

MALNUTRITION AMONG PRIMARY SCHOOL CHILDREN AND ITS ASSOCIATION WITH LITERACY OF MOTHERS

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ABSTRACT

Background and Objective: In low income countries like Pakistan the prevalence of malnutrition is quite high and this physical condition of children is associated with the educational status of their mothers. This study was conducted to find out the frequency of malnutrition among school children of 5 – 8 years of age, and its relationship with the literacy status and occupation of their mothers.

Methods: A Cross – sectional study was carried out in Public sector schools of Wah Cantt from Sep. 2013 to Feb. 2014. Four hundred and ten school children of 5 – 8 years of age were included in the study by simple random sampling technique. The height and weight was measured and frequency of overweight, underweight, stunting, muscle wasting and status of mothers' education were determined. Results were summed and statistically analyzed using SPSS 19. Chi-Square test was applied to find out the significance of association between mother's education and malnutrition of their children.

Results: Out of 410 children there were 149 (36.3%) boys and 261 (63.7%) girls. The mean age was 75.01 ± 6.5 months. Frequency of malnutrition was 59.5%, 53.4%, 40.3% and 43.7% in children with mother's education up to Primary, Matric/Intermediate, Graduate and Post-graduate respectively. A significant inverse relationship was found between mother's education and frequency of underweight and stunting among children (p-value 0.003 and 0.042).

Conclusion: Frequency of malnutrition was inversely related to mother's education. Educational status of mothers is a good judge of nutritional status of their children. It means that our children will be in good health if we raise the literacy level of our females.

Key Words: School – aged, children, overweight, underweight, stunting, wasting, mother's education, malnutrition.

INTRODUCTION

Malnutrition is a common community health issue in Pakistan. It is responsible for poor health and more deaths among children; in the long run it is associated with poor intelligence, decreased years of schooling and monetary output.¹ The National Nutrition Survey Pakistan – 2011 showed stunting rate of 43.7%, wasting rate of 15.1 % and 31.5 % children were underweight across Pakistan.²

Worldwide malnutrition in children is a matter of concern. In developing countries about 178 and 112 million children are correspondingly stunted and underweight.³ One of the targets of Millennium Development Goals is to halve the percentage of underweight children by 2015. Another goal of MDGs is to reduce child mortality by two – thirds which can also be achieved by improving the nutritional status of children as malnutrition is a vital factor responsible for

increased child mortality.³ Physical fitness of children is essential for their growth as it pass on to their adult life as well. So, if a nation has to plan for its sustainable future development, emphasis should be on the improvement of nutritional status of their children.⁴

In a country like Pakistan under-nutrition is an important cause of death among children and heavy health expenditures.^{5,6} Poverty can be blamed as a key factor responsible for increased prevalence of malnutrition in less developed countries. The frequency of malnutrition in any community can be determined by several factors: such as high rate of unemployment, illiteracy, world conflicts, natural disasters, overcrowding, the financial and sanitary conditions, availability of quality foods, breast – feeding practices, occurrence of communicable diseases, the success of food supplement programs and the accessibility and excellence of health care delivery.⁷⁻¹⁰ Wellbeing of children is a good

marker of the living standard in less developed states.⁴

In low income countries the physical condition of children is associated with the educational status of their mothers.¹ The frequency of malnutrition among children is found to be low in communities having literate females because of several likely reasons; educated women have more knowledge about healthy foods, they are better able to understand the causes and treatment of different diseases, they can also search health related information through different media, and such women are likely to have good financial status as well which makes them more amenable to new developments in medication. So investments in female education can make a nation healthier and economically more productive.^{11,12}

Today malnutrition is one of the major global health problems faced by the developing countries and a correlation exists between higher mother's education and improved child health. In a study conducted among Pakistani primary school children 10% children were undernourished; the frequency of malnutrition was significantly less among children with parents having higher education.⁶ Malnutrition and infections go hand in hand; if malnutrition is corrected infections will also be decreased. Pakistan has quite a high mortality among children and its advancement to the MDGs targets is also slow.

SUBJECTS AND METHODS

A Cross – sectional study was conducted among 5 – 8 years old children of public sector schools from Sep. 2013 to Feb. 2014. Four hundred and twenty children of both genders from six public sector schools of Wah Cantt were included in the study. For each school, a list of all students in class I and II was obtained, there were 90– 100 students in each class of all the schools. By simple random sampling technique seventy children from each school were included in the study. Information regarding age/date of birth, sex, family income, mother's education and occupation of all selected students was obtained. A written permission was taken from the office of GSO-I Education, Wah Region for collection of data from Schools. Verbal informed consent for the child to participate in the study was taken from parents and class teachers. Ten proforma having incomplete information were excluded.

Anthropometry has become a practical tool for evaluating the nutritional status of populations, particularly of children.⁷ Each child's height and weight were measured in the metric system, using standardized technique. The instruments were checked and calibrated on a daily basis. Height measurement was taken in centimeters (cm) to the nearest 0.1 cm and weight was measured in kilogram (kg) to the nearest 0.5 kg. For measuring height the child was asked to stand relax without footwear, feet were placed parallel with heels, buttocks and shoulder blades against the

measuring rod and head was positioned in the Frankfurt horizontal plane. A portable balance was used to record the weight of the subjects. Children were instructed to stand on the balance with light clothing and without footwear and with feet apart and looking straight. Findings were recorded in the proforma.

All the data obtained was entered and analyzed using SPSS 19. Mean and standard deviation (SD) was calculated for age. Frequencies and percentages were calculated for gender, family income, and mothers' education / occupation. The frequency of overweight, underweight, stunting and wasting was calculated by applying the 2007 WHO Child Growth Standard tables.

Underweight: Weight for age < 3rd percentile of the median.

Stunting: Height for age < 3rd percentile of the median.

Wasting: Weight for height (BMI – Kg/m²) < 3rd percentile of the median.

Overweight: Weight for height (BMI – Kg/m²) between 85th and 95th percentile.¹³ Chi-Square test was applied to find out the significance of results. We used a significance level of 0.05, below which the results were considered to be statistically significant.

RESULTS

Four hundred and twenty children between five to eight years of age were included in the study. Ten proforma having incomplete information were excluded. Out of 410 children there were 149 (36.3%) boys and 261 (63.7%) girls. The mean age was 75.01 ± 6.5 months (6 years and 3 months). The monthly family income of 134 (33%) children was below 10,000, of 230 (56%) was between 10,000 and 25,000, and of 46 (11%) was above 25,000. The education of mothers of 168 (41%), 159 (39%), 67 (16%) and 16 (4%) children was up to primary, Matric, Graduate and Post-graduate respectively. The mothers of 383 (93.4%) children were house wives and only of 27 (6.6%) mothers were working women.

The overall frequency of children having different categories of malnutrition was 219 (53.4%); 14 (3.4%) underweight, 1 (0.2%) stunted, 69 (16.8%) wasted, 4 (1%) overweight, 100 (24.4%) underweight and wasted, 22 (5.4%) underweight, wasted and stunted, 9 (2.2%) underweight and stunted and 191 (46.6%) were normal. On individual analysis of frequency of each category of malnutrition 146 (35.6%) children were underweight, 32 (7.8%) were stunted, 191 (46.6%) were wasted and only 4 (1%) were overweight. The frequency of malnutrition was significantly more among boys as compared to girls (56.3% vs 51.7% p-value 0.015). Mean and Standard Deviation for height, weight and BMI were 114.10 ± 5.85 cm, 17.13 ± 2.64 Kg and 13.11 ± 1.38 Kg/m² respectively. The frequency of malnutrition among children belonging to different

income groups is presented in Figure 1, the proportion of malnourished children was higher in low income families (57% vs 39%) but the difference was not statistically significant (p-value 0.55). Frequency of malnutrition was 100 out of 168 (59.5%), 85 out of 159 (53.4%), 27 out of 67 (40.3%) and 7 out of 16 (43.7%) in children with mother's education up to Primary, Matric / Intermediate, Graduate and Post-graduate respectively. A significant relationship was found between higher mother's education and low frequency of underweight and stunting among children (p-value 0.003 and 0.042 respectively, Table 1). Frequency of malnutrition was significantly high in children whose mothers were house wives as compared to children whose mothers were working women (p-value 0.023,

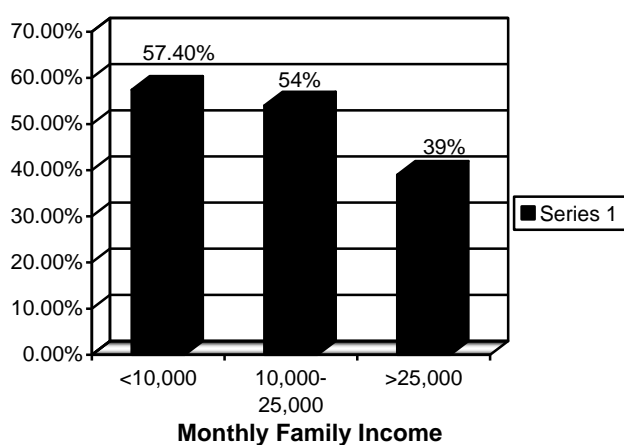


Fig. 1: Frequency of Malnutrition in different income groups.

Table 2).

The frequency of malnutrition was higher among children with mothers having lower educational status; the results were statistically significant for association between higher mother's education and low frequency of underweight and stunting among children.

Frequency of malnutrition was significantly high in children whose mothers were house wives.

DISCUSSION

Malnutrition among children is a colossal health problem of the recent century. According to different surveys about 2.2 million fatalities and 21% of DALYs (disability – adjusted life – years) lost worldwide are due to malnutrition.¹⁴ Poor nutrition hinders both body and intellectual development of children. Children on deprived nutrition for long period would have growth retardation, poor intelligence, more psychosocial problems and increased frequency of infectious diseases.¹⁵ This survey was conducted to determine the frequency of malnutrition among school children of 5 – 8 years of age, and its relationship with the literacy status of their mothers.

Under – nutrition in childhood is a major cause of increased mortality among children and heavy health expenditures observed in developing countries. In this study 146 (35.6%) children were underweight; these results are similar to findings of National Nutrition Survey Pakistan which showed that 29.7% children were underweight across Pakistan.² These results are comparable to the findings of different surveys in developing countries.^{7,10,16,17} Stunting is considered to be a good measure of overall health status during childhood

Table 1: Relation between Mother's education and frequency of different categories of Malnutrition.

Mother's Education	Under Weight %	Stunting %	Wasting %	Over Weight %	Malnutrition %
Primary	41.6	11.9	50.6	1.78	59.5
Matric / Inter	37.7	0.62	47	0	53.4
Graduate	16.4	1.49	37.3	1.49	40.3
Post Graduate	31.2	6.25	37.5	0	43.7
Chi-square value	13.89	8.19	3.95	3.05	26.01
p-value	0.003	0.042	0.26	0.38	0.07

Table 2: Relation between Mother's occupation and frequency of different categories of Malnutrition.

Mother's Occupation	Under weight %	Stunting %	Wasting %	Over weight %	Malnutrition %
House wives	36.8	8	47.5	0.52	54.3
Working women	18.5	3.7	33.3	7.4	40.7
Chi-square value	3.68	0.67	2.04	12.37	16.24
p-value	0.055	0.41	0.15	0.000	0.023

since it is related to the collective effects of socio-economic, health and nutritional problems. In our survey 32 (7.8 %) children were stunted, similar to the stunting rate of 8.2% among school – aged children of Lahore.¹⁸ Relatively high rates of stunting were found in different Asian and African countries.^{17,19,20}

Wasting (low BMI for age) reflects acute malnutrition and can be caused by an extremely low energy intake, nutrient losses due to infection, or a combination of low intake and high loss. In our study 191 (46.6%) children were found to have wasting, in India the rate of wasting ranges from 29% – 34%.⁵ In distinction low rates of wasting 10 – 13% were observed in different studies among Pakistani primary school children,^{6,16,18} the National Nutrition Survey Pakistan showed wasting rate of 15.1%.² Also low rates were found in different developing countries.^{10,19} Childhood overweight, although less documented, is a demanding health issue worldwide as about 10% children of school age are overweight. In Pakistan also the prevalence of childhood overweight is on a rise since last decade.²¹ Only 4 (1%) children were found to be overweight in our sample as most of the children belong to low income families, in contrast high frequency of overweight children has been noted in different studies.^{6,18,21}

Various studies have discovered that children of mothers with greater education had lower likelihood of being malnourished.^{17-19,22,23} Low rates of malnutrition have been recorded among children of educated females as literate mothers have good information about their child's dietary needs, have better employment opportunities, live in healthier environment, and are able to identify as well as manage health related problems properly; all these factors have an effect on the growth and development of their children.¹ In this study a significant relationship was found between higher mothers' education and low frequency of underweight and stunting among children (p-value 0.003 & 0.042 respectively) but the relationship with the frequency of malnutrition on the whole was statistically insignificant (p-value 0.2). Another study conducted in Pakistan⁶ showed a significantly decreased frequency of childhood stunting and thinness amongst siblings of educated mothers (p-value 0.001). In a study by Srivastava et al.⁵ an appreciably high frequency of malnutrition was noted in children having less educated mothers (OR 5.15). In studies by Senbanjo et al.²⁴ and Abubakar et al.²⁵ stunting had a linear association with maternal education (p-value 0.001), higher among children from less educated mother. In our sample frequency of malnutrition was more in children whose mothers were housewives as compared to children whose mothers were working women (p-value 0.023). Similar results were found in a study by Jesmin et al.,²² where children were found to be well – nourished if the mother held a job and had good knowledge of

nutrition. In contrast a study by Srivastava et al.⁵ showed high frequency of malnutrition in children whose mother were working women.

It is **concluded** that quite a high frequency of different categories of malnutrition was found among apparently healthy school children. Increased years of schooling of mothers have a positive effect on the child's health. So by investing money in female education and including health related dietary information in curriculum, we will be able to improve the health and productivity of our next generation as girls are the future mothers.

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Authors' Contributions

R. M. conceived the idea of this study, participated in data collection, did the statistical analysis, and drafted the manuscript. M. R. has made a large contribution to the conception and design of study, supervised the study and critically revised the article. S. A. M. reviewed related literature, and participated in the design of the research instrument. A. B., A. A., S. S., S. N., and K. W. participated in data collection, analysis and interpretation of results. All authors critically revised the manuscript for important intellectual content and approved the final manuscript.

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