Malnutrition among under five children in the peri-urban area of Meerut city: Impact of socio-demographic factors

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ABSTRACT

An attempt was made to analyze social factors associated with malnutrition in children and to assess the prevalence of protein energy malnutrition in children 1 5 years of age. A Cross-sectional was carried out in service area of urban health training center of Department of Community Medicine, Subharti Medical College, Meerut periurban area of Meerut and 392 children of age group between 0-5 years from randomly selected families have been included and the study period was March 2011- June 2011. Data was entered in Microsoft excel and chi-square test was applied using SPSS-16 version. The prevalence of malnutrition among under five children 210 (53.57%) was found. Faulty feeding practices have a major role in initiation of malnutrition among under five children .

INTRODUCTION

The future of the society depends on the quality of life of the children. Nutritional needs change throughout life, depending on genetics, rate of growth, activity and many other factors. Nineteen per cent of world's children live in India. India is a home to more than one billion people, of which 42 per cent are children. The nutritional status of population is therefore critical to the development and wellbeing of the nation.[1] Under nutrition is a major public health problem worldwide, particularly in developing countries .[2]

One third of the children under 5 years old worldwide are moderately or severely undernourished. Under nutrition impairs physical, mental and behavioural development of millions of children and is a major cause of child death. India stands 25th on the Global hunger Index with 46 per cent of underweight children below 5 years of age.[3] Growth assessment is the measurement that best defines the health and nutritional status of children, while also providing an indirect measurement of well-being for the entire population .School age is the active growing phase of childhood [4] . Protein energy malnutrition, which is manifested as decrease in weight for age or height for age or weight for height, is the most widely prevalent form of malnutrition among under-five children. Nutritional status of children is an indicator of nutritional profile of the entire community. Studies conducted worldwide show that 150 million (26.6%) are underweight, while 182 million (32.5%) are stunted all over the world. [5]

More than half of the world's undernourished people live in India. Fifty-four percent children are underweight, 52% are stunted, while 17% are wasted. [6]

Factors which are responsible for the higher prevalence of malnutrition in south Asian countries including India comprise low birth weight, maternal health problems, delay in introduction of complementary feeds, faulty child care and other poor environmental conditions which are again more prevalent in slums . [7]

The present study was done in periurban area of Meerut City (UP), India, aimed to   find out the overall prevalence of malnutrition among under five children   and   also know the impact of socio demographic factors on nutritional status.

MATERIAL AND METHODS

The present cross sectional study was conducted in the field

practice area of Urban Health Training Centre (UHTC) Multan Nagar attached to the Department of Community Medicine Subharti Medical College, Meerut. The study period was March 2011- June 2011. According to NFHS-3 prevalence of under weight children (0-5years) is 43% at 5% of absolute error sample size comes to 392 using $4Pq/L^2$ and families were selected by using simple random sampling technique from the enlisted families and all the children belonging to the age group of 0-5 years have been included in the study. Mothers of selected participants were interviewed using a structured pretested questionnaire and weight of child was measured by Solar Powered Electronic SECA scale with digital screen and age of child was taken from the delivery card, if card was not available then the records of family health survey of urban health training center was used for age estimation. Socioeconomic status was determined in accordance to Modified Kuppuswami classification. As the weight for age is a composite index of acute and chronic malnutrition so the classification of Indian Academy of Pediatrics (IAP) was adopted for assessing the nutritional status data was entered in Microsoft excel and chi-square test was applied using SPSS-16 version.

RESULT

In the present study, 392 under five children were included.. There were 210 (53.57%) males and 182 (46.43%) were females. Out of these 392 children, 210 (53.57 %) were found to be suffering from Malnutrition according to IAP (1972) classification. There is no significant association was seen between sex of the children and nutrition status.

82 (20.92%) Children were found undernourished of the age group 2-3 years and 63 (16.07%) of the age group 3-4years . There is a significance association was seen between age group of the children and nutrition status. Majority of the children suffering from PEM, 88 (22.44%) belong to social class IV, 57 (14.54%) to social class III, 38 (09.69%) to social class II and 27 (06.88%) to social class I. There is a significance association between social class and with PEM was observed. Family size observed in peri urban community was very high. The children suffering from PEM, 05 (01.27%) belongs to family size below 4, although 12 (03.06%) belongs to family size of 5 6, while 40 (10.20%) belongs to family size of 7-8 and 65 (16.58%) belongs to family size of 9-10, and remaining 88 (22.44%) belongs to family size of 11 and above There is a significant association between family size and PEM was observed.. Children belonging to higher caste had better nutritional status so the children suffering from the malnutrition was 13 (03.31%) as compared to backward caste 62 (15.81%) and schedule caste 135 (34.43%) and significant association was found between caste and malnutrition.

Findings of sex distribution suggested that 108 (51.42%) male children were malnourished out of them 51 (24.29%) suffered from I degree malnutrition, 35 (16.67%) from II degree, 17 (08.10%) from III degree and 05 (02.38%) from IV degree malnutrition as compared to 102 (48.58%) female out of which 46 (21.90%) was suffered from I degree malnutrition , 30(14.29%) from II degree, 18 (08.57%) from III degree and 08 (03.31%) from IV degree malnutrition and there is no significant association was found between sex and malnutrition.. 154 (39.28

Table 1: Relationship of various contributory factors to malnutrition status among children under five

No	Social Class	Normal Children	PEM Children	Total Children	P-VALUE
1	Social Class I	64 (16.32)	27 (06.88)	91 (23.21)	Probable value of chi–square=.0000, (P<.05) ,
2	Social Class II	52 (13.26)	38 (09.69)	90 (22.95)	
3	Social Class III	45 (11.47)	57(14.54)	102 (26.02)	
4	Social Class IV	21 (05.35)	88 (22.44)	119 (27.80)	
	Total	**182 (46.43)**	**210 (53.57)**	**392 (100.00)**	
No	Family Size	Normal Children	PEM Children	Total Children	P-VALUE
1	0-4	70 (17.85)	05 (01.27)	75 (19.13)	Probable value of chi–square=.0000, (P<.05)
2	5-6	48 (12.24)	12 (03.06)	60 (15.30)	
3	7-8	32 (08.16)	40 (10.20)	72 (18.36)	
4	9-10	23 (05.86)	65 (16.58)	88 (22.44)	
5	11& above	09 (02.29)	88 (22.44)	97 (24.74)	
	Total	**182 (46.43)**	**210 (53.57)**	**392 (100.00)**	

No	Caste wise	Normal Children	PEM Children	Total Children	P-VALUE
1	Higher caste	103 (26.27)	13(03.31)	116 (29.59)	Probable value of chi–square=.0000, (P<.05)
2	Backward Caste	52 (13.26)	62 (15.81)	114 (29.08)	
3	Schedule caste/ Schedule Tribes	27 (06.88)	135 (34.43)	162 (41.32)	
	Total	182 (46.43)	210 (53.57)	392 (100.00)	

No	Age wise distribution	Normal Children	PEM Children	Total Children	P-VALUE
	0-1 year	65 (16.58)	25 (06.38)	90 (23.13)	
	2-3	20 (05.10)	82 (20.92)	102 (26.02)	Probable value of chi–square=.0000, (P<.05)
	3-4	45 (11.48)	63 (16.07)	108 (27.55)	
	4-5	52 (13.27)	40 (10.27)	92 (23.47)	
	Total	182 (46.43)	210 (53.57)	392 (100.00)	

%) malnourish children had illiterate mothers. The lower educational status of mother is associated with the PEM in Children. Significant association has been found between literacy status of mothers and PEM .

Prevalence of malnutrition was found 36.22% among the children who did not receive exclusive breast feeding. It was found that there is a significant association between exclusive breastfeeding and malnutrition. Prevalence of malnutrition was found to be 40.81% (160) among children in which supplementary food items were introduced after 01 year of age,. Significant association was found between weaning and PEM.

DISCUSSION

210 (53.57%) children were found undernourished almost

similar it was found 56.04% in under five children in a study carried out by Ehtisham A et al. (2011).[8] In present study 88 (22.44%) and 57 (14.54) malnourished children was from social class IV and class III respectively .Study conducted by Saxena N. et al. (1997) in Kanpur found that PEM was higher among children of social class V [9]. Family size in the present study was found quite high, children from high size was suffering more from malnutrition. A study conducted by Mudkhedkar et al. on "Impact of family size on child nutrition and health" they found a inverse relationship between family size and nutritional status .[10]

The present study revealed children belonging to higher caste had better nutritional status 13 (03.31%) as compared to children of backward caste 62 (15.81%) and schedule caste 135 (34.43%)

Table 2: Prevalence & Grading of (PEM)

No	Children	Grading of PEM I	Grading of (PEM)II	Grading of (PEM) III	Grading of (PEM) IV	P-VALUE
1	Male	51 (24.29)	35 (16.67)	17 (08.10)	05 (02.38)	*Probable value of chi–square=.9910, (P>.05)*
2	Female	46 (21.90)	30 (14.29)	18 (08.57)	08 (03.81)	
	Total	97 (46.19)	65 (30.96)	3 5 (16.67)	13 (06.19)	

Table 3: Distribution of Children according to Literacy status of Mother

No	Literacy status of Mother	Normal Children	PEM Children	Total Children	P-VALUE
1	Illiterate Mothers	43 (10.96)	154(39.28)	197 (50.25)	**Probable value of chi–square=.0000, (P<.05)**
2	Literate Mothers	139 (35.45)	56 (14.28)	195 (49.75)	
	Total	**182 (46.43)**	**210 (53.57)**	**392 (100.00)**	

No	Exclusive Breastfeeding	Normal Children	PEM Children	Total Children	
1	Yes , Exclusive Breastfeeding	114 (29.08)	68 (17.34)	182 (46.43)	**Probable value of chi–square=.0000, (P<.05) , (SIG.)**
2	No , Exclusive Breastfeeding	68 (17.34)	142 (36.22)	210 (53.57)	
	Total	**182 (46.43)**	**210 (53.57)**	**392 (100.00)**	

No	Complementary Feeding	Normal Children	PEM Children	Total Children	P-VALUE
1	After 6 Months	88 (22.44)	50 (12.75)	138 (35.20)	**Probable value of chi–square=.0000, (P<.05) , (SIG.)**
2	After 01 Year	94 (23.79)	160 (40.81)	254 (64.79)	
	Total	**182 (46.43)**	**210 (53.57)**	**392 (100.00)**	

suffered to Protein Energy Malnutrition. A study carried out by Garg SK et al. (1997) in Ghaziabad revealed that majority of children suffering from PEM belongs to scheduled caste and backward caste.[11] In a study done in Punjab, revealed that children belonging to higher caste had better nutrition status as compared to children of backward and scheduled caste.[12]

In present study, 154 (39.28 %) children with PEM was belonging to illiterate mothers. The lower educational status of mother is associated with the risk factors of PEM in Children. Education leads to awareness and better utilization of existing health services. Mother education has got statistically significant influence on the nutritional status of the children. A Study conducted in Chandigarh showed that, with increase in educational status of parents, the prevalence of PEM was steadily and significantly decreases (p<0.001).[13]

In this study prevalence of malnutrition (PEM) was found 36.22% among the children who have not received exclusive breast feeding and late introduction of foods into a complementary feeding diet. Pre school age is a dynamic period of physical growth as well as of mental development of the child. The percentage of underweight children in the country was 53.4 in 1992; it decreased to 45.8 in 1998 and rose again to 47 in 2006 [14]

CONCLUSION

Relationship of various contributory factors related to malnutrition status among children under five were explored in this study. The nutritional status of children does not only directly reflect the socioeconomic status of the family and social wellbeing of the community, but also the efficiency of the health care system, and the influence of the surrounding environment. In peri urban environments, children are especially susceptible to a host of diseases and infections. Delayed initiation of breastfeeding and inappropriate feeding practices in newborn period and first year of life exacerbate under nutrition in infants and children. Malnutrition and childhood diseases are interconnected and mutually reinforce one another. It is therefore extremely important that childhood diseases are identified, and appropriately treated, to contain the effect of the disease on child health. Present study confirms that the mother is the key person in maintenance of good health and nutrition of children.

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