Original Article

Association of Literacy of Mothers with Malnutrition among Children Under Three Years of Age in Rural Area of District Malir, Karachi

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Abstract

Objective: To determine the association of literacy of mothers with malnutrition among children under three years of age in rural area of district Malir, Karachi.

Methods: A cross-sectional study was conducted on four hundred children under three years of age, residing in the rural area of district Malir, Karachi. The selection of the children was irrespective of gender, ethnicity and religion.

Results: Three hundred nineteen mothers (79.75%) were illiterate and 81 (20.25%) were literate. In the latter group, three mothers could read or write only, 38 had primary, 10 middle, 15 matric, 12 intermediate and 3 mothers had education upto graduate level. Maximum malnutrition regarding stunting (40.75%) was seen in children who's mothers were illiterate and maximum underweight (57.89%) was seen in children who's mothers had education up to primary level and maximum wasting (33.33%) was seen in children who's mothers (only 3 mothers out of 400) were graduates.

There was a significant difference regarding underweight between the children who's mothers were illiterate or had education up to primary level in comparison to the children who's mothers had education to more than primary level (P<0.016), but in significant difference regarding stunting and wasting was found.

Overall a total of 217 (54.25%) children were underweight, 156 (39%) were stunted and 86 (21.5%), had wasting.

Conclusion: Mother's literacy status has a definite association with the malnutrition of the children <3 years of

Introduction

Child malnutrition may be defined as a pathological state resulting from inadequate nutrition, including undernutrition (protein-energy malnutrition) due to insufficient intake of energy and other nutrients; overnutrition (overweight and obesity) due to excessive consumption of energy and other nutrients; deficiency diseases due to insufficient intake of one or more specific nutrients such as vitamins or minerals.[1] In this study, the term malnutrition has been used for the condition of under nutrition only.

Children whose weight-for-age (W/A), children whose height-for-age (H/A) and children whose weight-for-height (W/H) is below minus two standard deviation (-2SD) from the median of the reference population (National Centre for Health Statistics) are considered to be underweight, stunted and thin or wasted respectively.[2]

Malnourished children are much more likely to die as a result of a common childhood disease than those who are adequately nourished. Malnutrition lowers the body's ability to resist infection by undermining the functioning of the main immune-response mechanism. This leads to longer, more severe and more frequent episodes of illness. Of the nearly 12 million children under five who die each year in developing countries mainly from preventable causes, the deaths of over 6 million, or 55 percent, are either directly or indirectly attributable to malnutrition. Some 2.2 million children die from diarrhoeal dehydration as a result of persistent diarrhoea that is often aggravated by malnutrition.[3]

According to the national figures of Pakistan given by the State of world's children UNICEF 2004, adult literacy rate in females is only 28% and mother's literacy status must be much lower than this actual figure.[4] Prevalence of stunting and wasting is 32.50% and 16.5% respectively in rural areas of Pakistan which is higher in comparison to the urban areas.[5] This difference may be attributed to limited access and utilization of health services. Only 35% of rural areas have access to health whereas 90% of urban areas have these facilities.[6]

There is no scientific data available on prevalence of malnutrition among children under three years of age in rural area of district Malir, Karachi. The present study was designed to assess the prevalence of malnutrition and to identify the risk factor/factors specific to this particular community.

Methods

Study Design, Subjects and Setting

A cross-sectional study design was used. Four hundred Children under three years of age residing in the rural area of

district Malir, Karachi were enrolled for the study. The selection of the children was irrespective of gender, ethnicity and religion. Youngest child under three years of age was selected from each household. If a person had more than one wife, then youngest child of either of the wife was enrolled. If there were twins, then one was selected randomly. The exclusion criteria were children more than 3 years of age, children with mental retardation, congenital deformity, chronic diseases/disorder e.g. Tuberculosis, and thalassemia and parents who refused to consent were excluded.

Prevalence

Through statistical formula sample was derived as

$$n = \frac{(Z\alpha_{/2})^2\, p\,(1-p)}{B^2}$$

Z = Confidence level = 95% i.e. 1.96
P = Prevalence = 50% i.e. 0.5
B = Bound of error = 5% i.e. 0.05

$$n = \frac{(1.96)^2\, 0.5\,(1-0.5)}{B^2}$$

$$n = 384.5 = 385$$

At 95% confidence level, we used the prevalence of 50% (underweight/ stunting) and bound on error of 5%. We therefore needed at least 385 children for study.[7]

Sampling Technique

Area sampling technique was used for this study. It is a type of random sampling in which maps rather than lists are used.[8]

The rural area of district Malir was divided into 50 blocks. Simple random technique was used to select the 10 blocks out of these 50 blocks. Each block had variable number of villages and population. According to the proportion of sample size to the population in each block, number of children were selected. As each block had many villages, both the village and children were selected randomly. If one village did not fulfill the requirement of the sample size (in number) then a second village of the same block was used. Every block was therefore employed in this process for selecting the sample size.

The tools for data collection included:

1. Questionnaire for household information and child's information. Interviewers were hired from Health AND Nutrition Development Society (HANDS).

2. Anthropometric measurements as weight and length (height) were taken to assess the nutritional status of the children.[9,10]

The age of the child was determined by co-relating the date of birth with Islamic date or events as Ramadan or Eid, local events and political events.

An infant weighing scale having a maximum weight capacity of 20 kg was used. Children were weighed with minimal clothing, and the weight was recorded to the nearest of 0.1 kg.

Recumbent length of the children was noted. Each child was made to lie on an adjustable wooden measuring board and length measurements were recorded to the nearest of 0.1 cm.

Results

The total number of children included in the study were 400, 209 (52.25%) males and 191 (47.75%) females. Frequency distribution of age variables in these children was 48 (12%) less than 6 months, 89 (22.25%) between $\geq$6 months and <12 months, 150 (37.5%) between $\geq$12 months and <24 months and 113 (28.25%) between $\geq$24 months and <36 months.

Regarding the educational status of the mothers, majority of them, 319 (79.75%) were illiterate and 81

Table 1. Frequency distribution of mother's education by type of malnutrition.

S.No.	Education	Total	Weight for age		Height for age		Weight for height	
			Normal	Underweight	Normal	Stunting	Normal	Wasting
1.	Illiterate	319	139	180	189	130	250	69
		(80%)	(44%)	(56%)	(59%)	(41%)	(78%)	(22%)
2.	Can read/write and Primary	41	18	23	27	14	31	10
		(10%)	(44%)	(56%)	(66%)	(34%)	(76%)	(24%
3.	Middle, Matric and Inter	37	24	13	25	12	31	6
		(9%)	(65%)	(35%)	(68%)	(32%)	(84%)	(16%)
4.	Graduate	3	2	1	3	0	2	1
		(1%)	(67%)	(33%)	(100%)	(0%)	(67%)	(33%)
	OVERALL	400	183	217	244	156	314	86
		(100%)	(46%)	(54%)	(61%)	(39%)	(79.5%)	(21%)

(20.25%) were literate. Of the literate group, 3 could read or write, 38 (9.5%) had primary, 10 middle, 15 (3.75%) matric, 12 intermediate and 3 mothers received education up to graduate level (Table 1).

Relationship of 400 mother's education with the nutritional status in the children was analyzed. Three hundred nineteen Mothers (79.75%) out of 400 were illiterate and the children of these mothers, 56.43% were underweight, 40.75% were stunted and 21.63% were wasted. Three Mothers (.75%) could read and write only, their children 33.33% were underweight and stunted and no one had wasting (Table 1) of the 400 children 217 (54.25%) children were underweight, 156 (39%) stunted and 86 (21.5%) had wasting (Table 1).

The mother's educational status was cross-tabbed with the type of malnutrition. We divided mothers of 400 children into two groups. Mothers of 360 (90%) children were included in group one, according to their educational status i.e. they were illiterate or had education up to primary level. Second group comprised of 40 (10%) mothers, who received education higher than primary (i.e. middle, matric, inter or graduation) (Table 2).

Table 2. Frequency distribution of type of malnutrition by mother's educational status.

	Weight for age		Chi-Square	P-value
	Normal	Underweight		
≤Primary Education	157	203	5.88	0.016*
>Primary Education	26	14		
	Height for age			
	Normal	Stunting		
≤Primary Education	216	144	1.12	.289
>Primary Education	28	12		
	Height for age			
	Normal	Stunting		
≤Primary Education	281	79	.20	.655
>Primary Education	33	7		

* Statistically Significant p<0.05.

In group one there were 203 (56.39%) children who were underweight, 144 (40%) stunted and 79 (21.94%) wasted. In Second group 14 (35%) children were underweight, 12 (30%) were stunted and 7 (17.5%) had wasting (Table 2).

There was a significant difference between the children who's mothers were illiterate or had education up to primary level in comparison to the children who's mothers had education to more than primary regarding underweight P<0.016, but non-significant difference was found between the two groups as regards stunting and wasting (Table 2).

Discussion

Our study proved that literacy status of mothers strongly affects the nutritional state of the children where illiterate mothers are a risk for the development of malnutrition in children <3years of age especially underweight. This coincides with the studies of Ahmad[11], Bouvier[12], Tumwine[13] and Chen.[14] All of them have identified illiteracy of mothers as a strong risk factor for malnutrition in children <3 years of age.

Lu[15] found in both the crude analysis and after controlling for confounding variables that maternal education in the population remains statistically relevant to children's dietary and nutritional status. The proportion of low body weight and stunted children was highest in the group with maternal education level below preliminary school, the lowest proportion was seen where educational level was above high middle school.

Islam[16] in a multivariate analysis found maternal illiteracy and lack of breastfeeding to be associated with approximately fourfold increased risk of severe malnutrition in their children.

In our study highest number of children i.e. 130 (40.75%) were found to be stunted. They were the children of illiterate mothers. Maximum underweight and wasting were found in 22 (57.89%) and 10 (26.32%) children respectively and their mothers had education upto primary level. This coincides with the studies of Ahmed[17] and Ojofeitimi.[18]

In our study population, 360 (90.00%) mothers of the 400 were illiterate or who had education up to primary level only. Of these 360 mothers 203 children were underweight which on statistical evaluation was found to be significant P<0.01. This coincides with the study of Rikimaru[19], while stunting and wasting was found in 144 and 79 children respectively which were non-significant. This coincides with the study of Setswe.[20]

In our study 54.25% children were underweight, 39.0% stunted and 21.50% were wasted. This coincides with the national figures of 37% stunting but not with those 38% underweight and 13% of wasting which has been stated in state of world's children by UNICEF.[21] The cause could be attributed to the deference in ages of children. Our study analyzed malnutrition in children below 3 years age where the national figures are of children less than 5 years.

Another factor is the location of the study. Our sample was from a specified rural area with poor basic health facilities where the national survey included children from the entire country population.[6] The study concluded that a mother's literacy status and level of education has a significant influence on state of nutrition of her children. It is therefore recommended that education of females especially in the rural areas should the promoted and given due importance.

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