ORIGINAL ARTICLE

IMPACT OF SOCIOECONOMIC FACTORS ON NUTRITIONAL STATUS IN PRIMARY SCHOOL CHILDREN

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Background: Child malnutrition is a major public health and development concern in most of the poor communities leading to high morbidity and mortality. Various studies have highlighted the factors involved. The present study focuses on socioeconomic inequality resulting in malnutrition. Objectives of the Study were to find the Impact of socio-economic factors on nutritional status in primary school children. **Methods:** It was a cross sectional survey conducted at Lahore from February to August 2005 among primary schools from public and private sectors to assess the nutritional status of primary school going children age 5–11 years belonging to different socio economic classes of the society. Systematic random sampling technique was applied to collect the sample. Body Mass Index in relation to NHANES reference population was used for assessing nutritional status. **Results:** The nutritional status of children from lower socio economic class was poor as compared to their counter parts in upper socio economic class. Children with BMI <5th percentile were 41% in lower class while in upper class it was 19.28%. Prevalence of malnutrition was 42.3% among children of illiterate mothers as compare to 20% in those of literate mothers. **Conclusion:** Poverty, low literacy rate, large families, food insecurity, food safety, women's education appears to be the important underlying factors responsible for poor health status of children from low socioeconomic class. It requires economic, political and social changes as well as changes for personal advancement mainly through educational opportunities to improve the nutritional status of the children.

Keywords: Body Mass Index, BMI, Malnutrition, Nutrition, Children, Primary School

INTRODUCTION

In modern age malnutrition continues to be a serious public health problem and has for a long time been recognised as a consequence of poverty since most of the world's malnourished children live in the developing nations of Asia, Africa and Latin America where those mostly affected are from low income families.[1] The children from households with a low or very low socioeconomic status had 2.5 times the risk of being underweight relative to children who came from households with middle to upper socioeconomic status.[2]

Low levels of nutrition adversely affect physical and mental growth of children. Malnutrition in early childhood is associated with significant functional impairment in adult life, reduced work capacity and decreasing economic productivity.[3,4] Both prevalence and the severity of food insecurity increase as household incomes decrease.[5] However, there is not a simple linear relationship or one-to-one correspondence between poverty-level incomes and measures of hunger or food insecurity.[6] The main positive factors for malnutrition are inadequate food intake and poor health status that are influenced by poverty and lack of access to food, feeding practices, and family size.[7] Among population groups who have experienced constraint on economic and social development and factors affecting the physical growth of school children before puberty are environmental, e.g., poor food consumption pattern, illness, lack of sanitation, poor hygienic practice, food safety and women's education.[8] Mothers' education level even within the same social class is a key determinant of their children's health. A high level of maternal education could lower childhood malnutrition through other pathways such as increased awareness of healthy behaviour, sanitation practices and a more equitable sharing of household resources in favour of the children.[3,9] A small state of Kerala in India is an example. It has the highest rate of female literacy 87.86% compared to 54.16% for all India.[10] Kerala's birth rate is 14 per 1,000 females and falling fast. India's rate is 25 per 1,000 females. Kerala's infant mortality rate is 15.3 per 1,000 births versus 57.0 for India.[11]

Father's education is another important determinant and has a positive impact on child health and nutritional status. Usually father is the main earner and decision maker of a family and so their higher level of education plays an important role to ensure better nutritional status of children.[12] In a study conducted at district Malir, Karachi, maximum malnutrition regarding underweight (62.63%) and stunting (48.99%) was seen in children whose fathers were illiterate and maximum wasting (38.46%) was seen in children of fathers who could only read and write.[13]

Environmental factors, diseases, inadequate diet, and the handicaps of poverty appear to be far more important than genetic predisposition in producing deviations from the reference values.[14] These conditions, in turn, are closely linked to overall

standards of living and the ability of populations to meet their basic needs. Therefore, the assessment of growth not only serves as one of the best global indicators of children's nutritional status, but also provides an indirect measurement of the quality of life of an entire population.[15]

BMI is a very useful approximation to what one should weigh depending on height in children and teens. Body mass index is used to assess underweight, overweight, and risk for overweight. Children's body fatness changes over the years as they grow. This is why BMI for children, also referred to as BMI-for-age.[16]

BMI reflects protein and fat reserves, which in turn reflects functional reserves including ability to survive nutritional deficiencies and diseases. The BMI is thought to be a more accurate indicator of body fat content than the CDC height-weight tables that have been in use for over 30 years. The weight-for-stature curve does not show age-related changes while the BMI-for-age chart does show age related changes are more useful.[17]

SUBJECTS AND METHODS

A cross sectional and descriptive study was conducted to see the impact of socio-economic factors on nutritional status of 161 primary school children between ages 6–11 years. Primary schools were selected on basis of socioeconomic characters of schools' catchments areas. Systematic random sampling technique was applied to collect the sample from school students. Data was collected through a Performa that was a pre-tested questionnaire. The criterion set for assessing nutrition status in this study was BMI for age in relation to the growth chart of National Centre for health statistics reference population.

Data was analysed with the help of SPSS-10.0 and test of significance used was Chi-Square.

RESULTS

Out of 161 children studied, there were 96 (59.6%) girls, and 65 (40.4%) boys. The study population consisted of 83 (51.6%) children from upper and 78 (48.4%) children from lower socio-economic class (Table-1). Among children from upper socio-economic class only 16 (19.28%) were under-nourished, 37 (44.58%) had satisfactory nutritional status and 20 (24.10 %) were at risk of being over weight, and 10 (12.5%) were obese. In children from lower socioeconomic class, 32 (41.03%) were underweight, nutritional status of 41 (52.56 %) children was satisfactory, and 2 (2.56%) were at risk of being over weight. Only 3 (3.84%) were obese. The results were statistically significant (p<0.05) (Table-2).

Literacy rate among mothers of lower socio-economic class was alarmingly low. Only 2 (2.56%) were literate. There was only one mother who was educated below graduation and another one was a graduate. From upper class, 55 (66.3 %) mothers were graduates, 15 (18.2 %) were intermediate pass and 13 (15.5 %) were having secondary school certificates and none without illiteracy.

Thirty (42.25%) children of illiterate mothers and 18 (20%) children of literate mothers had BMI value less than 5th centile (p<0.05). Five (7%) children of illiterate mothers and 30 (33.4%) of educated mothers were at the risk of being overweight or were overweight (p<0.05). BMI values were negatively correlated to mothers' education. Literacy rate was low in fathers from lower socioeconomic class. Only 19.5% children of literate fathers' had BMI value less than 5th centile where as 50.9% children of illiterate fathers' were under nourished (p<0.05) (Table-3). No significant relation was found between family size and nutritional status (Table-4).

Table-1: Frequency distribution by socioeconomic class

Socio economic class	Children	
	Number	Percentage
Lower	78	48.4
Upper	83	51.6
Total	161	100

Table-2: Impact of socioeconomic class on nutritional status

BMI for Age	lower class		Upper class		Total	
	No.	%	No.	%	No.	%
<5th percentile	32	41.04	16	19.28	48	29.8
5th–85th percentile	41	52.56	37	44.58	78	48.4
85th–95th percentile	2	2.56	20	24.10	22	13.7
≥95th percentile	3	3.84	10	12.05	13	8.1
Total	78	100	83	100	161	100

Table-3: Impact of mothers' education on nutritional status

BMI for Age	Illiterate		Literate		Total	
	No.	%	No.	%	No	%
< 5th percentile	30	42.3	18	20	48	29.8
5–85th percentile	36	50.7	42	46.6	78	48.5
85–95th percentile	2	2.8	20	22.2	22	13.7
≥95th percentile	3	4.2	10	11.2	13	8.0
Total	71	100	90	100	161	100

Table-4: Impact of family size on nutritional status

Family size	No.	<5th percentile		5th–85th percentile		85th–95th percentile		≥95th percentile	
		No.	%	No.	%	No.	%	No.	%
3	6	1	16.6	3	50	1	16.6	1	16.6
4	30	7	23.3	14	46.7	6	20	3	10.0
5	60	19	31.7	28	46.7	6	10	7	11.6
6	38	14	36.8	18	47.4	5	13.1	1	2.6
≥7	27	7	25.9	15	55.6	4	14.8	1	3.3
Total	**161**	**48**	**29.81**	**78**	**48.44**	**22**	**13.66**	**13**	**8.09**

DISCUSSION

It obvious from the results of the study that nutritional problems are not just medical problems rather they have roots in many sectors of development such as economy, education, etc. Malnutrition is caused by a number of intertwining factors that form a web of causation and enhance each other's effect. It is largely the by-product

of poverty, insufficient education, ignorance, low income, large family size, occupation, etc. These are the true determinants of malnutrition in society as they bear most directly on the quality of life. According to the American Academy of Paediatrics, BMI for age is now the recommended method for screening overweight and underweight status in all children from 2–20 years of age.[18] Differences in BMI by social class are partly formed during childhood. In our study population percentage of children from well-off families had significantly higher BMI ($p<0.05$) as compared to ones from poor and large families. Maternal education and household wealth showed statistically significant association with childhood malnutrition. The world maps of poverty and literacy closely coincide with that of malnutrition. Literate mothers can influence health of their children by challenging traditional beliefs and attitudes, leading to a greater willingness to accept developmental initiative and utilise modern healthcare. Beneficial effects of maternal education have been observed to be more significant in case of sufficient but not abundant resources.

Paternal literacy level is indirectly associated with child nutritional status. Father's education may be important because he plays more active role in certain health-seeking decisions & household income in our social set up. The results showed that nutritional status (50.9% children of illiterate fathers' were malnourished as compare to 19.5% children of literate fathers') among children whose father were illiterate was poor as compare to children of educated fathers.

In our study, no significant relation was found between family size and nutritional status. It is at variance with that of various surveys conducted at national and international level. However, children examined in present study were not enough to draw a definite conclusion. A study by Pelto *et al* examined the extent to which household size is related to the nutritional status in school age children in Mexico. The relationship of food intake, anthropometric measures, and household size were assessed in a sample of 110 children 7–9 year of age who were followed longitudinally for a minimum of one year. Children from large household were significantly shorter and consumed diet of poor quality as assessed by intake of food from Animal sources. Deprivation of maternal care is found in large families. Fewer children would mean better maternal care, a better share of family resources and better health of the family members.

From the existing evidence, it is clear that childhood malnutrition is associated with a number of socioeconomic and environmental characteristics such as poverty, parents' education/occupation, and access to health care services.[3,19] Low levels of nutrition among children cause serious long and short-term consequences in their physical and mental growth. Studies report high levels of mortality among malnourished children.[20] Further, malnourished children are more likely to have functional impairment in adult life.[21] leading to a reduction in productive life and thus affecting the overall economic productivity of the society.[21] For example, it is widely accepted that adults who survive malnutrition as children are more likely to suffer from higher levels of chronic illness and disability.[22] The physical health of schoolchildren aged 5–10 years depends on environmental and genetic factors and their interaction.

CONCLUSION

Impact of maternal literacy on nutritional status of their children can be explained on basis of a strong linkage between maternal education, attitude towards health care.

RECOMMENDATIONS

Effective economic, social and political changes, improvement in food production, food security, personal hygiene, environmental safeguard, maternal education, nutrition education program especially for mothers and school children are few interventions and tools to bring about change in child health.

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