Micronutrients in the Treatment of Stunting and Moderate Malnutrition

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To measure how well children are growing, we can compare their weight and height with the charts made from children who grew normally. This allows us to identify children who are short (stunted) or malnourished. Being malnourished as early in life has long-term consequences, so it is important to prevent and treat it. Micronutrients are essential nutrients that are present in small amounts in food, and some of them are important for growth.

Children are especially at risk of malnutrition during the first 2 years of life when the first foods given in addition to breast milk are often deficient in micronutrients. Micronutrients are essential nutrients that are present in small amounts in food. Examples that are needed for growth but often lacking include zinc, iron, calcium and sometimes vitamin A. Foods from animals, like meat, fish and milk are good sources of these micronutrients, but often families cannot afford them. We will look at how micronutrients can treat and prevent stunting and moderate malnutrition.

Zinc is necessary for children to grow and protects them from infections. However, taking into consideration all the studies that have been done, it seems that giving zinc supplements does not consistently improve height. Likewise, giving vitamin A, calcium or iron supplements on their own does not seem to prevent or treat stunting.

Children’s diets in the poorest families often lack not one but many different micronutrients, so it seems logical and easier to administer if the micronutrients are given together. Studies in which infants and young children were given multi-micronutrient supplements have found that in general the children grew better. Pregnant mothers who took multi-micronutrients were also less likely to have small babies, which is important because stunting and malnutrition can start in utero. Multi-micronutrients benefit both moderately malnourished and stunted children.
The challenge is to find the best way to deliver these micronutrients. Different products have been developed, and new ways are being explored to provide multi-micronutrients in the diet.

Paps or porridges that are fortified with a mix of micronutrients are very widely used in food programs. They are usually dry powders that the mother prepares instead of, or in addition to, the food she would normally prepare. Although effective, the results have sometimes been disappointing because the mixes are not well accepted and are shared by all the family. One alternative is to give fortified milk beverages, and this has been shown to be effective. Milk has the advantage that it helps children to grow taller, but there are concerns that some children might develop intolerance and milk can be easily contaminated.

Micronutrients can also be prepared in powder form packaged in small amounts designed to be mixed into the child's portion of food. These powders can reduce anemia, but they have had less effect on malnutrition and stunting.

Mixing the micronutrients into a fat-based paste such as peanut butter has proved successful in the treatment of severe and moderate malnutrition. These products provide calories and essential fats, they taste good, have a long shelf life and resist bacterial contamination, but are relatively expensive. The high caloric content could be a disadvantage when given to stunted children who might gain too much weight, but smaller portions and locally made lower cost mixes are being tried out.

Improving the diets of infants and small children by promoting animal product foods is also possible, especially where these foods are available. Researchers are also investigating modifying local foods so that they are richer in micronutrients and these can be more easily absorbed.