Prevalence of Risk Factors of Primary 3rd Degree Malnutrition in Children Under 5 Years of Age; Admitted in Services Hospital, Lahore

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Objective: To determine the prevalence of risk factors of primary 3rd degree malnutrition in children under 5 years of age. **Design:** Hospital based descriptive study. **Place & duration of study:** Department of Pediatrics, SIMS/Services Hospital, Lahore, from July 2005 to December 2005. **Materials and methods:** A total of 200 children were included in study, from 2 months to 5 years of age. All had 3rd degree malnutrition according to modified Gomez Classification. Risk factors included were; Fresh (Cow) milk feeding, mixed feeding, delayed weaning, more than 2 children under 5, large family size (>5 children), partial vaccination, no vaccination, working mother, un-employed factors, twin delivery. **Results:** Risk factors identified were as follows: Mixed feeding 85.5% (n=171), more than 2 children under 5 was 84.5% (n=169), delayed weaning 74% (n=148), only fresh milk 70% (n=140), large family size (>5 children) 69% (n=138), partial vaccination 66.5% (n=133), working mother 24% (n=48), unemployed father 13.5% (n=27) and twin deliveries 3.5% (n=7). **Conclusion:** Most of the risk factors are preventable just by counseling and motivation of parents. Malnutrition can be avoided without causing financial burden on family.
Key words: Risk factors, Malnutrition.

The World Health Organization defines malnutrition as the "cellular imbalance between supply of nutrients and energy and the body's demand for them to ensure growth, maintenance, and specific functions". Protein Energy Malnutrition (PEM), first described in the 1920s' is observed most frequently in developing countries but has been described with increasing frequency in hospitalized and chronically ill children in the developed countries[1,2,3]. In addition to PEM, children may be affected by micronutrient deficiencies, which also have a detrimental effect on growth and development.

Malnutrition affects virtually every organ system. Dietary protein is needed to provide amino acids for synthesis of body p otein and other compounds that have a variety of functional roles. In addition to the impairment of physical growth and of cognitive and physiologic functions, immune response changes occur early in the course of significant malnutrition in a child[4]. The WHO estimates that approximately 150 million children (26.7%) younger than 5 years in developing countries are malnourished based on their low weight in relation to their age. An additional 200 million children stunted height secondary to poor nutrition[5]. Children who are chronically malnourished exhibit behavioral changes, including irritability, apathy and decreased social responsiveness, anxiety and attention deficits. In addition, infants and young children who have malnutrition frequently demonstrate developmental delay or permanent cognitive deficits. The degree of delay and deficit depends on the severity and duration of nutritional compromise and the age at which malnutrition occurs. Although, death from malnutrition in the United States is rare, in developing countries, approximately 50% of the 10 million deaths each year are secondary to malnutrition in children younger than 5 years.

A number of risk factors are responsible for malnutrition. It is an outcome of a complex set of inter-related behavioral, social, psychological, and physiological factors at the community, household and individual levels. Factors may be primary or secondary. In this study, we have included only primary risk factors.

Patients and methods:

This study was conducted from July 2005 to December 2005 at Department of Pediatrics, services Hospital, Lahore. This was a prospective, observational study. A total of 200 children were included in the study. Children included were from 2 months of age to 5 years. All had 3rd degree malnutrition according to modified Gomez Classification. The researcher himself interviewed the mothers or attendants. A number of risk factors, which were important in causing primary malnutrition were identified and included in the questionnaire. Each Performa had basic bio-data of the child along with anthropometrical data. Risk factors included were; Fresh (cow) milk feeding, mixed feeding, delayed weaning, more than 2 children under 5, Large family size (>5 children), partial vaccination, no vaccination, working mother, un-employed father, twin delivery. Children with any chronic illness or congenital diseases were not included in the study. Weight and height of the children was measured and the degree of malnutrition determined by using the 'Modified Gomez Classification'. According to this classification, a child was labeled as 3rd degree malnourished if his weight for age was less than 60% of the expected weight. Same weighing scale was used in all cases. Percentages of all the risk factors were calculated.

Results:

A total of 200 Performa's were filled. One hundred and twenty-two were males and seventy-eight was a female (Table-I). Ages of children were also analyzed. 6% children were from 2 months to 6 months (n=12) of age,

36.5% from 6 months to one year (n=73), 34% from one to two years of age (n=68), 11% from 2 years to 3 years (n=17) and 4% were from 4 years to 5 years of age (n=8) (Table-II). Risk factors of primary malnutrition were identified as follow; mixed feeding 85.5% (n=171), more than 2 children under 5 was 84.5% (n=169), delayed waning 74% (n=148), only fresh milk, 70% (140), large family size (>5 children) 69% (n=138), partial vaccination 66.5% (133), working mother 24%(48), unemployed father 13.5% (n=27) and twin deliveries 3.5%(n=7) (Table-III).

Discussion:

In our study we have evaluated ten important primary risk factors of malnutrition. Among all these factors, two most frequently occurred causes are related to breast-feeding. It is the most important factor as determinant of malnutrition. In our study, mixed feeding and fresh milk feeding are present in 85.5% and 70% of cases respectively. This is consistent with other studies, which shows that lack of breast feeding causes respiratory illness, pneumonia, otitis media and gastroenteritis ultimately leading to malnutrition[6,7,8]. Another very important cause of primary malnutrition is delayed weaning, which is present in 74% of cases in our study. This is consistent with recommendation of Betty Jean Clauses[9] and Arif M A et al[10]. In another study, conducted at children Hospital, it was observed that 50-60% of children received improper weaning diets by their mothers due to lack of nutritional awareness[11]. More than 2 children under 5 were 84.5% in our study, which obviously leads to malnutrition. Similarly, large family size, failure of immunization and poor socio-economic status is also very important causes of primary malnutrition in our society.

Conclusion:

This study has highlighted a very important reality that most of the risk factors of primary malnutrition are preventable. Although, we can't improve socioeconomic status of our people with immediate effect or provide jobs to them, but, we can promote exclusive breast-feeding, encourage proper weaning at proper time and motivate parents for complete immunization of their children. Similarly, we should highlight the importance of small family size. All these factors are not related to income of families. These only require proper motivation of parents.

Table-I: Sex distribution

Sex	No.	%age
Male	122	61
Female	78	39

Table-II: Age distribution

	No.	%age
2 months – 6 months	12	6
6 months – 1 year	73	36.5
1 year – 2 year	68	34
2 year – 3 year	22	11
3 year – 4 year	17	8.5
4 year – 5 year	8	4

Table III: Percentage of risk factors (n=200)

Risk factors	No.	%age
Mixed Feeding	171	85.5
Only Fresh Milk	140	70
Delayed Weaning	148	74
More than 2 Children under 5	169	84.5
Large Family Five (>5 children)	138	69
Partial Vaccination	133	66.5
No Vaccination	17	8.5
Working Mother	48	245
Unemployed Father	27	13.2
Twin Delivery	7	3.5

References:

1. Balint JP: Physical findings in nutritismal deficiencies. Pediatric Clin North Am 1998 Feb; 45(1): 245-60.
2. Haneef. S. M., Maqbool Sajid, Arif M A. The Text Book of Paediatrics. Pakistan Paediatric Association; 2000.
3. Blecker U, Mehta Dl, Davis R, et al: Nutritional problems in patients who have chronic disease. Pediatr Rev 2000 Jan; 21(1):29-32.
4. Chandra RK: 1990 McCollum Award Lecture. Nutrition and immunity: Lessions from the past and new insights into the future. Am J Clin Nutr 1991 May;53(5):1087-10.
5. World Health Organization: Malnutrition – The Global picture, 2000; Available at: http://www.who.int/home-page.
6. Golding J, Emmett PM, Rogers IS: Does breast-feeding protect against non-gastric infections. Early-Hum-Dev.1997 Oct, 29:49 Supple: 5105-20.
7. Lopez Alarion M, Villai Pando S: Breast-feeding lowers the frequency and duration of ARI and diarrhea in infants under six months of age. J Nute.1997 March 127(3): 436-43.
8. Dewy KG, Heining MJ. Rivers LA et al: Differences in morbidity between breast-fed and formula fed infants. J Pediate 1995:126:696-702.
9. Betty Jean Clasuss, Evelyn BV, Hall Marvis. Development of a breast-feeding support program at Naval Hospital Sigonella, Italy. Pediatric Nursing 1999. Vol 25(2): 161-6.
10. Arif MA, Mehdi Z. Knowledge and attitude of schoolteachers regarding breast-feeding. Pak J Med Sci. 2002, 18(2) 99-107.
11. Agha D A, Maqbool S, Anwar S. Is poverty or lack of nutrition awareness the main cause of malnutrition in children? Pak pediatric J. June2005; vol 29(2): 63-67.