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EDITORIAL

PROTEIN-ENERGY MALNUTRITION IN CENTRAL SUDAN: STUDY OF PREVALENCE AND SOCIO-ECONOMIC BACKGROUND

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Protein energy malnutrition (PEM) still has awide spread throughout the world, primarily among children. Approximately 192 million children under 5 years of age are suffering from acute or chronic (PEM). This average number increases during the annual period of food shortage in many developing countries, and in times of famine and social unrest [(1).] Poor nutritional status is a major factor in one third of all children deaths [(2)]. Malnutrition, especially among children continues to be a problem of considerable magnitude in most of the developing countries including Sudan. Children ages 0 to 5 years are nutritionally the most vulnerable. By one recent estimate 177 million under five children in the developing world are malnourished i.e. about one child in every three [(3)].

Today (PEM) is the most important public health problem in underdeveloped countries. It is largely responsible for the fact that in some areas up to half the children born do not survive to the age of five years. Death rates in these children may be 20 to 50 times the rate in rich and prosperous communities in Europe and North America [(6)].

Children admitted to Wad Medani Children Teaching Hospital during the year 2001, suffering from the various forms of (PEM) represented of the 7 % of total admissions. A total of ninety children randomly selected from patients admitted during the period January - December 2001 with (PEM) for medical management and nutritional rehabilitation were the subjects of our study ; of the ninety children: sixty were severely malnourished diagnosed and classified into two groups marasmus (30) and kwashiorkor (30) according to WHO criteria (WHO, 2000) .Thirty children who were hospitalized for non-nutritional causes and had minor ailments were included as control subjects; they were matched by age and sex to the study groups. The age of children in study groups ranged from 3 to 37 months. For each child a questionnaire was filled (with the co-operation of the parents) in order to obtain information regarding: demographic & medical data, feeding practices and socio-economic background of the family.

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Of 13023 patients admitted to the hospital during the period of the study, 920 (7 %) were cases of severe PEM; preceded in magnitude by malaria, respiratory tract infections and dehydration. Of the 920, 521 (57%) were males and 399 (43%) were females. The monthly intake of these cases into the nutrition ward runs between12 and 148 with the highest admissions in September and October. PEM contributed to 12 % (104 out of 838) of all deaths in a specified period. The mean age in the kwashiorkor and marasmus groups was 17.7 ± 7.6 months. The mean age in the control group was 17.2 ± 10.8 months. Males and females were represented in the study groups. All the children in this study came from the lower socio-economic strata of the community as revealed by their parental jobs and level of education. The fathers were mainly labourers and farming workers. The

mothers were house-wives and labourers. The major predisposing factors identified were poor nutrition, chronic illnesses, lack of adequate immunization, improper weaning practices since the children were always weaned onto sugared water, biscuits, cereal gruel, rice or other carbohydrate food, and poor purchasing power for protein-rich food items.

Table 1 : Residence and Parents' Occupation

Group	Control (n = 30)		Kwashiorkor (n = 30)		Marasmus (n = 30)	
Character	No.	%	No.	%	No.	%
Residence						
- Urban	20	66.7	5	16.7	6	20.0
- Rural	8	26.7	15	50.0	16	53.3
- Peri-urban	2	6.7	10	33.3	8	26.7
Parents' occupation						
* Mother						
- House-wife	27	90.0	24	80.0	25	83.3
- labourer	2	6.7	5	16.7	5	16.7
- clerical jobs	1	3.3	1	3.3	0	0.0
* Father						
- Jobless -	0	0	3	10.0	2	6.7
Farmer	0	0	1	3.3	1	3.3
- labourer	19	63.3	26	86.7	27	90.0
- clerical jobs	11	36.7	0	0.0	0	0.0

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n = number of subjects

Table 2: Parent's Education, Mother Age, Family Size and children less than 5 years of age (Mean ± SD)

Group Character	Control	Kwashiorkor	Marasmus
Parents'education (yrs)			
- Mother	5.7±5.5	1.4±2.7	2.7±3.4
- Father	7.2±6.1	1.7±2.3	2.1±3.4
Mother s age (years)	28.1±7.0	28.5±6.4	25.2±5.6
Family Size	7.5±3.7	7.0±2.8	8.2±4.1
Children ≤ 5 years	1.9±1.1	2.1±0.9	2.3±1.1

Breast-feeding, which protects the infant and fosters normal growth, was inadequate; most of the children were weaned early due to the mother's pregnancy, mother's or child's illness, some mothers thought that their children (by one year of age) are too old to be breast-fed. Weaning was observed to be abrupt in the majority of weaned infants.

Supplementary food was insufficient especially in proteins both quantity and quality. Among the factors contributing to the high prevalence of PEM there were unbalanced diets given to younger children during the weaning period.

Mother's ignorance of child's requirement during the period of rapid growth, cultural practices, poverty, poor sanitation; all had lead to provision of poor and inadequate diet and hence to malnutrition.

Table 3: Feeding practices, Immunization Status, Infection and illness

Group	Control (n = 30)		Kwashiorkor (n = 30)		Marasmus (n = 30)	
Character	No.	%	No.	%	No.	%
Feeding practice						

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-	Weaned	9	30.0	22	73.3	18	60.0
-	Breast-feeding	3	10.0	1	3.3	3	10.0
-	Mixed-fed	18	60.0	7	23.3	9	30.0
Weaning pattern							
-	Gradual	2	22.2	4	18.2	0	0.0
-	Abrupt	7	77.8	18	81.8	18	100.0
Immunization Status							
-	Complete	23	76.7	8	26.7	12	40.0
-	Incomplete	7	23.3	19	63.3	17	56.7
-	Not-vaccinated	0	0.0	3	10.0	1	3.3
Infection & Illness							
-	Previous	20	66.7	18	60.0	21	70.0
-	Current	28	93.3	25	83.3	29	96.7

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