A Study of Association between Family Size and Nutritional Status of Primary School Children of Chamoli District

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Abstract

The physical well being and maintenance of normal health of an individual is closely related to his nutritional status. Proper nutrition keeps us healthy and fit where as improper nutrition causes susceptibility to diseases. Nutrition plays a vital role in human development, as inadequate nutrition during childhood may lead to malnutrition, growth retardation, reduced work capacity and poor mental and social development. From nutrition point of view, childhood is very important period because this is time to build up body stores of nutrients for rapid growth of adolescence. Various social and economical factors have been identified to be the major determinants of malnutrition particularly in the developing countries. Therefore an attempt has been made in the present study to find out the association between family size and nutritional status of primary school children. Study was conducted in two blocks of Chamoli district of Uttarakhand. The sample consisted of 270 children in the age group of 5-9 years. Results of the study indicated that family size is significantly associated with the nutritional status of primary school children.

Keywords: Family size, Primary School Children, Nutritional Status

Introduction

India is the home for world's half of the malnourished children. Preventing malnutrition is one of the most critical challenges to India's development planners in recent times. Nutritional status of children is related to a various socio-economic factors. Family size is important determinant of nutritional status of children. Because resources are distributed among all the family members, in a poor country like India where resources are limited, individual share is reduced with the increase in family size. Iram and Butt (2006) reported that various socio-economic and environmental factors play important role in determining nutritional status of children in Pakistan. Family size has been found to be positively correlated with the prevalence of malnutrition, morbidity and infections among children belonging to the poor socio-economic status (Kumar et al. 1976). They studied rural families around Hyderabad city and found that restriction of the families to 3 or less children and increase in gap between two pregnancies to 3 years or more had a beneficial effect on health and nutritional status of young children. Rajammal et al. (1991) also reported that children in the birth order below three had lower incidence of morbidity as against the children in the birth order above three. Sachdeva et al. (2003) and Verma and Prinja (2008) also reported that family size and child spacing are important determinants of children's nutritional status. The number and sex of competing siblings in a household could affect the nutritional status of children. The presence of more than one child in the household usually results in not only resource constraints but also in competition among the siblings that would result in unequal child nutritional outcomes. According to resource dilution hypothesis, households with more children accrue fewer resources to each of the sibling (Gurmu, E. & Etana, D. 2004). Empirical findings from Jamaica, Trinidad and Tobago and three other Latin American countries (Brazil, Columbia and the Dominican Republic) revealed that large sibling size reduces the likelihood that children will be fully immunized and well nourished (Desai 1992, Bronte, Tinkew and De Jong 2005).

Objective of the Study

To find out the association between family size and nutritional status of primary school children.

Hypothesis

1. There is no significant association between family size and nutritional status of primary school children.

Method

Sample

The investigator used survey method for the study. The sample consisted of 270 children of the 7 primary schools. The sample children were in the age group of 5-9 years. Both purposive and multistage random sampling techniques were used for the study. Out of thirteen districts in Uttarakhand, Chamoli district was selected. Chamoli is an upper Himalayan district in Uttarakhand state. There are nine blocks in Chamoli district, two blocks namely Narayan bager and Tharali were selected and then seven primary schools were selected randomly from the selected blocks. Then total 270 children (149 boys and 121 girls) were selected in the age group of 5-9 years. Out of 270 children, 131 were from small families, 128 were from medium sized families and 11 children belonged to large sized families.

Tool

The information about children and their families was collected by interviewing children at school and their mothers were interviewed at their respective homes. The dietary assessment included dietary survey of children. The 24-hour recall method and food frequency questionnaire was followed for surveying the children and mothers. Standardized cups and spoons were used for converting the reported quantities into actual measure and weights, size of chapatti, consistency of daal and curry and additional ghee consumed were also taken in to account. Nutritive value of diets consumed per day the children was calculated in terms of calories, protein, fat, calcium, iron, thiamine, niacin, riboflavin, β- carotene and ascorbic acid using food composition tables of Gopalan et.al (1989).

Regarding size of the family, families were divided into three categories. Families having 2-5 members were considered small size and families with 6-8 members were considered as medium sized, where as families with 9-12 members were considered as large sized.

The information regarding the body weight and height was also studied. A personal weighing machine with minimum accuracy of 0.5 kg was used to record the body weights of subjects. Measurements were taken on levelled surface. First it was set up at zero and then subject was asked to stand straight and relaxed with minimum clothing. For measuring body height a non-stretchable plastic tape fixed to a true vertical flat wall was used. The subject was asked to stand relaxed and straight, before taking the measurement footwear and headwear of the child were taken off.

Evaluation of Nutritional Status

Three commonly used under nutrition indicators i.e. underweight, stunting and wasting were used to evaluate the nutritional status of subjects. For this the weight and height measurements were converted in to weight for age, height for age, and weight for height percentage of standard for each child using NCHS standards. The children were grouped in to different grades of nutritional status by both Gomez's and Waterlow's classification. The cut-off points for the two classifications were as follows:

Gomez Classification

% expected Weight for Age	Classification	Category of Nutritional Status
>90	Normal	Normal
76-90	Mild malnutrition	1st degree malnutrition
61-75	Moderate malnutrition	2nd degree malnutrition
≤60	Severe malnutrition	3rd degree malnutrition

This classification is based on weight for age (underweight).

Waterlow Classification

Height for Age Degree of Stunting	Weight for Height Degree of wasting			
Percent (Grade)	>90% (0)	80-90% (1)	70-80% (2)	<70% (3)
>90% (Grade = 0) 95-90% (Grade = 1)	Normal		Wasting	
85-90% (Grade = 2) <85% (Grade = 3)	Stunting		Stunting and wasting	

This classification is based on height for age (stunting) and weight for height (wasting).

Results and Discussion

Table 1

Computation of Chi-square for Determining the Association between Stunting and Family Size

Family size	Stunting (height for age)			
	Grade 0	Grade 1	Grade 2	Grade 3
Small (N=131)	82	49	0	0
Medium (N=128)	128	0	0	0
Large (N=11)	9	2	0	0

Chi square= 59.12   for df= 6

The value of chi-square was found to be 59.12, which is significant at 0.05 level of significance for the degree of freedom 6. This establishes a significant association between stunting and family size. Hence the hypothesis is rejected. No child was found in the grade 2 and grade 3 category of stunting. In small size families 62.6% children were normal, whereas 37.4% children were in grade 1 category of stunting. In medium size families, all children were in normal category. In large families 81.81 % children were normal and remaining 18 .19% were found to be in grade 1 category of stunting.

Table: 2
Computation of Chi-square for Determining the Association between Wasting and Family Size

Family Size	Wasting (Weight for Height)			
	Grade 0	Grade 1	Grade 2	Grade 3
Small (N=131)	82	18	18	13
Medium (N=128)	63	47	18	0
Large (N=11)	2	9	0	0

Chi square=45.08   for df =6

The value of chi-square with respect to table no.2 was found to be 45.08, which is significant at .05 level of significance. This indicates significant association between wasting and family size. Hence the hypothesis is rejected. Entries in the above table reveal that in small families 62.59% children were normal, 13.74% children in mild category and 13.74% children were in moderate category where as 9.92% children were in severe category of wasting. In medium size families 49.22% children were normal, 36.72% were in grade 1 category of wasting and 14.06% children were in grade 2 category of wasting.

Table 3
Computation of Chi-square for determining the Association between Underweight, and Family Size

Family size	Underweight			
	Normal	Mild	Moderate	Severe
Small (N=131)	62	69	0	0
Medium (N=128)	17	111	0	0
Large (N=11)	1	10	0	0

Chi-square= 37.62   for df =6

The value of chi-square with respect to table 3 was found to be 37.62, which is significant at 0.05 level of significance for 6 degree of freedom. Hence the null hypothesis framed, is rejected. Out of 270 children in all the families no child was found to be in moderate and severe categories of underweight. In small families 47.33% children were normal and remaining 52.67% children were in mild category of underweight. In medium size families 13.28% children were in normal category and remaining 86.72% children were in mild category of underweight. Out of 11 children in large size families, 9.09% children were normal and remaining 90.91% children were in mild category of underweight.

Conclusion

On the basis of findings of the study it can be concluded that stunting was more prevalent among the children from small families, where 37.40% children were in grade 1 category of stunting. In medium size families all the children were found to be in normal category. Regarding the association between wasting and family size, the prevalence of wasting was high in small sized families followed by medium sized and large sized families. This establishes a significant association between wasting and family size. Regarding association between underweight and family size it was found that prevalence of underweight increases as the size of family increases. Prevalence of underweight was highest among the children from large families. However in all the family size no child was found in moderate and severe categories of underweight.

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