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Research Article

DIETARY MANAGEMENT OF CHILDREN WITH MALNUTRITION

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A B S T R A C T

Background: Malnutrition refers to an unhealthy condition which is caused by unbalanced diet in which some nutrients are in excess, lacking or in wrong proportion. Simply put, it can be categorized into under-nutrition and over-nutrition. Children are malnourished if their diet does not provide adequate calories and protein for growth and maintenance or they are unable to fully utilize the food they eat due to illness. **The Key interventions:** The most important measures to in management of malnutrition include Provision of highly nutrient supplementary foods, Nutritional education to guardians, Early detection of malnutrition and intervention, Environmental sanitation, Improved health care system, Prevention of worm infestations, Nutritional planning and use of therapeutic foods for preventing and treating acute malnutrition. Conclusion: Malnutrition among children is better to be prevented in its early stage by provision of proper supplementary diet. The supplementary diets can be prepared by locally available plant foods which are economical, accessible and acceptable.

INTRODUCTION

Key interventions to prevent the development of acute malnutrition include appropriate breastfeeding and complementary feeding practices. Disease prevention strategies are important in breaking the infection-malnutrition cycle particularly related to diarrhea and repeated respiratory infections[1].

Strategies for Treatment of Moderately acute Malnutrition

WHO technical team on supplementary foods for managing MAM in children ages 6–59 months calls for providing locally available, nutrient-dense foods to improve nutritional status and treat malnutrition. WHO suggests that an energy intake of 25 kcal/kg/d in addition to the standard nutrient requirements of a non malnourished child would support a reasonable rate of weight gain without promoting obesity.[2]

The basic strategy which has been helpful in treating Moderate malnutrition or to prevent occurrence of severe acute malnutrition is provision of supplementary food. There are various strategies adapted according to the feasibility and availability of facilities but the ultimate method is to provide the children with supplementary diets prepared with locally and easily available and economical ingredients[3].

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Nutrition education

People can be educated on

- The nutritional quality of common foods
- Importance and nutritional quality of various locally available and culturally accepted low cost foods
- Importance of exclusive breastfeeding for six months and continuing to breast feed up to two years or beyond.
- Damage caused by irrational beliefs and cultural practices of feeding
- Recipes for preparing proper weaning foods and good supplementary food from locally available low cost foods.
- Importance of including milk, eggs, meat or pulses in sufficient quantities in the diet to enhance the net dietary protein value.
- Importance of feeding children and adults during illness
- Importance and advantages of growing a kitchen garden
- Importance of immunizing their children and following proper sanitation in their day to day life.[4]

Early detection of malnutrition and intervention

The longer the developmental delays remain uncorrected, the greater the chance of permanent effects and hence intervention must occur during pregnancy and first three years of life. A well recorded growth chart can detect malnutrition very early.

Velocity of growth is more important than the actual weight at a given time. If growth of the child is slowed or is arrested as shown by flat curve on the growth card, physician should be alerted and any hidden infection or any reason for nutritional deficiency must be evaluated and taken care of. If growth chart is not maintained, anthropometric indices like, weight, height mid arm circumference, and chest circumference etc. can be measured and used for evaluation of nutrition.

Nutrition supplementation

Usually, biologically vulnerable groups like pregnant women, infants, preschool going and school going children are targeted by various welfare measures conducted by the government. Calories, proteins and micronutrients like iron, vitamin A and zinc can be supplemented. [4]

Environmental Sanitation

According to the data from UNICEF there are more mobile phones in India than toilets. Many research studies have indicated that one of the root causes of malnutrition is poor environmental sanitation. The unhygienic environment promotes the spread of communicable diseases and in turn becomes the secondary cause for malnutrition[5]. The swach Bharat mission could be a supporting tool in promoting environmental hygiene.

Improved health care system

Infections like malaria, measles and diarrhea are prevalent in our society and they precipitate acute malnutrition among children and infants. A good health care system that provides immunization, oral rehydration, periodic deworming, early diagnosis and proper treatment of common illnesses can go a long way in preventing malnutrition in the society[4].

Prevention of worm infestations

Worm infestations are one of the root causes of malnutrition in India. one of the easy measures is to administer anthelminthic medications to underfive children. Mass dewormation strategies have been adapted by government of India under which Albendazole is administered to children in anganawadi and schools[4].

Nutritional planning

Nutritional planning involves formulation of a nutrition policy and overall long term planning to improve production and supplies of food, ensure its equitable distribution and programs to increase the purchasing power of people. This may include, land reforms,proper guidance in agriculture to help farmers to get better yields from their lands, help in proper marketing of farm produce. To help increasing the capacity of people to buy nutritious food in adequate quantity, income generating activities for the weaker sections of the community, making available good quality food in affordable prices through proper public distribution system, etc are some of the plans for the government to implement[4].

Use of Soybean in treatment of malnutrition

Many studies have proved that soybean is one of the richest plant sources for treating malnutrition. It can be used in various forms like soy milk, fortification with soy flour, soy podridge, soy sauce etc. Soy bean is recommended because of its high protein value. Soya (Glycine max) is a particularly good source of protein as it contains the eight essential amino acids which the human body needs. Soya milk and other soya products provide a rich source of polyunsaturated fatty acids (including the 'good' fats – omega-3) and are free of cholesterol. Compared to cow's milk, soya milk contains lower levels of saturated fat and higher levels of unsaturated essential fatty acids, which can lower cholesterol levels[6].

Soya products provide an excellent source of disease-busting antioxidants, B vitamins (including folate) and iron. Calcium-fortified soya products such as soya milk and tofu provide a valuable source of this important mineral without the saturated animal fat, animal protein (casein) and cholesterol found in dairy products. One serving of 200ml of Alpro soya with added calcium and vitamins contains 30 per cent of the recommended daily amount (RDA) of calcium – equivalent to cow's milk. It is also fortified with vitamin B12 and 200ml provides 100 per cent of the RDA of this important nutrient[6].

Many soya foods also contain valuable fiber which is important for good bowel health and can also lower cholesterol. Soya foods, particularly those made from whole soya beans, offer a wide range of nutritional and health benefits[6].

Therapeutic Foods for Preventing and Treating Acute Malnutrition F75 and F100 are specially formulated milks used in inpatient settings to treat Malnutrition. F75 is given in the stabilization phase of inpatient treatment; children are provided with approximately 80–100 kilocalories per kilogram per day (kcal/kg/d) spread over 8–12 meals per day for three to seven days. F75 is not designed for weight gain. F100 is given during the rehabilitation phase of inpatient treatment of Malnutrition, providing children with approximately 100–200 kcal/kg/d for three to four weeks Because F75 and F100 require preparation and have high moisture content, they cannot be stored for long at room temperature for food safety reasons, and are not given to caretakers to prepare at home.

Ready-to-use-foods (RUFs) are specially formulated bars, pastes, or biscuits that provide varying ranges of high-quality protein, energy, and micronutrients. These products are more nutrient dense than available home foods and do not require preparation; they typically have very low moisture content and are resistant to microbes. With use of each of these products, continued breastfeeding is recommended[7].

- Ready-to-use therapeutic foods (RUTFs), such as Plumpy'Nut are designed for the treatment of uncomplicated SAM.
- Ready-to-use supplementary foods (RUSFs), such as Plumpy'Sup, are designed as a supplement to treat MAM.
- Medium-quantity lipid-based nutrient supplements (LNSs), such as Plumpy'Doz, are designed as a supplement to prevent MAM.[8]

Fortified blended flours (FBFs) are an additional class of specially formulated foods. The most commonly used product is super cereal plus, formerly called Corn Soy Blend Plus (CSB++). FBFs require some preparation before consumption and are typically distributed in larger quantities as family rations for treating or preventing MAM. [8]

Locally Produced Therapeutic Foods

In developing countries new formulations of RUFs that make use of locally available ingredients while targeting taste

preferences of different populations. For example, RUFs could substitute other legumes for the standard peanut base, or reduce or substitute the milk powder component in areas in which dairy is not commonly consumed[9]

Conclusion: The prime cause of malnutrition among children below 5 years of age is inappropriate malnutrition. The children in India need to be fed health food rather than unhealthy, low calorie food with marginal nutritive value. Proper nutrition is of great concern in appropriate growth and development of children especially below 5 years of age.

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