

Addressing malnutrition in Latin America and the Caribbean with nuclear techniques

The challenge...

Poor nutrition in early life has a significant impact on later health. Inadequate or inappropriate nutrition in infancy and childhood can affect mental development, increase vulnerability to disease, and precipitate the risk of non-communicable diseases (NCDs). Poor nutrition is of particular concern in Latin America, where changing diet and lifestyle mean that today around 18% of children and adolescents are overweight or obese. Obesity in childhood can lead to chronic diseases later in life, resulting not only in lasting health problems but also impairing economic progress in the region. There is a need for studies in the region, as most of the data currently available about body composition comes from USA and Europe and may not be representative of the region.

The project...

The project aimed to assess the relationship between body fatness (adiposity) and risk factors for NCDs, such as cardiovascular disease and diabetes. Body fatness was measured using a stable isotopic technique, deuterium dilution, which is more accurate than traditional measures of body fat which are based on body weight, height and skinfolds. The deuterium dilution technique produces very sensitive and specific body composition measurements. This information can then be used to develop and evaluate public health interventions such as school programmes to encourage healthy eating and increased physical activity. Argentina, Bolivia, Brazil, Chile, Costa Rica, Cuba, Ecuador, El Salvador, Jamaica, Mexico, Nicaragua, Paraguay, Panama, Peru, Uruguay and Venezuela all participated in this project, which also had support from USA through the Peaceful Uses Initiative.



Children in Ecuador drinking a dose of deuterium oxide (Photo: E. Aguilar Lema, Ecuador).

The impact...

Data were collected from over 1200 children aged 6-12 years from Latin America and the Caribbean region. It was found that body fat was positively associated with risk factors for NCDs such as blood pressure, total cholesterol, plasma triglycerides, insulin and inflammatory markers (IL6 and CRP). This information has been disseminated to the scientific and public health communities at many international congresses.

With the assistance of the IAEA, new stable isotope laboratories were also established in Argentina, Brazil, Costa Rica, Cuba, Peru and Venezuela.

The project brought together nutritionists, health officials and decision-makers from the region and helped to create a network of professionals and policy makers across Latin America and the Caribbean who can support each other, including through training and the provision of technical expertise. This network is expected to provide a valuable channel for continued future collaboration, and will contribute to improving the health of both children and adults in the region.

Technical cooperation project RLA/6/064: Using Nuclear Techniques to Address the Double Burden of Malnutrition in Latin America and the Caribbean (ARCAL CX)