Designing Better Nutrition Programmes

The Role of Nuclear Technology

The IAEA supports the application of nuclear techniques in nutrition, in particular stable isotope techniques, to combat malnutrition. These techniques include reference methods for assessment of body composition, bone mineral density, human milk intake, total daily energy expenditure, micronutrient bioavailability and vitamin A status.

Why does the IAEA support nutrition projects?

According to a study conducted by the World Bank, investing in infant and young child nutrition can save 1 million lives each year and help 260 million more children and their mothers have a healthier future. The effects of adequate nutrition on a child's development and on the society in which they live cannot be overestimated, as well-nourished children perform better in school, and grow into healthy and productive adults who, in turn, give their children a better start in life. Given the relatively low cost solutions, improving a child's nutrition is one of the most effective investments in advancing global prosperity.

The IAEA's contribution during the first 1000 days of a child's life

Receiving the right nutrition during a woman's pregnancy and during the first two years of her child's life is essential for ensuring a child's healthy growth, mental development and resistance to infection. Childhood mortality can be substantially reduced by following the World Health Organization guidelines on exclusive breastfeeding for the first 6 months of life and continued breastfeeding for up to 2 years. The IAEA supports the use of stable isotope techniques, which are safe, non-invasive and suitable for all ages, to better evaluate the mother's breastfeeding practices. The deuterium dilution technique for assessing the volume of human milk consumed by breastfed babies also determines whether the baby was exclusively breastfed or not, and can be used to monitor and evaluate the impact of breastfeeding promotion campaigns.

The IAEA's contribution to management and prevention of obesity and non-communicable diseases

Measuring changes in a child's body composition is important for assessing the quality of growth in early life. Healthy growth is related to developing lean tissue (muscle mass), while too much body fat increases the risk of chronic diseases, such as diabetes and heart disease, later in life. The IAEA supports the use of nuclear techniques to measure the proportions of fat-free mass and fat mass and assess small changes in body composition. The doubly labelled water technique can be used to measure total daily energy expenditure to evaluate interventions that promote a healthy and active lifestyle.

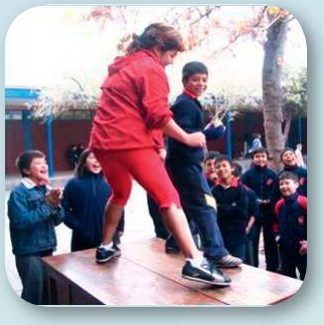
The IAEA addresses ‘hidden hunger’

If a child is not consuming enough micronutrients, such as pro-vitamin A, iron and zinc, it can lead to mental impairment, poor health and productivity and even death. This is often called the ‘hidden hunger’ of micronutrient deficiencies. These micronutrients are also key building blocks, enabling infants to develop a strong immune system against infectious disease. The IAEA supports the use of stable isotope techniques to assess the availability of micronutrients from foods and individuals’ vitamin A status. This will provide Member States with the necessary evidence to design or improve their national health and nutrition programme, for example by increasing the intake of vitamins and minerals through food fortification, micronutrient supplementation or to encourage healthy eating.

Mechanisms of support from the IAEA

The IAEA is dedicated to helping Member States adapt and improve their national health programmes and build a healthier, stronger civil society. Through its technical cooperation programme, which consists of both national and regional projects, the IAEA works alongside Member States in order to share resources and contribute technical expertise in the use of nuclear techniques, in particular stable isotope techniques in human nutrition. In addition, the IAEA coordinated research activities promote smaller, specific research projects that bring together scientists from various countries, with the aim of encouraging the acquisition and dissemination of new knowledge gained from the use of nuclear technologies.

IAEA successes in the field



Obesity in Latin America is a major health problem, driven by changes in diet and patterns of physical activity. A regional technical cooperation programme within the Regional Cooperative Agreement for the Promotion of Nuclear Science and Technology in Latin America and the Caribbean has helped participating Member States to design and enhance intervention programmes related to overweight or obese children and to evaluate their impact using isotopic techniques.

Expert missions have trained staff in participating institutions in the assessment of micronutrient status, energy expenditure and body composition, and laboratory equipment was suitably upgraded. Training was also provided on the development of interventions to address childhood obesity. As a result of the project, policy makers gained tools for the diagnosis and evaluation of obesity and its causal factors. The project supported the evaluation of the impact of ongoing intervention programmes in Chile and Cuba, and helped Bolivia, Costa Rica, Guatemala, Panama and Uruguay to develop pilot intervention programmes.

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For more information on the IAEA’s work in human nutrition, please visit www-naweb.iaea.org/nahu/

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