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Research Article

Study of Nutritional Status Among Under Five Children Attending Out Patient Department at A Primary Care Rural Hospital, Bareilly(UP)

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Abstract: The problems of malnutrition among under five children can be used to determine the need for nutritional surveillance, nutritional care, or appropriate nutritional intervention programmes in a community. The Objectives of the study were to study the stunting, wasting and underweight in under five children and to find out bio social characteristics associated with malnutrition. A hospital based cross-sectional study was carried out to assess prevalence of stunting, wasting, underweight among under-five children at the field practice area hospital of Rural health training centre (RHTC),DhauraTanda, dept. of Community Medicine, SRMS Institute of medical sciences, Bareilly UP. Data was collected by predesigned, pre-tested questionnaires from July 2013 to September 2013. Children detailed history, sex &weight were recorded and length/height was measured using standard technique. The length /height and weight were plotted on WHO centiles curves. The malnutrition was graded according to WHO classification. Data analysis was done by using WHO Anthro and Epi Info software. Total study subjects age group 0-5 yrs were 516. Total malnutrition cases were 394 with a prevalence of 76.36%. Here malnutrition was more common in males than females. Author observed that 53.86% children were underweight, 43.22% children were stunted and 60.67% were wasted. Malnutrition was more prevalent in 1-5 age group children and was found statistically significant. In conclusion, high percentage of malnutrition was found in under five rural male children. Generally percentage of malnutrition increases, as age increases among under five rural children.
Keywords: malnutrition, children, WHO, Bareilly

INTRODUCTION

Malnutrition among children below five years continues to be one of India's major human development challenges. In spite of tremendous economic progress made in the last two to three decades, malnutrition among children in both urban and rural India still claims many lives. However, mounting cases of malnutrition has caught the public eye and so healthcare providers as well as the government are taking the necessary steps to improve the current status of nutrition for children in India.

Malnutrition is a silent emergency [1]. It is frequently part of a vicious cycle that includes poverty and disease. These three factors are interlinked in such a way that each contributes to the presence and permanence of the others. Socioeconomic and political changes that improve health and nutrition can break the cycle; as can specific nutrition and health interventions. The health and social consequences of the current high prevalence of impaired child growth in developing countries are severe. The major outcomes of malnutrition during childhood may be classified in terms of morbidity, mortality, and psychological and intellectual development; there are also important consequences in adult life in terms of body size, work and reproductive performances, and risk of chronic diseases.

Several authors have examined the association between anthropometry and morbidity. The leading childhood diseases are diarrhea, respiratory infections, measles, tuberculosis etc. It is known that a child may get affected severaltimes in a year; the incidence increases with the aggravation of a state of malnutrition [2].

The three main indicators used to define under nutrition, i.e., underweight, stunting, and wasting, represent different histories of nutritional insult to the child. Occurring primarily in the first 2–3 years of life, linear growth retardation (stunting) is frequently associated with repeated exposure to adverse economic conditions, poor sanitation, and the interactive effects of poor energy and nutrient intakes and infection. Low weight-for-age indicates a history of poor health or nutritional insult to the child, including recurrent illness and/or starvation, while a low weight-for-height is an indicator of wasting (i.e., thinness) and is generally associated with recent illness and failure to gain weight or a loss of weight [3].

Deaths in children constitute more than 34% of total deaths in India [4]. Seven out of ten of these deaths are due to respiratory infections, diarrhoea and malnutrition. There is high under five morbidity and mortality in India [5]. Protein energy malnutrition is major contributory factor in majority of these childhood morbidities and mortalities. At present 65% under five children are under weight which includes 47% moderate and 18 % severe cases of malnutrition[6](UNICEF 2006 State of Worlds children).

Aims & Objectives

- To determine problems of malnutrition in under five children coming to the OPD at RHTC, DhauraTanda
- To find out the bio social characteristics associated with malnutrition.

METHODOLOGY

A hospital based cross sectional study was carried out in the field practice area of rural health training centre (RHTC),Dhaura Tanda, dept. of Community Medicine, SRMS Institute of medical sciences, Bareilly. Under five year children with a sample size of 516 was taken for study. It was a hospital based study conducted over a period of 2 months from July to September 2013.

Anthropometric measurements were carried out following standard methods. The data included weight, recumbent length (for children less than24 months of age) and height (for children morethan 24 months of age). Weight was measured to the nearest 0.1 Kg and Salter weighing machine was used for weight measurement. Height was measured against a non stretchable tape fixed toa vertical wall, with the participant standing on affirm/level surface and it was measured to the nearest 0.5 cm. Recumbent length (for children less than 24 months of age) was measured by using an infant measuring board. Socio-economic status (SES) - was determined by using Modified Prasad's scale [7].

Standard statistical method was used in the analysis of the data with use of MS Excel and Epi-Info software 3.4.3.p value were used to examine the relation between variables. Data of the nutritional survey were analyzed using WHO Anthro for personal computers, version 3.1, 2010 [8].

0-5 year's children were taken for under weight and stunting while 2-5 years children were taken for wasting in this study.

WHO classification was used for the assessment of malnutrition. Based on the age, body weight and height, a number of indices such as height-for-age, weight-for-age and weight-for-height have been suggested [9]. The children are classified using three categories: 'underweight' (low weight-for-age), 'stunting' (low height-for-age) or 'wasting' (low weight-for-height). Low anthropometric values are those more than 2 SD away from the CDC 2000 (Centers for Disease Control and Prevention) standards [9-11].

Underweight is defined as low weight-for-age and it reflects past (chronic) and present (acute) under nutrition. Children with z-scores < -2.00 are said to be underweight.

Stunting is defined as a low height-for-age for children, and it measures the past (chronic) child under nutrition. Children with z-scores <-2.00 are said to be stunted.

Wasting is defined as low weight-for-height for children, and it is a measure of current or acute under nutrition. Children with z-scores < - 2.00 are said to be wasted.

Inclusion criteria

Children under 5 years attending OPD

Exclusion criteria

Children who were too agitated & unwilling for anthropometric measurements were excluded from the study. Those who were very sick requiring emergency treatment were referred to emergency unit of SRMS IMS Bareilly.

RESULTS

Total malnutrition cases were 394 out of 516 patients aged 0-5 years. Hence, the hospital outpatient based, estimated occurrence of malnutrition was found 76.36% in the 0-5 year age group.

Table 1 shows age and gender distribution of study population. It was observed that out of total 516 children, 276(53.49%) were males maximum being in the age group 49-60 months i.e. (61.07%) and 240 (46.51%) were females maximum in the age group 0-12 months i.e. (51.72%). There were 87(16.86%) infants and 149(28.88%) children in the age group of 49-60 months.

Table 2 shows that 53.86% children were underweight, 43.22% children were stunted and 60.67% were wasted. Nearly 1% study subjects were overweight. Males were comparatively more malnourished than females.

As per table 3, a child either underweight, wasted or stunted or any combination of the three was considered as having malnutrition which comes to be 76.36 %. Malnutrition was prevalent in 216(54.82%) males and 178(45.18%) females. Age group wise prevalence of under nutrition was highest in 37-48 months age group (83.15 percent) and lowest in 0-12 month'sage group (62.07 percent). On comparing prevalence of under nutrition in 0-12 month age group with 13-60 month

age group (age groups merged to make 2 by 2 table), it was observed that former group had a better nutritional status as compared to later group. The difference was statistically significant ($\chi 2$ =11.83, df=1, p<0.001).

Modified B.G. Prasad's classification was used to classify the socioeconomic status. Majority of Children from the socioeconomic status IV and V were malnourished. Here association of socioeconomic class with malnutrition was not found statistically significant.

As per table 5, it was observed that percentage of under nutrition was higher among children having other illness (80.29 percent), followed by diarrhea (74.70percent), acute respiratory infection (72.26 percent) and measles (52.94 percent). The association was found significant when children with illness among malnourished were compared to children without malnourished. ($\chi 2$ = 8.95, df = 3, p< 0.05)

Table 1: Age & gender distribution of study population (n=516)

Age (months)	Males (%)	Females (%)	Total (%)
0-12months	42(48.28)	45(51.72)	87 (16.86)
13-24months	49(48.51)	52(51.49)	101 (19.57)
25-36months	45(50)	45(50)	90 (17.44)
37-48months	49(55.06)	40(44.94)	89 (17.23)
49-60months	91(61.07)	58(38.93)	149 (28.88)
Total	276(53.49)	240(46.51)	516(100.00)

Table 2: Percentage of underweight, stunting and wasting in study population

Percentile	Underweight 516 (%)			Stunting 516 (%)			Wasting 328 (%)		
	M	F	Total	M	F	Total	M	F	Total
>97	4 (0.78)	3 (0.58)	7 (1.36)	10 (1.94)	8 (1.55)	18 (3.5)	4 (0.78)	5 (0.97)	9 (2.74)
3-97	118 (22.87)	113 (21.90)	231 (44.77)	150 (29.07)	125 (24.22)	275 (53.3)	66 (12.79)	54 (10.47)	120 (36.59)
<3	154 (29.84)	124 (24.03)	278 (53.86)	116 (22.48)	107 (20.74)	223 (43.22)	115 (35.06)	84 (25.61)	199 (60.67)
Total	276 (53.54)	240 (46.51)	516	276 (53.49)	240 (46.51)	516	185 (56.40)	143 (43.60)	328

Table 3: Distribution of children according to Age and nutritional status (n=516)

Age (months)	Malnutrition (%)	Normal(%)	Total (%)
0-12months	54(62.07)	33(37.93)	87 (16.86)
13-24months	75(74.26)	26(25.74)	101 (19.57)
25-36months	74(82.22)	16(17.78)	90 (17.44)
37-48months	74(83.15)	15(16.85)	89 (17.23)
49-60months	117(78.52)	32(21.48)	149 (28.88)
Total	394(76.36)	122(23.64)	516(100.00)

($\chi 2$ =11.83, df=1, p<0.001).

Table 4: Socio economic status wise distribution of malnutrition among study subjects

Class	Malnourished (%)	Normal (%)	Total (%)
Class I (Upper)	3(50.00)	3(50.00)	6(1.16)
Class II (Upper Middle)	30(78.95)	8(21.05)	38(7.36)
Class III (Middle)	36(76.60)	11(23.40)	47(9.11)
Class IV (Lower Middle)	172(76.79)	52(23.21)	224(43.41)
Class V (Lower)	153(76.12)	48(23.88)	201(38.95)
Total	394(76.36)	122(23.64)	516(100.00)

(χ^2=2.48, df=4, p value=0.648)

Table 5: Association of major morbidities and Nutritional Status

Past Illness	Nutritional Status (%)		Total (%)
	Malnourished (%)	Normal (%)	
ARI	99(72.26)	38(27.74)	137(26.55)
Diarrhoea	62(74.70)	21(25.30)	83(16.09)
Measles	9(52.94)	8(47.06)	17(3.29)
Others	224(80.29)	55(19.71)	279(54.07))
Total	394(76.36)	122(23.64)	516(100.00)

(χ^2=8.95, df=3, p value=0.0299)

DISCUSSION

Protein calorie malnutrition is a widespread nutritional disease in developing countries [12]. As mentioned by Gupta *et al.* [13] preschool (under five) children are notoriously fraught with the risk of malnutrition and the prevalence of malnutrition varies between 50-80%.Majority of the children in our study were suffering from protein energy malnutrition. Alarger proportion of males were suffering from malnutrition as compared to females.

Out of 394 malnourished children 216 were males and178 were females. The percentage of malnutrition was significantly more in 1-5 year age group. Similar finding was observed by Gupta *et al.* [13]. Improper weaning, recurrent infections make this age group more vulnerable.

In our study prevalence of underweight, wasting and stunting was 53.86%, 60.67% and 43.22%respectively giving total prevalence of malnutrition to be 76.36%, which is higher than studies of Sengupta P [14] (74% stunted, 42% wasted and 29.5% underweight)and Rao VG [15] [underweight (61.6%), stunting(51.6%) and wasting (32.9%)]. Here higher prevalence of malnutrition in our study may be because of rural Muslims pre -dominance.

In our study association was found statistically significant between age and gender of the child with malnutrition ($p<0.05$), which is comparable with the study of Rao VG [15] and finding of study conducted by Sengupta P [14] that found association with both age and gender ($p<0.05$)

As per table No. 4 it was observed that prevalence of under-nutrition was higher among children from low income group as compared to higher income group, however the association was not found significant ($\chi 2 = 2.48$, df=4, $p>0.1$). Dhakal MM*et al.* [16], also mentioned the similar findings that burden of malnourishment still haunts the poor with 82.75% children from low income group i.e. IV & V by Prasad Scale.

CONCLUSION

Majority of under five children were malnourished (76.36%) and among them 53.86% children were underweight, 43.22% children were stunted and 60.67% were wasted. Here malnutrition was more common in males than females.

RECOMMENDATIONS

Reduction of malnutrition in 0-5 age group can be ensured by availability of supplementary feed. Healthcare providers to focus on health education among parents, especially the mothers on the exact nutritional requirements in terms of quality and quantity of the child at specific age groups.

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