Original Research Article

To Assess the Prevalence of Underweight and Its Determinant Factors among the Children Aged 6-23 Months in an Urban Catchment Area of a Tertiary Care Hospital

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ABSTRACT

Objective: To assess the prevalence of underweight and its determinant factors among the children aged 6-23 months in a urban catchment areas of a tertiary care hospital.

Methods: This was a community based cross sectional study conducted in an urban setting. Study was conducted by door to door visit through enlisting the children in the age group 6-23 months. Mothers of the children were interviewed, and physical examination and hemoglobin estimation were carried out on study subjects. Data collected was recorded on the pre-designed proforma which included information on socio-demographic, birth profile and breast feeding practices.

Results: About one third of the children were between 12-17 months (37.1%). More than half (54.4%) of the children were males and majority (71.1%) belonged to nuclear family. The percentage of illiterate mothers was 42.2% and majority was housewives (91.1%). There was no significant (p>0.05) association between age and prevalence of underweight. The prevalence of underweight was significantly (p=0.002) higher among males (41.6%) compared to female (27.8%) children. The multivariate analysis revealed that gender, type of family, education of mother, exclusive breast feeding and pre-lacteal feeding were the significant factors associated with the prevalence of underweight.

Conclusion: The prevalence of underweight in this study was almost similar as reported in other studies. Thus, efforts should be made to improve the antenatal care (ANC) services, emphasis on maternal nutrition and the importance of proper infant and young child feeding practices for reducing malnutrition among under-two children.

Key words: Prevalence, Underweight, Children.

INTRODUCTION

Children constitute the most vulnerable segment of any community. Their nutritional status is a sensitive indicator of community health and nutrition. Under-nutrition among them is one of the greatest public health problems in developing countries. Attempts to reduce child mortality in developing countries through selective primary health care have focused primarily on the prevention and control of specific infectious diseases, with less effort being directed to improving children's underlying nutritional status. [1]

Malnutrition continues to be a major public health problem in developing countries. It is the most important risk factor for the burden of disease causing about 300,000 deaths per year directly and indirectly responsible for more than half of all deaths in children. [2-5] Malnutrition at the early stages of life can lower child resistance to infections, increase child morbidity and mortality, and decrease mental development and cognitive achievement and nutritional status is the best global indicator of well-being in children. [6,7]

Global and Indian data exist to show that breast feeding promotes infant survival and growth, protects the infant against infections; the mother gets some protection from next pregnancy. However, globally and in India, women have not been able to take full advantage of this nature's gift. All National surveys (surveys done by National Nutrition Monitoring Bureau [8] National Family Health Surveys [9] and District level Household Surveys [10] have shown that in India, steps taken for the protection and promotion of breastfeeding from the nineteen seventies have been effective; breast feeding is universal and the mean duration of lactation is over two years. However, the message that exclusive breastfeeding up to six months and gradual introduction of semisolids from six months are critical for the growth and prevention of under nutrition in infancy has not been as effectively communicated. Exclusive breastfeeding among infants till the age group of 0-6 months continues to be low. In spite of all IEC efforts on the need for timely introduction of appropriate complementary food in adequate quantities, only about half of the children in the age group of 6-9 months, receive semisolid food.

Analysis of data from District Level Household survey regarding prevalence of under nutrition (weight for age WHO 2006 standards) [11] in relation to age provides useful insights on the effect of feeding and caring practices on under nutrition rates. Most women exclusively breast fed in the first three months. As a result, the prevalence of underweight in first three month is 30%. After 3 months, underweight rate rises due to early introduction of milk supplements and higher morbidity rates due to infections. Between 6 and 11 months, underweight rate further rises to 45% partly due to inadequate complementary feeding and partly due to increase in morbidity due to infections.

Knowing the importance of appropriate breastfeeding in infants on the overall nutrition, we want to achieve the gold standard of infant feeding; that is breastfeeding should be initiated within first hour of birth, exclusively breastfeeding for six months and providing appropriate complementary foods with continued breastfeeding for upto two years or beyond as per national guidelines on Infant Young Child Feeding. [12] If we achieve this, we can reduce infant mortality substantially and improve the quality of life for children and strengthen them against many other diseases that are likely to make them vulnerable to death and diseases.

The objective of this study was to assess the prevalence of underweight and its determinant factors among the children aged

6-23 months in a urban catchment areas of a tertiary care hospital.

MATERIALS AND METHODS
Study design:
This was a community based cross sectional study conducted in the field practice area of Department of Community Medicine & Public health of a tertiary care hospital where interns and residents of the department are posted as a part of their training programme to acquaint with the structure and functioning of Primary Health Centre.

Study Period:
The study was conducted over a period of one year.

Study Population:
The study was conducted in the urban catchment area of the Department which was varying in population size. All the wards of the catchment area were covered due to their diverse cultural practices; which reflected in the nutritional status and feeding practices of their children. The study units were all the children aged 6-23 months and every attempt was made to cover all the children of this age group in the area. The sample size calculation was based on the prevalence of underweight being 45%[11] with 80% power, 5% significance level and 95% confidence interval which yielded 425 children to be assessed. Thus, a total of 450 children were included in the study. The youngest child of the family was included in the study.

Study Instruments:
Mothers of the children were interviewed, and physical examination and hemoglobin estimation were carried out on study subjects. Data collected was recorded on the pre-designed proforma which included information on socio-demographic, birth profile and breast feeding practices.

Data collection:

Study was conducted by door to door visit through enlisting the children in the age group 6-23 months. If the house was locked, then it was inquired from the neighbors for the child of this age group in that house and further visits were made subsequently to look for the child in that particular house. After inquiry and greeting, the members of the family, the mother of the child was explained the-purpose of the visit and consent was taken to include the child in the study. Those who agreed to participate were included in this study.

Physical examination:
Anthropometric measurements such as weight and age was measured and analyzed for different nutritional indices as per WHO Child Growth Standards. [11]
The Z-score of weight for age was calculated using WHO Child Growth Standards 2006. [11] To classify underweight <-2SD of weight for age was considered.

Statistical analysis:
Data and information were coded and analysed using SPSS (Statistical Package for Social Sciences) software version 16.0 version. Categorical/dichotomous factors were compared using Chi-square test. The multivariate binary logistic regression analysis was used to find the significant factors associated with the prevalence of underweight. The p-value<0.05 was considered significant.

RESULTS
Table-1 shows the basic characteristics of the children. About one third of the children were between 12-17 months (37.1%) followed by 18-23 (25.8%), 9-11 (19.8%) and 6-8 (17.3%) months. More than half (54.4%) of the children were males and majority (71.1%) belonged to nuclear family. The percentage of illiterate mothers was 42.2% and majority was housewives (91.1%).

Table-2 presents the prevalence of underweight in association with basic characteristics of the children. There was no significant (p>0.05) association between age and prevalence of underweight. The prevalence of underweight was significantly (p=0.002) higher among males (41.6%) compared to female (27.8%) children. There was significant (p=0.0001) association between prevalence of underweight with type of family, education of mother, socio-economic status, birth interval, exclusive breast feeding and pre-lacteal feeding.

The multivariate analysis revealed that gender, type of family, education of mother, exclusive breast feeding and pre-lacteal feeding were the significant factors associated with the prevalence of underweight (Table-3).

Table-1: Basic characteristics of the children

Basic characteristics	No. (n=450)	%
Age in months		
6-8	78	17.3
9-11	89	19.8
12-17	167	37.1
18-23	116	25.8
Gender		
Male	245	54.4
Female	205	45.6
Type of family		
Nuclear	320	71.1
Joint	130	28.9
Education of mother		
Illiterate	190	42.2
Primary to middle	144	32.0
Secondary and senior secondary	90	20.0
Graduate & above	26	5.8
Occupation of mother		
Housewife	410	91.1
Employed	40	8.9
Socio-economic status*		
Upper	56	12.4
Upper middle	51	11.3
Lower middle	89	19.8
Upper lower	210	46.7
Lower	44	9.8
Birth order		
1	135	30.0
2	144	32.0
3	119	26.4
>3	52	11.6
Birth interval		
<2	121	26.9
2-5	198	44.0
>5	131	29.1
Birth weight		
LBW	65	14.4
Normal	156	34.7
Not known	229	50.9
Exclusive breast feeding		
Yes	29	6.4
No	421	93.6
Pre-lacteal feeding		
Yes	244	54.2
No	206	45.8

*Significant

Table-2: Prevalence of underweight in association with basic characteristics of the children

Basic characteristics	No. of children	Prevalence of underweight		p-value[1]
		No.	%	
Age in years				
6-8	78	24	30.8	0.17
9-11	89	36	40.4	
12-17	167	59	35.3	
18-23	116	50	43.1	
Total	450	169	37.6	
Gender				
Male	245	102	41.6	0.002*
Female	205	57	27.8	
Type of family				
Nuclear	320	97	30.3	0.0001*
Joint	130	72	55.4	
Education of mother				
Illiterate	190	99	52.1	0.0001*
Primary to middle	144	44	30.6	
Secondary and senior secondary	90	21	23.3	
Graduate & above	26	5	19.2	
Occupation of mother				
Housewife	410	152	37.1	0.49
Employed	40	17	42.5	
Socio-economic status*				
Upper	56	9	16.1	0.0001*
Upper middle	51	10	19.6	
Lower middle	89	29	32.6	
Upper lower	210	104	49.5	
Lower	44	17	38.6	
Birth order				
1	135	47	34.8	0.14
2	144	64	44.4	
3	119	51	42.9	
>3	52	7	13.5	
Birth interval in years				
<2	121	67	55.4	0.0001*
2-5	198	68	34.3	
>5	131	34	26.0	
Birth weight				
LBW	65	34	52.3	0.37
Normal	156	46	29.5	
Not known	229	89	38.9	
Exclusive breast feeding				
Yes	29	3	10.3	0.0001*
No	421	166	39.4	
Pre-lacteal feeding				
Yes	244	48	19.7	0.0001*
No	206	121	58.7	

[1]Chi-square test, *Significant

Table-3: Significant factors associated with the prevalence of underweight-Multivariate logistic regression.

Factors	Adjusted OR	95%CI	p-value
Gender			
Male	2.31	1.12-5.62	0.01*
Female	1.00 (Ref.)		
Type of family			
Nuclear	0.56	0.11-0.78	0.002*
Joint	1.00 (Ref.)		
Education of mother			
Illiterate	3.11	1.45-7.89	0.001*
Primary to middle	2.34	1.09-6.56	0.003*
Secondary and senior secondary	1.57	1.10-4.57	0.02*
Graduate & above	1.00 (Ref.)		
Exclusive breast feeding			
Yes	0.67	0.23-0.95	0.004*
No	1.00 (Ref.)		
Pre-lacteal feeding			
Yes	0.59	0.21-0.69	0.005*
No	1.00 (Ref.)		

OR-Odds ratio, CI-Confidence interval, *Significant

DISCUSSION

This paper presents data on the prevalence of underweight and its determinant factors with underweight among under two years old children in an urban area of India. An increasing trend of overweight and obesity in combination with a high prevalence of underweight is found to be common in many developing countries. [13]

The age and sex distribution of this study was consistent with national figures. In NFHS-III[9] the total children covered were 15067 in the 6-23 months age group. Out of which 53% and 47% were males and females respectively. 33.7% children were in 12-17 age groups. In this study, majority of the children belonged to nuclear family. More than one third of the mothers were illiterate and majority was housewives in this study. About half of the mothers did not know birth weight of their child and the percentage of low birth weight was 14.4% in the present study. In India, 28% children born are at low birth weight. [14]

In NFHS-3, [9] 24.5% children were breastfed within one hour of birth. 46.4% children were exclusively breastfed (last 24 hour period) and 57% children were given pre-lacteal liquids. Lahariya et al [15] found similar feeding practices in an urban slum of Gwalior where only 7.8% children were exclusively breast fed for 6 months and 63.8% children were given pre-lacteals. The percentage of feeding practices in the present study is almost similar to the above studies.

In the present study, the prevalence of underweight was 37.6 %. In NFHS-3, [9] the percentage of children under 3 years of age who were underweight was 40.4%. UNICEF [14] showed the prevalence of underweight being 43% in under 5 children. Kumar et al [16] found the proportion of underweight being 45.5%. In the present study, the prevalence of underweight was

maximum among the children of age 18-23 month. Rao et al [17] observed that the prevalence of malnutrition in children was maximum during 18 months and in those who are exclusively breastfed for less than 3.5 months.

Underweight was found to be more among males as compared to females and this was statistically significant in this study. Kapur et al [18] in their study found that 9.6% girls in 9-36 months of age had severe malnutrition as compared to 6.5% males. In NFHS-3, [9] percentage of male and female children who were underweight were 41 9% and 43.1% respectively. In the present study, the univariate analysis revealed that the education of mother, type of family and socio-economic status were significantly (p=0.0001) associated with the prevalence of underweight. There was no significant (p>0.05) association of birth order with the prevalence of underweight in this study. In NFHS-3, [9] the percentage of malnourished children increased with the increasing birth order. In this study, the lesser birth interval was responsible for prevalence of underweight. Mishra et al [19] observed in their study that birth order, age, type of family, number of living children, literacy status of mother and calorie intake were statistically significantly associated with grades of malnutrition. In the present study, the prevalence was lower among the children who had early breast feeding.

In the present study, the multivariate analysis revealed that gender, type of family, education of mother, exclusive breast feeding and pre-lacteal feeding were the significant factors associated with the prevalence of underweight.

CONCLUSION

The prevalence of underweight in this study was almost similar as reported in other studies. Thus, efforts should be made to improve the antenatal care (ANC)

services, emphasis on maternal nutrition and the importance of proper infant and young child feeding practices for reducing malnutrition among under-two children.

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