78.2)	314 (78.5)	
Moderate wasting	31 (13.2)	23 (13.9)	54 (13.5)	
Severe wasting	19 (8.1)	13 (7.9)	32 (8.0)	
Weight for age				$\chi^2 = 1.577$ df= 2 p = 0.454
No underweight	159 (67.6)	103 (62.4)	262 (65.5)	
Moderate underweight	54 (23.0)	47 (28.5)	101 (25.3)	
Severe underweight	22 (9.4)	15 (9.1)	37 (9.2)	

The prevalence of stunting, wasting and underweight among children was found to be higher who had illiterate mothers (41.6%, 28.1% and

52.1% respectively) and lowest in mothers having graduate degree or above (21.1%, 10.5% and 21.1% respectively). This distribution was found to be statistically significant. (Table 3)

Table 3: Association between nutritional status of children and education of mother

	No Stunting (n=265)	Moderate (n=99)	Severe (n=36)	
Illiterate (n=96)	56 (58.4)	25 (26.0)	15 (15.6)	$\chi^2=15.680$ df = 6 p = 0.016
Primary/middle (n=156)	101 (64.7)	47 (30.2)	8 (5.1)	
High/Sr. Sec. (n=91)	63 (69.2)	18 (19.8)	10 (11.0)	
Grad./dip./above (n=57)	45 (78.9)	9 (15.8)	3 (5.3)	
	No wasting (n=314)	Moderate (n=54)	Severe (n=32)	
Illiterate (n=96)	69 (71.9)	13 (13.5)	14 (14.6)	$\chi^2 =15.084$ df = 6 p = 0.020
Primary/middle (n=156)	125 (80.2)	25 (16.0)	6 (3.8)	
High/Sr.Sec. (n=91)	69 (75.8)	12 (13.2)	10 (11.0)	
Grad./dip./ above (n=57)	51 (89.5)	4 (7.0)	2 (3.5)	
	No underweight (n=262)	Moderate (n=101)	Severe (n=37)	
Illiterate (n=96)	46 (47.9)	34 (35.4)	16 (16.7)	$\chi^2 =26.903$ df = 6 p = 0.000
Primary/ middle (n=156)	104 (66.7)	44 (28.2)	8 (5.1)	
High/ Sr.Sec. (n=91)	67 (73.6)	14 (15.4)	10 (11.0)	
Grad./dip./ above(n=57)	45 (78.9)	9 (15.8)	3 (5.3)	

The prevalence of stunting, wasting and underweight was found to be higher in children of working mothers (40.5%, 24.3%, 39.2% respectively) as compared to children whose mothers were housewives (32.2%, 20.9% and 33.4% respectively) but this difference was not found to be statistically significant. (Table 4)

Table 4: Association between nutritional status of children and occupation of mother

	No Stunting (n=265)	Moderate (n=99)	Severe (n=36)	
Housewife (n=326)	221 (67.8)	77 (23.6)	28 (8.6)	$\chi^2 = 1.873$ df = 2 p = 0.392
Working (n=74)	44 (59.5)	22 (29.7)	8 (10.8)	
	No wasting (n=314)	Moderate (n=54)	Severe (n=32)	
Housewife (n=326)	258 (79.1)	43 (13.2)	25 (7.7)	$\chi^2 = 0.459$ df = 2 p = 0.795
Working (n=74)	56 (75.7)	11 (14.9)	7 (9.4)	
	No underweight (n=262)	Moderate (n=101)	Severe (n=37)	
Housewife (n=326)	217 (66.6)	80 (24.5)	29 (8.9)	$\chi^2 = 0.896$ df = 2 p = 0.639
Working (n=74)	45 (60.8)	21 (28.4)	8 (10.8)	

DISCUSSION

Prevalence of stunting in the present study was found to be 33.8% which was comparable with the studies of NFHS-4 (2015-16, Haryana)⁹ (33.4%) and DLHS-4 (2012-13, Haryana)¹¹ (31.8%). The prevalence of wasting was found to be 21.5%. Similar findings were observed in NFHS-4 (2015-16, Haryana)⁹ (21.0%) but prevalence of wasting was found higher in DLHS-4 (2012-13, Haryana)¹¹ (30.3%). Prevalence of underweight was found to be 34.5% which was similar as found in DLHS-4 (2012-13, Haryana)¹¹ (32.9%) but was higher as compared in NFHS-4 (2015-16, Haryana)⁹ (28.5%).

Prevalence of stunting, wasting and underweight was found to be highest among children whose mothers were illiterate (41.6%, 28.1% and 52.1% respectively). The higher education of mothers increased their awareness about the nutritional needs of children and enhanced their capability to adequately look after their nutritional and health

needs. Similar results were reported in the studies of **Yadav et al (2016, Haryana)**¹², **Purohit et al (2017, Maharashtra)**¹³ and **Pant et al (2013, Uttar Pradesh)**¹⁴. Prevalence of stunting, wasting and underweight was found to be higher in children of working mothers (40.5%, 24.3%, 39.2% respectively). The study conducted by **Meshram et al (2016, Gujarat)**¹⁵ and **Damor et al (2013, Gujarat)**¹⁶ showed similar findings in which, prevalence of undernutrition was higher in the children of working mothers (57.8%). This might be due to lack of time for adequate care and feeding practices among working mothers.

Limitation:

In the present study, children aged 1-5 years were included to improve the participation of study subjects and reduce non-response rate, as participation of recently delivered mothers including infants in the study was difficult.

CONCLUSION AND RECOMMENDATION

It was revealed in this study that the prevalence of undernutrition was unacceptably high among the children. Every endeavor should be made to combat the undernutrition in children through multi-sectoral and multipronged approach. Nutritional education among mothers is the need of the hour and it should be an integral component of the job functions of peripheral health workers for implementing all nutritional programmes. Anganwadi workers, community based organizations and volunteer groups can help organize the regular meeting of these mothers in order to address the issues regarding the food consumption patterns including proper child rearing practices. Importance of providing adequate protein and energy dense food should be stressed among the mothers and use of non-expensive, culturally acceptable nutritious recipes should be promoted and demonstrated. Mother should be encouraged to participate in growth monitoring of their children by regular weighing and plotting the weight on growth charts, so that the growth faltering can be detected at an earliest, so that necessary timely interventions can be taken to prevent the development of moderate and severe undernutrition.

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