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Original Research Article

Assessment of nutritional status and its association with feeding practices in children under five years

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ABSTRACT

Background: The level of child and maternal under nutrition remains unacceptable throughout the world. In India 48% of children are stunted, 20 per cent of children under five years of age suffer from wasting due to acute under nutrition.
Methods: The present study was a cross-sectional study conducted on 211 children from 6 months - 6 years of age. Data collection included socio-demographic characteristics, anthropometric measurements and assessment of infant and young child feeding practices.
Results: A total of 211 (128 females and 83 males) children were included in the study. The prevalence of underweight, stunting and wasting was observed to be 84 (39.81%), 99 (46.92%) and 47 (22.27%) respectively. Proportions of stunting and underweight was significantly more among children whose mothers reported inappropriate feeding practices as compared to their study counterparts.
Conclusions: Under nutrition of sizeable magnitude is prevalent in children less than six years; as revealed by results of the present study. Past and current Infant and young child feeding practices were found to be significantly associated with under nutrition.

Keywords: Anthropometry, Infant and young child feeding practices, Under nutrition

INTRODUCTION

The level of child and maternal under nutrition remains unacceptable throughout the world, with 90 per cent of the developing world's chronically undernourished (stunted) children living in Asia and Africa.[1] In India however, a significant improvement in the child malnutrition levels between NFHS-3 and the rapid survey on children (RSoC) is evident. The prevalence for stunting in under-five children has decreased from 48% to 38.7%; prevalence of underweight has declined from (42.5% to 29.4%) and wasting (from 19.8% to 15.1%).[2]

In spite of the decline, high prevalence levels of stunting among children under-five years in India remains a public health problem, one which often goes unrecognized.[1] There is a critical window of opportunity to prevent under nutrition by taking care of the nutrition of children in the first two years of life.

In India, since 1975; the centrally sponsored integrated child development services scheme (ICDS) has among its objectives "improvement of nutritional and health status of children in the age-group 0-6 years".[3] In spite of it being functional for more than 4 decades, sizeable under nutrition persists and latest statistics reveal that overall, only 21 percent of children age 6-23 months are fed according to all three IYCF recommended practices.[4]

Health education of caregivers on feeding and care practices and on the optimal use of locally available foods, is among the nutritional interventions through which marked reductions in child under nutrition can be achieved.[1,5] Assessment of feeding practices of infants

and young children reflect awareness, cultural and behavioral nuances of care-givers and may reflect potential target areas for planning health education interventions for improvement of nutritional status of children less than 6 years of age.

The present study aimed to assess the nutritional status of children in the age group of 6 months to 6 years and study its association with feeding practices in infants and young children.

The objective of present study was to assess the nutritional status of infants and children of age group 6 months to 6 years; in an urban slum, the field practice area of urban health training centre of a teaching institute in Hyderabad and explore the infant and young child feeding practices (IYCF) among primary care givers of children less than 6 years of age.

METHODS

The present study was a cross-sectional study. Prevalence of 15% under nutrition as estimated by a pilot study in age group under study was taken to calculate the sample size. Precision of test was 5% (allowable error d= 5%). Applying the formula Sample size n (n = 4pq/d2); the required sample size was estimated to be 204. Making an allowance of non-response rate of 4%, the study was conducted finally with sample size of 211.

Approval for the study was obtained from institutional review board. A list of children along with addresses in the age group under study was obtained. Mothers of children selected by systematic random sampling; who were willing to be part of the study were interviewed to obtain desired information. Information was obtained on selected socio demographic characteristics: age of children, religion, socio-economic status (SES), current feeding practices of infants and children were assessed using pretested questionnaires. The questions were constructed based on the standard IYCF module adjusted to the local context.

Anthropometric parameters (weight and height): Infants and children were weighed using standard electronic weighing scales precise to 10g. An infant meter, a portable rigid length board with a head and a sliding foot piece with precision of 0.1 cm, was used to measure supine length of infants and heights of older children were measured using standard techniques.

The weight and height measurements were converted into three summary indices of nutritional status: weight-for-age, height-for-age and weight-for-height.

According to WHO criterion based on percentiles, children who were below the 3rd percentile below the reference median on the basis of weight-for-age, height-for-age and weight-for height indices were considered respectively to be underweight, stunted and wasted.

Modified Prasad's BG classification adjusted with current income levels was used to determine socio-economic status (SES).[5]

Statistical analysis

Descriptive statistics; percentages were used to describe magnitude of under nutrition. Chi square-test was used to test the significance of difference between proportions and testing the association between different attributes.

RESULTS

In the present study; a total of 211 (128 females and 83 males) children from 6 months to 6 years of age; comprised the final participants. The overall mean age in months was observed to be 39.77 (±15.73). Study participants were mostly from low SES category. Mothers of 109 (51.65%) children were illiterate. Almost all 208 (28.58%) children were ICDS beneficiaries

Table 1: Age-wise classification of study participants.

Age in months	Stunted	Underweight	Wasted
>6- 12	2	2	0
13-24	21	21	9
25-36	22	21	14
37-48	29	23	14
49-60	19	13	8
61-72	6	4	2
Total	**99**	**84**	**47**

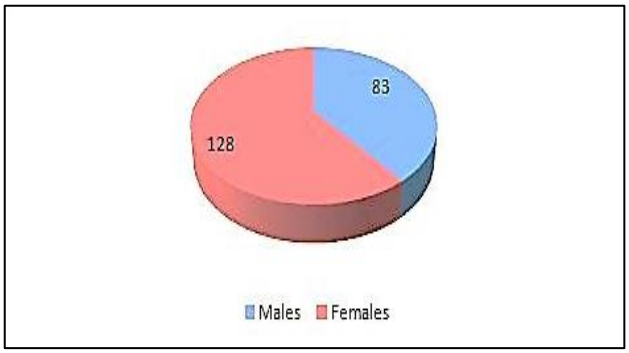

Figure 1: Gender distribution of study participants.

The prevalence of underweight was observed to be 84(39.81%), 99 (46.92%) participants were observed to be stunted and 47 (22.27%) participant children were observed to be wasted. Maximum prevalence of underweight (46.26%) was observed in the age group of 37-48 months; maximum prevalence of stunting (36.84%) was observed in the age group of 25-36 months. Underweight and stunting during infancy were observed to be 20% each respectively. Prevalence of stunting declined after 60 months.

Table 2 shows nutritional status of participant children according to certain socio demographic characteristics.

Under nutrition showed variations with age of children. More male underweight children (46.98%) were observed as compared to female participants (38.28%); conversely prevalence of stunting was more in female participants (46.09%) as compared to 42.07% male participants.

Under nutrition in terms of underweight and stunting was found to be significantly associated (P<0.05) with SES. The association between wasting and any of sociodemographic characteristics was not found to be significant. (P>0.10).

Proportions of stunting and underweight among children whose mothers reported appropriate feeding practices; [initiation of breastfeeding within six hours of birth (33.33% and 34.53%), children who were fed colostrum (38.38%, 29.76%), proper complementary feeding (28.28% and 27.38%)] were found to be significantly less (P<0.05) as compared to their respective counterparts whose mothers reported inappropriate feeding practices. None of the infant and young child feeding practice studied was significantly associated with wasting (P>0.10).

Infant and child feeding practices (IYCF)

Association of infant and young child feeding practices with the indices of nutritional status assessed in the present study i.e. stunting, wasting and underweight is detailed in Table 3.

Table 2: Nutritional status of participants according to socio demographic characteristics.

Age in months	N	Stunted	Under weight	Wasted
	No	**No (%)**	**No (%)**	**No (%)**
>6- 12	10	2 (20)	2 (20)	0 (0.00)
13-24	37	21 (56.76)	21 (56.76)	9 (24.32)
25-36	38	22 (57.89%)	21 (56.76)	14 (36.84)
37-48	67	29 (46.26)	23 (34.39)	14 (20.90)
49-60	42	19 (45.24)	13 (30.95)	8 (19.05)
61-72	17	6 (35.29)	4 (23.53)	2 (11.76)
		99 (46.92)	84 (39.81)	47 (22.27)
Mean Age±SD	39.77(±15.73)	28.61 (±9.22)	29.72 (9.77)	28.91 (8.63)
Gender				
Male	83	35 (42.17)	39 (46.98)	17 (20.48)
Female	128	64 (46.09)	49 (38.28)	30 (23.43)
SES				
Lower	112	54 (54.55)	31 (36.90)	28 (59.57)
Middle	99	45 (45.45)	53 (63.10)	19 (40.43)

Table 3: Infant feeding practices and nutritional status of children.

	Total	Stunted		Underweight		Wasted	
		No. (%)	**P-value**	**No. (%)**	**P-value**	**No. (%)**	**P-value**
Initiation of BF							
Within six hours	116 (54.98)	33 (33.33)		29 (34.53)		23 (48.94)	P = 0.45
After six hours	95 (45.02)	66 (66.67)	<0.001**	55 (65.47)	P = 0.001	24 (51.06)	
Colostrum feeding							
Yes	91 (25.32)	38 (38.38)		25 (29.76)		26 (55.32)	P = 0.12
No	120 (56.87)	61 (61.62)	<0.05*	59 (70.38)	P<0.05	21 (44.68)	
Appropriate complementary feeding							
Yes	84 (39.81)	28 (28.28)		23 (27.38)		22 (46.80)	P = 0.38
No	127 (60.19)	71 (71.72)	<0.05*	61 (44.68)	P<0.05	25 (53.19)	

*- Significant at 5 % CI; **- Significant at 1 % CI.

DISCUSSION

In the present study, prevalence of underweight, stunting and wasting in participant children from 6 months - 6 years as was observed to be 84 (39.81%), 99 (46.92%) and 47(22.27%) respectively. Prevalence is seen to increase from >12 months onward to peak at 36-48 months and decline after 5 years of age. The prevalence

of underweight and wasting observed in the present study are comparable with those of RsoC.[2] Pandve HT et al observed a prevalence of 119 (51.14%) of undernourishment, 67 (28.52%) children were wasted, and 116 (49.36%) children were stunted.[11] Kumar D et al reported prevalence of 36.4% underweight, 51.6% stunted, and 10.6% wasted in their study.[4]

In a similar study by Katepa-Bwalya M.[6] 25/594 (4.2%) were severely stunted, 10/596 (1.7%) severely underweight and 3/594 (0.5%) severely wasted which is lesser than that reported by other studies probably due to large proportion of infants (>50%) in their study. Other studies have observed maximum prevalence of malnutrition in children in different age groups.[7-10]

In the present study significant proportions of underweight and stunted more children were not observed during infancy, which may be attributed to near-optimal breast-feeding practices. Children of middle SES were observed to be underweight than those of lower SES where more children were found to be stunted. More boys were observed to be underweight but stunting was more common among girls as compared to boys. In the NFHS survey girls were found more likely than similarly boys to be underweight and stunted.[4]

In the present study, initiation of breastfeeding within six hours was seen in 33.33% and 34.53% of stunted children. Among stunted and underweight children 38.38% and 29.76% respectively were fed colostrum. Appropriate complementary feeding was reported by mothers of (28.28 and 27.28% of stunted and underweight children. Nutritional status indices i.e. stunting and underweight are found to be significantly associated with delay (>6 hours) in initiation of breastfeeding, deprivation from colostrum, and improper/inappropriate complementary feeding practices which is consistent with other studies.[7,8]

Katepa-Bwalya M in their study found that 50.5% of care-givers considered colostrum to be good.[4] Complementary feeds were introduced early before six months of age and were usually not of adequate quality and quantity which is consistent with the present study.

Findings of NFHS-3 state that only 23.5% of mothers initiated breastfeeding within the first hour after birth, 99.2% had ever breastfed their infant, 89.8% were currently breastfeeding, and 14.8% were currently bottle-feeding. Among infants; 56.7% of those aged 6 to 9 months received complementary foods.[4]

Infant and young child - feeding practices are not observed in the present study, to affect nutritional status index of weight-for-height. Associations of infant-and young child feeding practices significant with other nutritional status indices (underweight and stunting) are evident. Wasting implies recent weight loss due to severe acute infection or starvation/food deficit whereas stunting implies chronic malnutrition and ill health and wasting implies linear growth retardation.

Community based educational interventions have shown improvement in dietary intake and indices of chronic malnutrition (length).[12-14] Almost, all children in the present study are observed to ICDS programme beneficiaries. Impact of supplementary nutrition component on the nutritional status is not evident. In the present study probably community based health education interventions of primary care-givers located within ICDS setting can help in improvement of nutritional status of children under 6 years of age.

Limitations of the present study, it was a cross-sectional study and children who were not available at the time of interview or whose primary care givers did not give consent were not included in the study.

CONCLUSION

Under nutrition of sizeable magnitude is prevalent in children less than six years; as revealed by results of the present study. Past and current infant and young child feeding practices were found to be significantly associated with under nutrition. Targeted community based health education interventions involving future and current primary care giver of children less than 6 years of age are proved to improve nutritional status and should be utilised.

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