

Assessment of Nutritional Status and Impact of Various Demographic Factors on it for 1 To 5 Years Children in the Urban Slum Population at Madrasi Colony, Tyagi Road, Dehradun, India



Child Health

KEYWORDS : Urban slum, Malnutrition, Children one to five years, Protein Energy Malnutrition Grade

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ABSTRACT

The objective of this study was to assess the nutritional status of children one to five years of age and to determine the significant influence of various demographic factors on it at Madrasi colony, Tyagi road, Dehradun, India. Non-experimental survey research design was adopted for the study that focuses on obtaining information regarding the status of malnutrition. The study included 50 children, selected through purposive sampling technique. The data was collected with structured interview schedule and anthropometric assessment. Malnourishment was categorized according to the grades suggested by Indian Academy of Pediatrics. 18%, 38%, 10% and 2% children were classified under Protein Energy Malnutrition (PEM) grade I, II, III and IV respectively, whereas 32% children were found normal. Amongst many demographic variables included in this study for interpreting their association with malnutrition, mothers' education was found to have significant impact on malnutrition of children of surveillance area.

INTRODUCTION:

Children are the future pillars of a Nation and the future of the Nation rests on the hands of the children's health today. Therefore the health of children is of fundamental importance. There is a high nutritional requirement for the children under 5 years of age because they are undergoing a period of rapid growth, loss of passive immunity and the development of the immune system against infection and good nutrition at their age is vital^{1,2}, as unavailability of key nutrition could result in physical and mental retardation that may be irreversible also they are much more likely to suffer from serious childhood illnesses such as diarrhoea, measles, pneumonia, malaria, tuberculosis etc. and their survival becomes doubtful, those undernourished children who survive may pass through repeated sickness which may jeopardize their physical and mental development. Nutrition during these first five years also influences health during adulthood³ therefore; under-nutrition reduces work capacity and productivity among adults. Thus, monitoring the nutritional status of children is a fundamental instrument for measuring the population's health⁴ and getting the best possible nutrition during the early periods have substantially lower the chances of not getting health issues in future.

Estimates portray that 90 % of the developing world's chronically undernourished children living in Asia and Africa and they were undetected until severe. When we account this situation in India, 20 % of under five years children suffer from wasting due to acute under nutrition and more than one third of the world's children who are wasted live in India. 43% of Indian children in this age category are underweight and 48 % are stunted due to chronic under nutrition and India accounts for more than 3 out of every 10 stunted children in the world⁵, perhaps India is having the worst malnutrition problem in world.

There are innumerable causes of malnutrition but the prevailing ones may be poverty and lack of nutritious food in adequate quantity, customarily mother related factors contribute the most towards this issue when availability of nutritious food is not a problem; viz. not optimally breastfed to children, lack of knowledge about proper nutrition at particular age, short birth intervals between children, under nourished mothers and these problems are more or less inclined towards mother's awareness where the education level effects the most. Taking these aspects under consideration, the present study is an attempt to find out the significant association of Mother's education on malnutrition of children under five years of age, also some other demographic variables like Sex of children, Educational status of father and Occupation of father and mother, Economical condition of family, Number of living children, and Diet were taken into consideration, and the percentage of underweight children in an urban slum population at Madrasi colony, Tyagi

road, Dehradun, India elucidated. The people taken in this study were migrated from Tamil Nadu for earning their livelihood by doing labor oriented work.

METHODS:

This cross-sectional study was conducted in Dehradun during 25-26 May 2013 at Madrasi colony, Tyagi road. We selected all households within this surveillance area with the inclusion criteria of at least one child aged in between 1-5 years thereto willingness of their parents or care takers to participate in this study and was carried out by interviewing them using pretested and predesigned questionnaires about demographic variables viz., Age and Sex of children, Educational status and Occupation of father and mother, Economical condition of family, Number of living children and Diet by house to house visit. The nutritional status was assessed by anthropometric measurements like Height, Weight, Head, Mid Arm and Chest circumference measurements using standardized instruments. Readings of heights were taken to the nearest centimeter. Prestige (Hardic-MediTech) weighing machine was used for measuring weight of children dressed in light clothing. The scales were checked for accuracy and calibrated every morning using standard known weights. Weights were recorded to the nearest 0.1 kg. Children who could not stand on the scale were weighed with the respondent, then the respondent was weighed alone, and the difference was used for obtaining weight of the child. Two repeat visits were made to all the households which were having the selected age group of children, if in the first visit either the care giver or the child was absent. After meeting with the caregivers, the field workers (nursing students) explained about the purpose of this study and the items of interview, thereafter, we preceded with the willingness of caregiver for participation in this study and in this way out of 75 children of this age group present in the surveillance area 50 were studied for this survey. The obtained data were organized, grading of malnutrition was carried out according to Indian Academy of Pediatrics and Chi-square test was utilized to find out the level of significance between nutritional indices and demographic variables of interest.

Ethical approval

Formal permission was taken from the Principal of State College of Nursing Dehradun for data collection and written permission was taken from the Ward member of Madrasi Colony, Tyagi road, Dehradun to conduct the study in the respective area.

RESULTS:

The demographic profile of surveyed surveillance area obtained was as follows.

Among the 50 children 1 to 5 years studied was having 40% (20), 26% (13), 16% (8) and 18% (9) children in the age group of 1-2,

2-3, 3-4 and 4-5 years respectively. The proportion of male to female children was found as 64% (32) to 36 % (18) respectively. Surveying the dietary consumption it was noticed that 84% of the children were non- vegetarian. Families were grouped into two categories based on "number of living children" more than half of families (56%) were having more than two living children, 44% were having 2 living children. The overall educational status of families was found very poor where among parents the predominant illiterate cases were the mothers and their count was 78%, 8% were having only primary education, 14% were holding the upper primary (primary to high school) level of education and none of the mother in the total population has ever attended high school. Whereas the educational level of father group was a little better with the illiterate cases of 66%, 10% were having primary education, 14% hold upper primary level of education, and rest 10% were attended high school. However, none of the total population was having the intermediate level of literacy. We found 54% of mothers as housewives and 46% were working as labors in different construction sites; fields etc where as all fathers were working out of which 74% were labors and rest of them were assigned with private sector jobs. Total household income levels per month were graded in to 2 groups i.e., below 4000 and above or equal to 4000 INR and the results came out as 46% and 54% respectively.

From anthropometric measurements the data obtained indicated that amongst the total population of surveyed children almost of them (96%) were having the body weight below normal and only 2% of children were having normal and rest 2% were having above normal body weight range. Again a major portion (74%) of total population was having height below normal. Equal proportion of children (48%) was having head circumference below normal and normal and 4% were having above normal reading. Chest circumference of 40% children had below normal, 58% had normal and 2% had above normal range. Finally, the mid arm circumference measured was having 52% below normal and 48% had normal range.

Malnutrition was categorized into PEM grades according to their weights measured as suggested by Indian Academy of Pediatrics from which we interpreted that 68% children were malnourished out of which 18% children were malnourished under the PEM grade I, majority of children were fallen under PEM grade II (38%), 10% children were categorized in PEM grade III, only 2% of children were under PEM grade IV and normal children were found 32%. (Fig. 1)

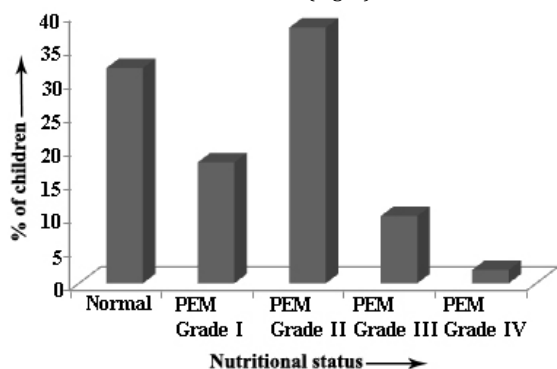


Figure 1 Nutritional status of surveyed children according to PEM Grades

Association between demographic variables and malnutrition:

Demographic variables	Category	Nutritional status		p value
		Normal	Malnourished	

Sex of children	Male Female	09 07	23 11	0.433
Education of father	Illiterate Primary Upper primary High school	10 03 02 01	23 02 05 04	0.529
Education of mother	Illiterate Primary Upper primary High school	10 04 02 00	29 00 05 00	0.026
Occupation of father	Labor Private job	11 05	26 08	0.561
Occupation of mother	Labor Housewife	07 09	20 14	0.318
Level of income of family	< 4000 INR ≥ 4000 INR	08 08	15 19	0.697
Number of living children	≤ 2 > 2	08 08	14 20	0.557
Type of diet consumption	Vegetarian Non- vegetarian	02 14	06 28	0.643

[Table 1 showing the association between demographic variables and nutritional status (N=50) at 0.05 level of significance]

It can be observed from the table that sex of children does not affect their nutritional status. Although during survey we found that the percentage of malnourishment among females is slightly higher than the Male. However in this statistical study it was found non- significant. It could be also be possible that with the increase in population size we may find some significant relationship between sex and malnourishment status in children. On the basis of data obtained and level of significance determined it was obvious that father's education does not associated with the nutritional status of children the prime reasons may be because of fathers spent their most of time outside the home and so apart from their children to earn living expenses. Also it was evident from the table that father's occupation does not affect the nutritional status of children at 0.05 level of significance ($p = 0.561$). Number of living children in a family indicates the family size. If the family size is large, then it is possible that the low income of the family does not fulfill the necessities and demands of the family and vice versa. However in our case this assumption does not hold good. The number of living children and nutritional status shows no significant result ($p = 0.557$). But, from the table it could be well interpreted that the percentage of malnourished children in households falling under "more than 2 living children" category is considerably higher than the percentage of malnourished children in "below or equal to 2 living children category" i.e. there is some relation between family size and nutritional status of children. If we increase the sample size it is possible that it may show some different result.

It was also evident from the analysis of results that the type of diet consumption does not affect significantly the status nutrition among children at 0.05 level of significance ($p = 0.643$). It is a well-known fact that nutritional status is directly related to the level of income, but in our case the association between level of income and nutritional status does not show any significant result. The prime cause of this short of trend is the small number of samples under study. It is also considerable that the average monthly income of all families are approximately same, either they work as a labor or in privately owned small companies.

From the level of significance obtained, it was prominent that

the most predominant factor in effecting childhood malnutrition is mother's education among other demographic variables studied here. It can be observed here that the percentage of malnourished children is much low in those family where the mother is educated in comparison to those families where mothers are illiterate (Fig. 2) and so mother is directly responsible for children's mental as well as physical development but mother's working status does not affect the nutritional status of children at 0.05 level of significance ($p = 0.318$). But here we were not able to get the linear trend with the increase in educational levels from primary to upper primary reason may be due to less difference in literacy levels.

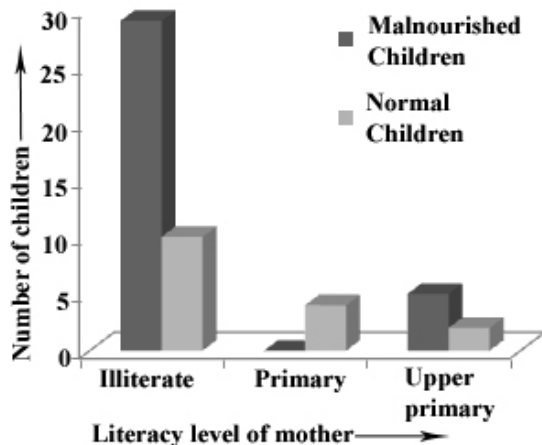


Figure 2 Literacy level of mother vs. nutritional status

DISCUSSION:

The results of above findings of the study revealed that majority of the children who lived in the urban slum area were having poor nutrition status and only 32% were having good nutrition status. Mother's education was found to be the most contributory factor effecting child's nutritional status under five years of age in the surveyed surveillance area, which was most significant also in the small population group under study, however other factors like socio-economic condition⁶ and sex might have

played significant roles if the population size chosen was large. Studies have already revealed that maternal education levels have comparatively stronger association with low height for age than socio-economic factors^{7, 8, 9}. Because mother usually decides her family's eating habits, practices of adequate nutrition for child growth and development, immunization to children, personal and household hygiene habits, and it is also obvious that inadequate sanitary conditions are associated with anaemia¹⁰ as well as malnutrition in children¹¹. Thus the findings of the present study were similar to other conclusions reached by the researchers which confirm that maternal education significantly affects a child's nutritional status under 5 year age, this study also reveals that the incidence of malnutrition is very high in urban slum population.

Implications of study:

This study can impact awareness on the community people, especially the mothers regarding child care, nutrition, household sanitation etc and their need thereof in the growing children also it would provide them an active ignition for participating in different educational projects/camps.

Limitations of the study:

The major limitation of this study is that it interprets only the associations between variables and malnutrition but precludes their cause-and-effect relationships. Secondly, the study was limited to a very small population size.

CONCLUSION:

Malnutrition among one to five years children in the studied urban slum surveillance area was found very prevalent as determined according to PEM grades. Among the various factors studied, mothers' education has significant role in child's nutrition. Therefore the urgent problem that victimized mostly the children of poor and illiterate people needs to be alleviated by utilizing proper tools of awareness about best feeding practices, hygienically preparation of foods, maintaining personal and household hygiene etc among mothers.

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