Local Diets for Mainutrition in Children

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The mortality rate in children under 5 years is approximately 10%. Less than 10% of the children survive to their sixth year of life. Increased morbidity and mortality at an early age of life is due to low birth weight, birth asphyxia. respiratory distress syndrome and sepsis[1,2] However, the primary contributing factor to high childhood mortality in Pakistan is the prevalence of malnutrition. The severe degree of malnutrition is due to the synergistic effect of inadequate dietary intake, recurrent infections e.g. diarrhea[3] AR! (acute respiratory tract infections)[4] and poor hygiene in poverty areas[5]. UNICEF figures show that 50% of Pakistanis are stunted, 38% underweight, 9% demonstrate evidence of wasting[6].

Malnutrition in children requires adequate nutrition. This nutrition is provided in the form of energy, protein, vitamins, minerals e.g., supplemental zinc and electrolyte balance. Diets are increased every one to two days, in increments of approximately 25-call kg/day, as tolerated. Tolerance is generally assessed on the basis of stool output, recognizing that loose stools are common early in rehabilitation. Stool output up to 200g/day or more are considered acceptable early in re-feeding so long as the child is not becoming dehydrated and the trend over several days to weeks is towards reduced stool output and less watery stool. Hence, a close to ideal nutritional supplement is that which is easy to prepare. It should be well tolerated and vomiting, diarrhea etc should not occur[7].

Earlier studies on rats, followed by clinical trials on infants and children have been done. Diet consisting of rice. wheat, chickpeas, milk and drumstick leaves when given to infimis and children result in increase in weight[8].

Local diets such as a combination of khichri (rice and lentil), yogurt, banana (KYB) or vitamin A plus KYB or Soya milk diet or other formulas have been used[9-11]. The advantage of the local diet KYB is well known. Combination of chicken and a formula prepared with soya-bean protein in acute diarrhea is beneficial at a local level[12]. Commercially available Soya formula or infant lipid nutrition[13] is too expensive for the poor population in developing countries like Pakistan.

The possibility of using commercially available formulas is to be approached with extreme caution. Reasons are obvious; cost factor, not so easily available to the poor, in which sector malnutrition is very common. Local diets such as KYB should be encouraged, which are more effective.

Traditional complementary foods are mainly semi-solid starch-based gruel of low energy and nutrient density prepared from cereals and root crops. They have a very high starch content and must therefore be extensively diluted for the viscosity to be acceptable to the child. These provide less energy and essential nutrient for the infant than is required to complement breast milk, thus constituting a major cause of growth faltering, malnutrition and possible mental retardation during the weaning period. A new dimension in the management of malnutrition is amylase rich foods e.g., amylase rich flour (ARF). In ARF the amylase liquefaction of high density, high viscosity HD-HV porridge results in increased energy consumption by young children[14]. This feeding approach is also useful in preventing malnutrition following infections e.g., dysentery due to shigellosis[15]. Also, local diets such, as “Kimea” or “power flour[16] should be promoted. This flour is made from germinated grain and contains amylase and has a thinning effect when added in small quantities to thick porridge. This allows small children to consume greater quantities of porridge. ARF can be used by germinating cereals domestically and for small scale production or industrial amylase for large scale production. In urban environments, these technologies should be encouraged among Street vendors and small food business. Studies in Pakistan of a similar nature should be done on amylase rich flour.

However, specialized nutritional support is recommended in hospitalized children with severe

malnutrition, hypermetabolism. growth failure, range of gastro-intestinal disorders, congenital anomalies, or injuries resulting in developmental delay with or without neurological impainuent. These children are unable to attain adequate energy and nutrient intake without the intervention of specialized nutritional support e.g. pediatric enteral nutrition[17]. Enteral nutritional support can be given for a short period as a complete nutrition or supplement to breast-feeding.

The design of a locally prepared rehabilitation diet requires consideration of seasonal patterns of food availability as well as cultural, economic, biological, and nutritional factors. Interviews with key informants at the community and household level and periodic market surveys are useful to identify available foods and their costs. In addition socio-cultural factors governing child feeding practices should be looked into before preparing the diets. Hence, further studies, which lead to the development of cost-effective diets, sufficient to meet the specific nutritional needs of this region are essential.

It is concluded that supplementary formulas and specialized nutritional support are effective ill initial stages of treatment of severely malnourished patients. Children with severe illness, surgery, congenital anomalies, trauma and failure to thrive may also benefit. Following this therapy local diets e.g. KYB with Vitamin A, AMR, HD-HV, "Kimea" should be encouraged. Monitoring of the children's intake is advisable to judge whether the response to therapy has been adequate. The pediatric nutritionist should reinforce counseling and nutritional support at regular clinic visits.

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