

ORIGINAL COMMUNICATION

Micronutrient deficiencies in developing and affluent countries

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Micronutrient deficiencies, also known as 'hidden hunger', are determining and aggravating factors for health status and quality of life. Three nutritional problems that have serious consequences are deficiencies of iron, vitamin A and iodine. It is estimated that in today's world, iron deficiency anemia affects two billion people, mostly women and children. Blindness due to vitamin A deficiency affects 2.8 million children under 5 years of age. Iodine deficiency disorders affect 740 million people. Cuba is employing various programs to deal with these micronutrient deficiencies. Dietary diversification, fortification of foods and supplementation with pharmaceutical preparations are included in Cuba's response to these deficiencies. Urban agriculture is one strategy to increase dietary diversity. The aim is to increase both the availability and consumption of vegetables and fruits. Food fortification takes many forms in Cuba today and various supplementation programs are carried out. The most common supplemental program in the country is the prenatal program. This program provides four essential nutrients: iron, ascorbic acid, vitamin A and folic acid. At present, iodination covers more than 90% of the total amount of salt used for human consumption. Results of research carried out in Cuba have shown that vitamin A deficiency is nonexistent in children up to 7 y of age. Foods and preparations for these programs are delivered gratuitously or at very low prices.

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Introduction

Micronutrient deficiencies, also known as 'hidden hunger', are determining and aggravating factors for health status and quality of life. Increasing research results confirm the close relation between fetal malnutrition and the development of chronic noncommunicable diseases later in life. This is mostly in those who survive the first years of life but who are affected by undernutrition. Research also shows the role of micronutrients for adequate growth and development in children and for the prevention of the so-called 'diseases of civilization' that are the first causes of death in developing and affluent societies. The consequences of malnutrition due to a deficient diet are still serious public health problems worldwide. They are responsible for a great number of deaths in children under 5 y of age. These deaths are potentially preventable with policies and programs as well as political

decision. Deficiencies of iron, vitamin A and iodine are three nutritional problems that have frequently serious consequences. Deficiencies of calcium and zinc must also be taken into account since they are related to the increasing number of patients with osteoporosis. Food fortification and pharmaceutical preparation programs have proven their effectiveness in combating and overcoming micronutrient deficiencies. Cuba is facing these problems with a multidisciplinary approach. The strategy proposed by the World Health Organization is to centralize assistance on those population groups that do not reach their human potential due to inadequate diets or disease. Undernutrition in developing countries is related to child mortality, insufficient physical growth and inadequate socioeconomic development (World Health Organization, 2000), that is, protein-energy undernutrition. A study carried out in 53 developing countries indicates that 56% of deaths in children aged 6–59 months was due to undernutrition, which had increased the potential effect of infectious diseases. Moderate undernutrition accounted for 83% of those deaths. It is estimated that 800 million people suffer from undernutrition. The majority of them are in developing countries. About 30% are in Southeast Asia, 25% in Africa, and 8% in Latin America and

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Prevalence of undernutrition in developing countries. Children under five.

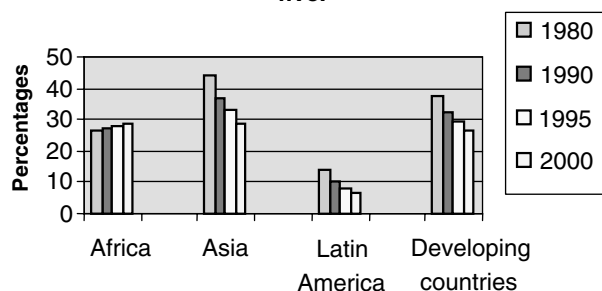


Figure 1 Prevalence of undernutrition in developing countries among children under 5 y.

the Caribbean. Consequently, 36% of children (193 million) under the age of 5 y are underweight, (Figure 1).

Micronutrient deficiencies

Micronutrients are essential for growth and development of individuals. The groups most susceptible to suffer from micronutrient deficiencies are women in reproductive age, small children and the elderly. Iodine deficiency is a serious public health problem in 130 countries affecting about 740 million individuals. This represents 13% of the world's population. It is the main cause of cerebral damage in fetuses and infants as well as psychomotor retardation in children. Pregnant women and preschool age children are greatly affected (for more information on iodine deficiency disorders, go to www.chidinfo.org/eddb/idd/index.htm). It is estimated that 100–140 million children are vitamin A deficient and 250–500 thousand suffer from night blindness every year (for more information on vitamin A deficiency, go to www.chidinfo.org/eddb/Vit_a/index.htm). This is a public health problem in 118 countries mostly located in Africa and Southeast Asia (Figure 2).

Iron deficiency is the most frequent nutritional disorder in the world, both in developing and affluent nations. It is the main cause of anemia and increases the risk of morbidity, mortality and intrauterine growth retardation. It is a frequent cause of psychomotor disorders, poor coordination and decreases physical activity (Figure 3).

Direct actions to combat these deficiencies

The Cuban health system, together with other sectors, is committed to strengthen the programs and actions aimed at controlling and reducing the micronutrient deficiencies. Iodization of salt has been adopted as the main strategy to overcome iodine deficiency. Salt was selected as a vehicle because of its widespread consumption and the low cost of the iodization process. Vitamin A supplements are recom-

Estimated percentage of children under five suffering from ocular illness

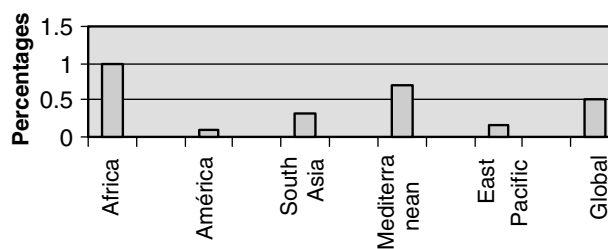


Figure 2 Estimated percentage of children under 5 y suffering from ocular illness.

Estimated population with anemia and iron deficiency

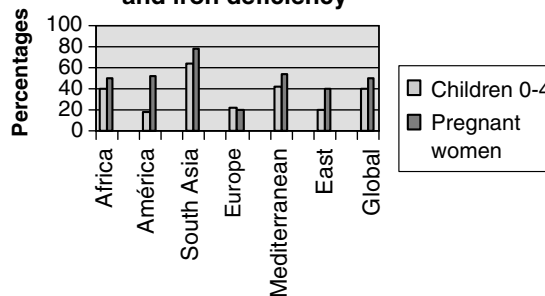


Figure 3 Estimated population with anemia and iron deficiency.

mended for infants/children from 6 months to 5 y of age. Two high doses each year are applied. This is also recommended for lactating mothers in order to protect infants during their first months of life. This procedure is safe and cost-effective for overcoming vitamin A deficiency. Fortification of foods such as sugar is another centralized strategy actually being implemented in various countries. Fortification and supplementation with iron has been used for several decades with various results and is widespread in some countries. Wheat flour is the vehicle most frequently used. Iron, folic acid and other B vitamins are also added to wheat flour. A cereal-based product with iron and other nutrients is used with children under the age of 2 y. A whole meal with iron and vitamins added is used for undernourished pregnant women. A cereal-based product with iron and vitamins added is targeted for school-age children in the five eastern provinces. A fruit puree with added iron and ascorbic acid is employed with children from 6 to 35 months of age. And a cereal fortified with micronutrients is used with ambulatory pregnant women. Various supplementation programs are carried out. The most common program used across the country is the prenatal program that provides four basic nutrients: iron, folic acid, ascorbic acid and vitamin A. A tablet called 'Mufer' that contains iron, folic

acid and other B vitamins is used for nonpregnant women of reproductive age. A preparation called 'Forfer' is used with preschool age children. Iodization presently covers more than 90% of the total amount of salt used for human consumption. Research carried out in Cuba has shown that vitamin A deficiency in children up to 7 y of age is practically nonexistent, probably due to their consumption of milk.

Foods and preparations for these programs are delivered gratuitously or at a low price.

References

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