MALNUTRITION OF CHILDREN UNDER 5 - FINDINGS FROM MAHMOODABAD SURVEY

Pages with reference to book, From 3 To 6

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Abstract

To assess the nutritional status of children under 5, a survey was conducted in the under-privileged community of Mahmoodabad. Of over 1,000 children, three-fourth had varying grades of protein calorie malnutrition. The prevalence of grade III malnutrition was higher in children in their 2nd year and among those belonging to families of more than four persons. On the average, a child was reported to suffer from two spells each of diarrhoea and respiratory illness. Both the diseases seemed to be associated with age and nutritional status of the children. An association was found between history of roundworm infestation and the nutritional status. On the basis of these findings, we emphasize on education of the mothers on various aspects of child health, regular growth monitoring, and on measures to improve general health status in the underprivileged communities (JPMA 39: 3 , 1989).

INTRODUCTION

Protein calorie malnutrition in children, especially those under five years of age, is persistent and wide-spread in Pakistan. Several nutritional surveys consistently found varying degrees of malnutrition in about two-thirds of infants and preschool children (birth to 5 years)[1-3]. It has been estimated that twenty five percent of all children born in the country die before reaching their 5th birthday. Of those who survive, a majority show defective growth patterns. For instance, at two years of age, an average Pakistani child weighs 20 lbs and is 28.5 inches in height while a European child of the same age weighs 26 lbs and is 34 inches in height. [4] Numerous risk factors have been identified for malnutrition of children under-5 years of age, such as inadequate diet, unhygienic living environment, and high illiteracy rate of women. On analysis, these risk factors may themselves reflect other diverse conditions in the society; inadequate diet may be because of low per capita income or due to late introduction of weaning food; unhygienic environment may be the manifestation of high population density, lack of potable water and sewage disposal facilities; and illiteracy of females may be the result of traditional customs in a society. [5] These risk factors occur in clusters and interact with each other to produce synergistic effects[6]. Malnutrition resulting from insufficient diet may be aggravated by unhygienic living conditions through recurrent diarrhoea and respiratory infections. Similarly, malnutrition resulting from recurrent infections may become severe by non-utilization of modern medicines by an unconvinced, often uneducated mother. Therefore, it is difficult to quantify the effect of each risk factor in the causation of this illness, suggesting that a successful intervention strategy for prevention of malnutrition should attack many risk factors at a time[7]. The present paper is based on the findings of the "Child Nutrition Project" conducted by a team of investigators from Jinnah Postgraduate Medical Centre (JPMC) Karachi. [8] The aims of this project were to assess nutritional status of children under 5 years in a poor community, and to design interventions according to the findings. This paper reports only some of the findings of the baseline survey.

SUBJECTS AND METHODS

The survey was conducted in Mahmoodabad Colony, a squatter settlement in Karachi about three miles from JPMC. A sample of 750 households, covering a population of 5,000 people, was selected from the proximity of the project field office. The baseline survey was conducted between August 1976 and June 1977. The families were interviewed by research assistants by using a predetermined questionnaire. All physical examinations were done by experienced paediatricians. Alongwith general information such as housing characteristics, family size and monthly income of the household, history of children under 5 was obtained from the mothers. The latter data included information on the length of breastfeeding, age at which weaning diet was introduced, spells of diarrhoea and respiratory tract infections during the six months preceding the date of interview and whether the mother had observed roundworms in the child's stool. A spell of diarrhoea was defined as three or more watery stools in 24 hours and a respiratory tract infection spell was considered when a child suffered from cough and fever lasting more than 48 hours. Weights of the children and other body measurements were recorded, using beam balance scales for weighing children below 15 kg, and weighing machines for children over 15 kg. The scales were read to the nearest 0.01 kg and 0.1 kg respectively. Clinical and laboratory examinations were conducted for assessment of nutritional status. Nutritional status of the children was established by analysis of weight for age according to the Gomez classification. Children having weight of 90% or more of the standard were considered normal. Malnutrition was categorized into three grades of increasing severity according to the percentage reduction in weight from the standard. The first degree is 75% - 90%, second degree 60% - 75% and third degree is below 60% of the standard.

RESULTS

The general data of the baseline survey indicates that most of the families in the area live in conditions of poverty. Eighty percent of the families reported monthly income of less than Rs.500 (1976 value), more than 60% of the families live in one room houses, the main source of water is community taps and the pit latrine was the usual toilet facility. The average family size is 7 persons per household and more than 70% people were found to be fliterate.

TABLE I. Nutritional Status by Age (Percentages).

Nutrition Status	AGE (months) 0–11 (n=274)	12–23 (n=216)	24–35 (n=229)	36–47 (n=213)	48–60 (n=187)	Total sample (n=1119)
Normal	58	23	16	13	15	27
Grade I	29	41	50	47	44	41
Grade II	10	25	26	35	32	26
GradeIII	03	11	08	05	04	0.6

Table I shows nutritional status of the children by the age. Weight for the age was found normal in only 27% of the total sample. The remaining children manifested varying degrees of malnutrition with one

third falling below 75% of the standard weight for their age. The frequency of malnutrition seemed to be associated with the age of the children. 58% are found normal in the first year of their lives. This percentage rapidly declines in the latter years. The grade III malnutrition is least. among the infants, reaches its peak in the 2nd year and then tapers off. Large family size has an adverse effect on the nutritional status of the children. In comparison to families having four or less members, the percentage of severely malnourished children was double in those families constituted of more than four persons (Table II).

TABLE II. Percentage Distribution of Nutritional Status by the size of Family.

Nutrition Status	SIZE OF THE FAMILY 3–4 (n=191)	5–7 (n=525)	8 and above (n=454)
Normal	30	23	29
Grade I	42	44	38
Grade II	27	27	26
Grade III	03	06	06

Mothers reported that their children experienced an average of two spells each of diarrhoea and respiratory tract infection during the six months proceeding the date of interview. Both the diseases were found to have association with the age of the child. The frequency of the diseases was lower in the first and fifth year of the age of the children (Table III).

TABLE III. Number of spells of Diarrhoea and Respiratory Illness in the past Six Months by Age (Means and Standard Deviations).

Type of Illness	AGE (months) 0–11	12–23	24–35	36–47	48–60	Total Sample
Diarrhoea	1.40 (1.91)	2.39 (1.88)	2.57 (1.81)	2.50 (1.93)	1.60 (1.42)	2.05 (1.86)
Respiratory	1.17 (1.56)	2.00 (1.85)	1.91 (1.52)	2.04 (1.51)	1.74 (1.48)	1.75 (1.58)
N	233	186	187	198	208	1,012

Source: Ref. # 6

A relationship was also apparent between the occurrence of the diarrhoea and respiratory illness and the nutritional status of a child. Frequency of both the diseases is lowest among the normal children and increases with the severity of malnutrition (Table IV).

TABLE IV. Number of spells of Diarrhoea and Respiratory Illness in the past Six Months by Nutrition Status (Means and Standard Deviations).

Type of Illness	Nutrition Status				Total Sample
	Normal	Grade I	Grade II	Grade III	
Diarrhoea	1.75	1.98	2.38	2.54	2.06
	(2.05)	(1.65)	(1.91)	(1.84)	(1.86)
Respiratory	1.36	1.78	2.01	2.22	1.75
	(1.53)	(1.57)	(1.55)	(1.65)	(1.58)
N	278	404	272	54	1,008

Source : Ref. # 6

Finally, an association was detected between history of passing worms by the children and their nutritional status. Among those, whose mothers reported noticing roundworms in the child's stool, 16% were found nutritionally normal. Of children who did not have such a history, 34% were in normal range, while of malnourished children 84% had history of passing worms and 66% did not.

DISCUSSION

Infant and pre-school years are a period of very rapid growth and development with high nutrient needs. Various forms of dietary deficiencies can occur in this age group, especially in underprivileged communities. The principal form of malnutrition seen during this period is protein calorie malnutrition (PCM). Weight-for-the age is a sensitive indicator of such malnutrition[9]. Forty-percent of infants in our study population had weights below normal. This problem becomes more serious from the 2nd year onwards, this being the period when the young child is transitional as regards diet and immunity to infections. Mild malnutrition as found by using Gomez classification had very high prevalence among the pre-school children studied, and most of these children are liable to change to the moderate or severe form of under nutrition, if continuously exposed to health or nutrition hazards. At these later stages, nutritional rehabilitation is difficult and mortality climbs rapidly. [10] Our data show that in poor communities large family size seems to aggravate the nutritional problems of the children. As the number of family members increases there is increased frequency of 3rd degree malnutrition among the children. The addition of every new member in the family apparently further reduces the nutritional share of even those who are already malnourished. Despite the possibility of under reporting due to

long recall, diarrhoea and respiratory illness are reported to be high in our study population and the data are consistent with the view that the frequency of diseases increases during the weaning period, then diminishes, as the child develops his or her immunity. Additionally higher frequency of these diseases among the malnourished children, compared to the nutritionally normal, suggests interaction between nutrition status and episodes of these illnesses. The observed relationship, however, may be due to other intervening variables. In poor communities where intestinal parasites are highly prevalent, an important concern is the contribution of parasitic infections to growth faltering in children. Despite an association evident between history of passing round-worms and the low nutritional status in our subjects, absence of laboratory data do not allow further inferences. The findings of our study re-emphasize that the health of a child under 5 is exposed to several risk factors in an underprivileged community such as poverty, late introduction of weaning diet and recurrent infections. Because of the close interactions of many of these risk factors, it cannot be assumed that addressing one contributing factor will produce improvement in the health status. A multifaceted strategy is, therefore, required to reduce morbidity and mortality in this age group. Secondly, a health education programme is urgently needed for the mothers in these communities. This programme should constitute education on weaning practices and infant nutrition, food and personal hygiene to protect children from infectious diseases, especially diarrhoeal diseases, and awareness of vaccination against immunizable diseases. Nevertheless the role of family income supplementation, mass literacy; sanitation and better housing cannot be neglected in the improvement of both general health status and the health of the children. Finally, for early detection and treatment of malnutrition and for the evaluation of preventive measures, regular growth monitoring of the children under 5 is needed in these communities. Although weight-for-the-age is a simple method for this kind of nutritional screening, other anthropometric measurements, such as height for the age, weight for the height and mid-arm circumference may be used whenever they provide more insight of this problem and help in designing of better intervention strategies.

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