



# Child nutrition in Senegal

Efforts to reduce malnutrition, particularly in densely populated, peri-urban areas, is considered a priority among governments around the world. The problem is especially acute in Africa due to the high prevalence of malnutrition and micronutrient deficiency. The International Atomic Energy Agency is providing technical support to a community nutrition programme in Senegal where nuclear techniques help to monitor the programme's effectiveness in order to ensure that it produces maximum benefits on vulnerable groups (women and children).



*Nutrition - a health priority in developing countries.*

GOOD NUTRITION is essential if people are to achieve their full biological and social potential, yet over 800 million people around the world are chronically malnourished. Malnutrition most seriously affects the survival and early development of children, and the health of pregnant and nursing mothers. It also determines overall resistance to diseases and future performance in school and at work. Nutrition is, therefore, a major health sector priority in developing countries.

## **Children at risk**

Over recent years the prevalence of malnutrition in Senegal has risen to 12% for children aged 6-26 months and to 20% in children under five years. Although widespread throughout the country, malnutrition is of particular concern for urban populations. Children often do not get enough to eat, nor receive food of adequate quality and variety. In an effort to address the problem, the Senegalese Government launched in 1994 the Projet de Nutrition Communautaire (PNC) with US \$28 million contributed by the World Bank, the World Food Programme and the German Kreditanstalt für Wiederaufbau and US \$1.6 million as national input. The PNC is managed by the Public Works and Employment Agency (AGETIP) which is an autonomous semi-private agency attached to the Senegalese Presidency.

## **Nutrition at community level**

Under the PNC programme, supplementary food, made from locally grown ingredients, is provided for six months to pregnant women, to those who are breastfeeding and to children between 6 and 36 months of age. The programme is administered through a network of 295 local community nutrition centres in 21 cities. Each community centre engages local people, trained through the project, to carry out tasks such as stocking food, monitoring malnutrition and educating local people on issues involving food and sanitation.

Large scale nutrition programmes are very expensive to implement and it is obviously important to know which food supplements, and which strategies, are most effective.

It may be that some elements of a

programme should be modified or replaced, or that the timing of a food supplement should be adjusted to achieve maximum benefit.

However, because there are so many variables, it is difficult to tell which factors are having most impact. Nuclear techniques can help nutritionists to identify precisely the most effective elements of a nutrition programme.



*Trained advisors provide nutritional advice to mothers.*

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## Nuclear techniques

AGETIP's highest priority is to assess the cost effectiveness and quality of the food supplementation programme and its impact in terms of reducing malnutrition. The IAEA is supporting the use of isotope techniques to enable precise measurements of programme benefits.



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*The Model Project will reveal the optimum time at which to start giving food supplements to mothers.*

Isotopic methods can be used, for example, to measure how much breast milk the baby is taking, the nutrients that are being transferred and the body composition of both mother and baby. This will indicate the best time during pregnancy at which to provide the supplement. For a baby that is being weaned, isotopic methods can identify the baby's intake of both breast milk and weaning food. This is the simplest and most accurate way in which the relative value of weaning foods and breast milk can be assessed.

## How isotopes work

Isotopes used in nutrition evaluation are natural, harmless and are simply used to label a food supplement to allow it to be traced within the body, or from mother to baby. With her consent, the mother may be given a drink that has a slightly higher than normal percentage of deuterium, a natural isotope of hydrogen. This can be measured in breast milk using Fourier transformed infrared spectroscopy.

## From pilot to full study

The principal study in Senegal will cover 200 women, recruited during pregnancy, who will receive food supplements for at least six months. Pregnant women joining the programme will receive supplementation from the 6th, 7th or 8th month of pregnancy. Infant growth will be monitored and body composition of mothers and

children, and milk production, will be measured at the end of the third month of lactation, irrespective of the date of entry into the supplementation programme. Results will indicate the optimum time to enter the programme and the adequacy of the composition of the supplement. The Laboratoire de Nutrition at the Université Cheikh Anta Diop, Dakar, is responsible for the isotope evaluation, with technical support from the IAEA.



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**The Model Project will provide the Senegalese authorities with the irrefutable scientific evidence that is needed to assess its community nutrition programme. That programme can then be refined as necessary to ensure that the children of Senegal have a healthier start to their lives.**

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