

Eliminating iodine deficiency disorders

Bruno de Benoist¹ & Graeme Clugston²

In 1990, the World Health Assembly took a pioneering step in urging WHO's 191 Member States to take action to eliminate iodine deficiency disorders (IDD). Iodine deficiency is a major threat to health and development the world over, particularly among preschool children and pregnant women in low-income countries. It is a significant public health problem in 130 countries and affects 740 million people. An estimated one-third of the world's population is currently exposed to the risk of IDD. These disorders are caused by insufficient iodine intake and, in some areas, goitrogenous factors in the diet. Their negative impact on the health of individuals and societies, and thus on national economic development as well, is tremendous.

The spectrum of health problems caused by iodine deficiency includes goitre, stillbirth and hypothyroidism. However, its most severe consequence is mental retardation due to brain damage occurring during fetal development as a result of maternal hypothyroidism. Indeed, iodine deficiency is the world's greatest single cause of preventable brain damage in childhood. While cretinism is the most extreme outcome, of much greater significance are the subtler degrees of mental impairment that lead to poor school performance, reduced intellectual ability and impaired work capacity. Iodine-deficient communities have been found to score 10–15 points lower on IQ tests than iodine-replete ones. These disorders can be prevented by ensuring adequate iodine intake, which is the primary objective of the current worldwide drive to eliminate IDD.

Compared to other major forms of malnutrition, IDD has attracted much attention in view of the substantial progress recently made towards its elimination. In the early 1980s, only a few countries were known to be affected by IDD, and only a very few had national IDD control programmes, often based on supplementation with iodized oil. Today most of the countries in which IDD is a public health problem have national control programmes. Whereas in 1990 only 46 countries had salt iodization programmes, by 1998 their number had increased to 93, more than 80% of which had adopted

legislation governing iodized salt. More than two-thirds of households living in IDD-affected countries now have access to iodized salt, and 20 countries have reached the goal of universal salt iodization, which is defined as more than 90% of households with access to iodized salt.

The more recent salt iodization programmes have not been in place long enough for a full evaluation of their impact on iodine status. Nevertheless, it is clear that where such a programme has been in place for more than 5 years, improvement has been dramatic. This has been demonstrated over the last three years in Algeria, Bhutan, Cameroon, China, Colombia, Indonesia, Islamic Republic of Iran, Panama, Peru, Thailand, Venezuela and Zimbabwe.

Particularly noteworthy among the factors that have led to these successes is the collaboration between the various actors involved. As the discussion on pages 413–417 of this issue of the *Bulletin* explains, it did not all start at once but developed over time. In the early 1960s, WHO alerted the international community to the public health importance of iodine deficiency. This helped to stimulate research on the epidemiology of IDD and the testing of approaches to control. The extent and severity of IDD gradually became clear. As a result, with the support of WHO and UNICEF, the International Council for the Control of Iodine Deficiency Disorders (ICCIDD) was established with the participation of scientific experts from around the world who are committed to controlling IDD. The ICCIDD was inaugurated in 1985 in Kathmandu, Nepal, and from then onwards the global momentum steadily increased. WHO and UNICEF, with the technical support of ICCIDD, worked closely with the governments of affected countries to assist in formulating, establishing, implementing and evaluating IDD control programmes, and to train national experts.

In the 1990s, promotion of universal salt iodization as the strategy of choice for controlling IDD led to an expansion of the circle of partners involved in IDD control. They were joined by government bilateral development cooperation agencies, universities and research centres, nongovernmental organizations, philanthropic foundations,

and the salt industry. This expansion was largely due to the broad consensus achieved within the international public health community on the salt iodization strategy. It was adopted in international forums including the World Health Assembly, the World Summit for Children and the International Conference on Nutrition. The importance of strengthening collaboration between partners was thus recognized as critical for the success and sustained control of iodine deficiency.

Remarkable and measurable progress is being made, but nearly 30 IDD-affected countries still have no national control programmes, or only embryonic ones. In 2001 alone, some 50 million children were born without any preventive measures having been taken against IDD during pregnancy. The twofold challenge in the coming years is to introduce salt iodization in the remaining 30 affected countries and to ensure the long-term sustainability of IDD control programmes. The growing evidence that iodine deficiency may be reappearing in countries where it was thought to have been eliminated underscores the need for vigilance in sustaining current programmes.

There are many constraints, and iodized salt is not reaching all target communities, in particular the most disadvantaged. In some areas, there is a plethora of small-scale salt producers for whom iodization presents technical or practical difficulties. Although monitoring is essential for ensuring the long-term success of salt iodization programmes, monitoring systems for salt quality and urinary iodine are often inadequate, and the result is unacceptable variations in the quality of iodized salt.

To overcome these constraints and make the programme more sustainable, recent major international initiatives have included reinforcing the partnership between the main actors involved in IDD control. This concerns in particular the implementation of salt iodization programmes and surveillance, which are essential aspects of the help countries need to meet the goal of IDD elimination. Adequate iodine intake for all is both necessary and achievable. But it has not yet been achieved, and it cannot be taken for granted. ■

¹ Scientist, Nutrition for Health and Development, World Health Organization, 1211 Geneva 27, Switzerland (email debenoistb@who.int). Correspondence should be addressed to this author.

² Director, Nutrition for Health and Development, World Health Organization.

Ref. No. 02-0208