IMPACT OF EDUCATION OF PARENTS ON NUTRITIONAL STATUS OF PRIMARY SCHOOL CHILDREN

Lt Col RAJESH KUNWAR*, Col PB PILLAI†

ABSTRACT

In a cross-sectional study the nutritional status of 2585 school children, including 1253 boys and 1332 girls, aged between 5 and 15 years was correlated with the levels of literacy of their parents. The study showed a direct relationship between the levels of literacy of parents and the nutritional status of children. When the same was tested separately for mothers and fathers in relation to the sex of the child, it was noted that nutritional status of boys and girls was not different irrespective of mother's literacy level. However, in case of fathers it was noticed that with the increase in the literacy level of fathers, the nutritional status of boys was better than that of girls.

MJAFI 2002; 58 : 38-43

KEY WORDS : Nutritional status; Parents education; School children.

Introduction

Among the various determinants of nutritional status, parent's education is probably the next most important factor after the socio-economic status. A literate mother uses scarce resources in a better manner for the child's welfare than an illiterate mother with higher resources does [1]. D'souza et al believe that the effect of women's education on the nutritional status of their children is exerted through their roles as providers of household health and nutrition [2]. In a study carried out at Parbhani, Marathwada (Maharashtra), Arya et al have shown that the children of literate mothers have better anthropometric measurements than children of illiterate mothers [3]. Sive et al, while comparing 53 children hospitalized for kwashiorkor with 106 children hospitalized for non-nutritional diseases observed that the major difference between the two groups was the educational status of mother. Only 57% of the mothers of the children with kwashiorkor were literate as compared to 93% of the controls [4].

While the relationship between the mother's education and the child's nutritional status is well documented, that between the education of father or the education of both the parents put together and the child's nutritional status is not well established [5,6]. Keeping this in mind a study was carried out in primary school children of Pune cantonment to find out :

(a) The association between parent's education and the nutritional status of children.

(b) The association between mother's education and the nutritional status of children.

(c) The association between mother's education and the nutritional status of girls as compared to boys.

(d) The association between father's education and the nutritional status of children.

(e) The association between father's education and the nutritional status of girls as compared to boys.

Material and Methods

The present study was based on a cross sectional study design and was carried out in primary schools of a large Cantonment between June 1994 and May 1995. There were 37 primary schools located in the Cantonment during the period of study. The total population of students studying in class I to class V of these schools was 14497 with their age group varying between 5 to 15 years.

Since the minimum sample size calculated, using a two tailed type I error of 0.05 was worked out to be 2100, a minimum of 7 schools were required to be selected randomly to meet this requirement. Thus 7 schools with a total of 2585 children were selected out of the list of 37 schools by using random number table. This not only increased the precision of the study but also ensured that none of the children of the selected schools were left from the examination.

Information regarding the education of the parents was obtained through a questionnaire addressed to parents in the form of a letter. Information regarding the education of father and mother was to be given separately and one of the options from illiterate, primary, middle (VIII), high school (X), junior college (10+2), graduate, post graduate and professional was to be chosen. An effort was made to verify the information, thus made available by meeting the parents and interviewing the children. Based on the information the parents were further divided into three groups comprising illiterate and primary in one group, upto X standard in second group and above X standard in the third group.

Information regarding the age, sex and class in which the child was studying was obtained from the school records. Age was recorded to the nearest completed years. Weight of the children

* Graded Specialist (Preventive and Social Medicine), DADH, HQ 27 Mountain Division, C/o 99 APO, †Senior Advisor (Preventive and Social Medicine), Director AFMS (H), M block, Office of DGAFMS, New Delhi.

TABLE 1
Distribution of children according to literacy status of parents

Mother's literacy status	Father's illiterate/primary (%)	Literacy up to X standard (%)	Status above X standard (%)	Total (%)
Illiterate/Primary	901 (34.86)	688 (26.62)	88 (3.40)	1677 (64.88)
Up to X standard	175 (6.77)	581 (22.48)	114 (4.41)	870 (33.66)
Above X standard	5 (0.19)	17 (0.65)	16 (0.62)	38 (1.46)
Total	1081 (41.82)	1286 (49.75)	218 (8.43)	2585 (100)

was recorded with the help of a platform type of beam balance to the nearest 0.1 Kg. The weighing machine was checked everyday before the start of study with standard weights. The children were made to stand on the centre of the platform without touching anything. They were weighed in uniform but without shoes. Later, weight of uniform, averaging 200 gms, was deducted for the correction of individual weight. The nutritional status was assessed by using the indicator weight for age. All children with weight for age less than 80% of standard (as per IAP classification) were considered undernourished. Kuppuswamy's Socio Economic Status (SES) Scale (urban) was used to define the socio-economic class [7].

Results

Out of 2585 children included in the study, 1253 (48.47%) were boys and 1332 (51.53%) were girls. Among these 0.12% came from upper SES class, 52.19% from upper-middle, 15.00% from lower-middle, 31.84% from upper-lower, and 0.85% from lower SES class. However, the distribution according to SES class was found to be homogeneous with respect to sex.

Literacy Status

The distribution of children according to the educational status of their parents is shown in Table-1.

As is seen from the table both the parents of 901 (34.86%) children out of a total of 2585 were either illiterate or educated up to primary only. The number of children further reduced to 581 (22.48%) and 16 (0.62%) when both the parents were educated upto X standard and above X standard respectively. These figures were subsequently used for correlating the literacy status of parents with the nutritional status of children.

Sex-wise distribution of children according to the literacy status of their fathers and mothers is shown in Table-2 and Table-3 respectively.

TABLE 2
Sex-wise distribution of children according to father's education

Father's education	Male (%)	Female (%)	Total (%)
Illiterate/Primary	549 (43.81)	532 (39.94)	1081 (41.81)
Up to X standard	605 (48.28)	681 (51.13)	1286 (49.75)
Above X standard	99 (7.91)	119 (8.93)	218 (8.44)
Total	1253 (100)	1332 (100)	2585 (100)

As can be seen from the tables, 41.81% of children had their fathers either illiterate or educated up to primary standard only. This increased markedly upto 64.87% in case of mothers.

TABLE 3
Sex-wise distribution of children according to mother's education

Mother's education	Male (%)	Female (%)	Total (%)
Illiterate/Primary	824 (65.76)	853 (64.04)	1677 (64.87)
Up to X standard	415 (33.12)	455 (34.16)	870 (33.66)
Above X standard	14 (1.12)	2 (1.80)	38 (1.47)
Total	1253 (100)	1332 (100)	2585 (100)

Nutritional Status

Using weight for age (IAP Classification) as the indicator for undernutrition, 882 (34.12%) children were found to be normal. Mild undernutrition was present in 855 (33.08%) children, moderate in 619 (23.95%) and severe in 229 (8.89%) children. In order to evaluate the effect of education of parents on nutritional status, the nutritional grades were regrouped. All those with moderate and severe under nutrition i.e. weight for age less than 70% (IAP classification) were considered as undernourished and all others as normally nourished.

After regrouping 1737 (67.20%) children including 866 boys and 871 girls were found to be normal while 848 (32.80%) children including 387 boys and 461 girls were found to be undernourished.

Impact of Parents Education on Nutritional Status

Distribution of children's nutritional status according to the educational status of both the parents put together is shown in Table-4. As can be seen from the table, 36.51% children were undernourished when both the parents were either illiterate or educated upto primary only. As the literary status of both the parents improved upto X standard and above X standard, the proportion of undernourished children further decreased to 30.29% and 18.75% respectively. This association between the educational status of parents and nutritional status of children was found to be statistically significant.

Impact of Mothers Education on Nutritional Status

Distribution of children's nutritional status according to mother's education is shown in Table-5. As seen from the table, 34.47% of the children were undernourished when mothers were educated upto primary standard. The proportion of undernourished children decreased to 30.34% and 15.79% when the mother's educational standard improved to X standard and above X standard respectively. Further a stratified analysis was carried out to detect sex differential in undernourished at each level of educational standard of mothers. This helped in assessing the independent risk of a girl child being undernourished. The findings are shown in Table-6. It is seen from the table that the odds of a girl child being undernourished was 1.16 times higher than a male

child when mother's educational standard was up to primary, 1.24 times higher when mother's educational standard was upto X and 3.42 times higher when it was above X. However these findings were statistically not significant. The independent risk of a girl child being undernourished was 1.19 times higher as compared to a male child. This finding was statistically significant.

Impact of Father's Education on Nutritional Status

Distribution of children according to father's educational standard and nutritional status is shown in Table-7. As is seen from the table, 35.99% of the children were undernourished when fathers were educated upto primary standard. The proportion of undernourished children decreased to 31.57% when father's educational

TABLE 4

Distribution of children's nutritional status according to parent's education

Nutritional status	Illiterate/Primary (%)	Up to X standard (%)	Above X standard (%)	Total (%)
Undernourished	329 (36.51)	176 (30.39)	3 (18.75)	508 (33.91)
Normal	572 (63.49)	405 (69.71)	13 (81.25)	990 (66.09)
Total	901 (100)	581 (100)	16 (100)	1498 (100)

$X^2 = 7.76$; df - 2; $p < 0.05$

TABLE 5

Distribution of children's nutritional status according to mother's education

Nutritional status	Illiterate/Primary (%)	Up to X standard (%)	Above X standard (%)	Total (%)
Undernourished	578 (34.47)	264 (30.34)	6 (15.79)	848 (32.80)
Normal	1099 (65.53)	606 (69.66)	32 (84.21)	1737 (67.20)
Total	1677 (100)	870 (100)	38 (100)	2585 (100)

$X^2 = 9.49$; df - 2; $p < 0.01$

TABLE 6

Association between sex and undernutrition of children stratified on mother's educational standard

Sex	Undernourished	Normal	Total	Stratum specific OR
Stratum - 1 :	Illiterate / Primary			
Female (%)	308 (36.12)	545 (63.88)	853 (100)	1.16
Male (%)	270 (32.77)	554 (67.23)	824 (100)	(0.94-1.43)
Total (%)	578 (34.47)	1099 (65.53)	1677 (100)	
Stratum - 2 :	Up to X standard			
Female (%)	148 (32.53)	307 (67.47)	455 (100)	1.24
Male (%)	116 (27.95)	299 (72.05)	415 (100)	(0.92 - 1.68)
Total (%)	264 (30.34)	606 (69.66)	870 (100)	
Stratum - 3 :	Above X standard			
Female (%)	5 (20.83)	19 (79.17)	24 (100)	3.42
Male (%)	1 (7.14)	13 (92.86)	14 (100)	(0.31 - 86.89)
Total (%)	6 (15.79)	32 (84.21)	38 (100)	
Summary :	Crude OR = 1.19 $X^2 = 4.28$	MH OR = 1.19 $p < 0.05$	95% CI =	1.01-1.41

TABLE 7

Distribution of children's nutritional status according to father's education

Nutritional status	Illiterate/Primary (%)	Up to X standard (%)	Above X standard (%)	Total (%)
Undernourished	389 (35.99)	406 (31.57)	53 (24.31)	848 (32.80)
Normal	692 (64.01)	880 (68.43)	165 (75.69)	1737 (67.20)
Total	1081 (100)	1286 (100)	218 (100)	2585 (100)

$X^2 = 12.98$; df = 2; $p < 0.01$

TABLE 8
Association between sex and undernutrition of children stratified on father's educational standard

Sex	Undernourished	Normal	Total	Stratum sepcific OR
Stratum - 1 : Illiterate / Primary				
Female (%)	199 (37.41)	333 (62.59)	532 (100)	1.13
Male (%)	190 (34.61)	359 (65.39)	549 (100)	(0.87 - 1.46)
Total (%)	389 (35.99)	692 (64.01)	1081 (100)	
Stratum - 2 : Up to X standard				
Female (%)	226 (33.19)	455 (66.81)	681 (100)	1.17
Male (%)	180 (29.75)	425 (70.25)	605 (100)	(0.92-1.50)
Total (%)	406 (31.57)	880 (68.43)	1286 (100)	
Stratum - 3 : Above X standard				
Female (%)	36 (30.25)	83 (69.75)	119 (100)	2.09
Male (%)	17 (17.17)	82 (82.83)	99 (100)	(1.04-4.24)
Total (%)	53 (24.31)	165 (75.69)	218 (100)	
Summary :	Crude OR = 1.19 $\chi^2 = 4.46$	MH OR = 1.20 $p < 0.05$	95% CI =	1.02 - 1.41

Fig. 1 : Prevalence of children's undernutrition according to parent's educational status

standard improved upto X standard. The proportion of undernourished children further decreased to 24.31% when fathers were educated beyond X standard. These findings suggest an inverse relationship between father's educational standard and undernourishment. The result of stratified analysis carried out to detect the sex differential in undernourishment and the independent risk of girl child being undernourished is shown in Table-8.

As can be seen from the table, the odds of a girl child being undernourished was 1.13 times higher than a male child when fathers were educated upto primary and 1.17 times higher when fathers were educated upto X standard. These differences were statistically not significant. However, a statistically significant difference in the nutritional status of girls and boys was observed

when fathers were educated beyond X standard. The independent risk of a girl child being undernourished was 1.20 times higher as compared to a male child.

Discussion

The school going children are in a critical age group with regard to nutrition. It is the time when growth spurts occur. It is the time when most nourishing diet is required. It is the time when nutritional deficiencies lead to malnutrition without having any overt features of it unless very severe.

Fig. 2 : Prevalence of children's undernutrition according to mother's educational status

Fig. 3 : Prevalence of children's undernutrition according to father's educational status

The parent's education, undoubtedly, is one of the most important factors that determine the nutritional status of children. The present study has clearly shown that education of parents as well as that of mothers and fathers separately has a direct relationship

with nutrition i.e. with the improvement in the educational standard, the nutritional status of children also improved. This could be because of the greater role of educated parents in pursuing the appropriate strategy in making greater share of household resources avail-

able to children. The possibility that the undernourished children came from poor families was not considered because majority of children included in study, came from similar economic background. The findings of our study, in general, are thus comparable to the findings of Bairagi [1], Ganguli et al [5], Sen et al [8] and Gopalan [9].

The stratified analysis further showed that the mothers, irrespective of their educational status, did not discriminate between the boys and girls with regard to nutrition. Similar was the case when fathers were educated upto X standard. But with further increase in father's educational standard, the odds of girls being undernourished, as compared to boys, was higher. All the available literature on the subject is silent on this issue and hence this finding of our study needs to be verified by a larger study. Another, but no less important collateral finding of the study was that the girls irrespective of their parent's education, suffered a higher risk of being undernourished as compared to boys. This is in consonance with the findings of Levinson - as quoted by Meera Chatterjee - that the gender itself was the most significant determinant of nutritional status [10].

References

1. Bairagi R. Is income the only constraint on child nutrition in Bangladesh? Bull WHO 1980;58:767-72.
2. D'souza S, Bhuiya AL. Socio-economic mortality differentials in a rural area of Bangladesh, population and development review. 1982;8:753-9.
3. Arya A, Devi R. Influence of maternal literacy on the nutritional status of pre-school children. Indian Journal of Paediatrics 1991;58:265-8.
4. Sive AA, Subotzky EF, Malan H. The social, family and medical backgrounds of children with kwashiorkor presenting at a teaching hospital. South Africa Medical Journal 1993;83(3):180-3.
5. Ganguli SS, Achar DP. Polytomous logistic regression approach for modelling risk factors of malnutrition among pre-school children. Statistics in health and nutrition, Hyderabad : NIN 1990;162-7.
6. Gupta MC, Mehrotra M, Arora S, Saran M. Relation of childhood malnutrition to parental education and mother's nutrition related KAP. Indian Journal of Paediatrics 1991;58:269-74.
7. Kuppuswamy B. Manual of socio economic status scale (urban) Delhi, Manasayan 1976.
8. Sen A, Sengupta S. Malnutrition in rural children and the sex bias. Economic and political weekly 1983;18:855-64.
9. Gopalan C. The role of women in a new health order. In:Gopalan C, editor. Nutrition, health and national development. Special publication series 4, New Delhi:NFI, 1989;115-35.
10. Chatterjee M. Socio-economic and socio-cultural influences on women's nutritional status and roles. In:Gopalan C, Kaur S, editors. Women and nutrition in India. Special publication series 5, New Delhi:NFI, 1989;296-329.