vested in the Department of Health. The program has four main components: production, marketing and distribution, promotion and advocacy, and management and coordination.

An in-depth assessment of the National Salt Iodization Program showed the following strengths: strong political commitment of national leadership in addressing iodine-deficiency disorders; availability of local technology for salt iodization; responsive participation of private industry, nongovernmental organizations, and other relevant sectors; promotional and advocacy efforts that have contributed to the generation of much-needed resources and political will and support; and regular consultation and dialogues that have effectively contributed to issue resolution and have forged alliances.

However, there are still a number of weaknesses that need to be addressed: the availability of iodized salt is still a bottleneck; nationwide compliance and enforcement of the ASIN Law need to be strengthened, particularly the implementation of the regulation and monitoring scheme; the personnel and testing facilities of Bureau of Food and Drugs (BFAD) as the primary agency responsible, should be upgraded; and information dissemination targeting consumers should be intensified to bridge the gap between awareness and utilization of iodized salt. Furthermore, the government can consider utilizing existing networks such as the National Food Authority (NFA) system for importation and distribution of iodized salt nationwide, while at the local level, the *takal* system (repackaging salt sold loose) of selling iodized salt provides a workable and acceptable system for marketing iodized salt. It is also evident that a stronger government–private sector–nongovernmental organization partnership has to be forged, where sharing of resources and expertise can take place, if the National Salt Iodization Program is to be sustainable.

8. South Africa

Micronutrient programs in South Africa

C. Witten, P. Jooste, D. Sanders, and M. Chopra

Although South Africa is a middle-income country, persistent social and economic inequalities have resulted in large numbers of people living in poverty. National surveys consistently found that more than a quarter of children were stunted in 1994, rising to over 40% in many rural areas. Marginal vitamin A deficiency (serum retinol < 20 μg/dl) was prevalent in 33% of preschool children (6 to 72 months of age) [1]. Even after a universal salt iodization program, over 10% of schoolchildren were iodine deficient. The South African Government has recognized malnutrition as a key priority issue and developed an Integrated Nutrition Programme. Micronutrient malnutrition control is one of the focus areas of the Integrated Nutrition Programme, which addresses micronutrient deficiencies in the population through a combination of strategies, namely, supplementation, food fortification, the promotion of dietary diversification, and related public health measures [2–4].

In order to support the implementation of the focus areas of the Integrated Nutrition Programme (on micronutrient and other deficiencies), the Department of Health placed considerable emphasis on the development of a coordinated intersectoral approach to solving nutrition problems in South Africa through community-based nutrition projects. A number of general management aspects were identified as constraints to the implementation of community-based nutrition projects: complex financial procedures and delays in funding, lack of staff, inadequate staff training, and inadequate technical support. This highlights the crucial gap between policy and successful implementation [5].

The Department of Health has had relative success with mandatory salt iodization since 1995. However, small weaknesses still exist in the national salt iodization program, such as domestic use of noniodated agricultural salt in 6.5% of households [6]. The 1999 National Food Consumption Survey (NFCS) findings indicated that one of every two children had a dietary vitamin A intake less than half the recommended level. The Department of Health set out a policy for a supplementation program as a primary prevention strategy, to form part of routine mother and child health services. This program targets all children aged between 6 and 60 months and postpartum women in the period six to eight weeks after delivery [7]. Based on the findings of the NFCS, it was recommended that maize and wheat flour be fortified with vitamin A and iron, among other nutrients, to provide a person 10 years old or older with 25% of his or her RDA of both micronutrients from 200 g of raw maize or wheat flour [8].

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References

1. South African Vitamin A Consultative Group (SAVACG). Anthropometric, vitamin A, iron and immunisation coverage status in children aged 6-71 months in South Africa, 1994. S Afr Med J 1996;86:354–7.
2. Statistics South Africa. The People of South Africa Population. Census, 1996. Census in Brief. Report No 03-01-11. Pretoria: Statistics South Africa, 1996.
3. Statistics South Africa. Mid-year estimates. Statistical Release P0302, 1999.
4. May J, ed. Poverty and inequality in South Africa. Report prepared for the Office of the Executive Deputy President and the Inter-Ministerial Committee for Poverty and Inequality. Durban: Praxis Publishing, 1998.
5. Department of Health. Integrated Nutrition Programme. Pretoria: Directorate Nutrition, 2000.
6. Nutriview. Vitamin A deficiency in South Africa. Roche: Basel, Switzerland, 1996.
7. Jooste PL, Weight MJ, Lombard CJ. Iodine concentration in household salt in South Africa. Bull WHO 2001;79: 534–40.
8. Hendricks MK, Saitowitz R, Fiedler JL, Hussey G, le Roux I, Makan B, Sanghvi T, Maglagang H, Dary O. An assessment of the feasibility, coverage and cost of a vitamin A food fortification programme in South Africa. S Afr J Clin Nutr 2001;14:46–55.

9. Sri Lanka

Case studies of successful micronutrient programs: The Sri Lankan experience

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Sri Lanka has achieved considerable successes in the sphere of community health services owing to the well-established network of primary health-care workers. Immunization coverage of over 90% has been achieved, while growth monitoring is successfully implemented even at the remote village level. Advances have also been made in related sectors. For example, approximately 75% of the Sri Lankan population has a safe drinking water supply. The food authority has implemented a wide range of regulations by the food act ensuring food safety and hygiene. Food and agriculture policy has taken different dimensions during the last few decades, moving from the objective of self-sufficiency toward a free-market economy and liberalization of foreign exchange transactions, thereby increasing private sector participation and privatization of state enterprises.

Although low food acquisition power is a key factor exposing the poor sections of the community to a greater risk of micronutrient deficiencies, wrong beliefs and lack of knowledge have contributed to the present pattern of food consumption. Addressing issues of food quality, in line with goals set up by the World Health Organization and UNICEF, national policy makers endorsed and adopted a declaration and plan of action for the virtual elimination of vitamin A deficiency, the virtual elimination of iodine deficiency, and reduction of iron deficiency in women by one-third.

Clinical vitamin A deficiency is not commonly seen in Sri Lankan children. The latest survey in 1995–96 revealed that 36% of Sri Lankan preschool children had suboptimal serum vitamin A levels, with the prevalence of night-blindness (0.8%) and Bitot's spots (0.8%) indicating vitamin A deficiency as a moderate public health problem in the country. Control measures have been implemented for some years, such as free distribution of milk, vitamin A supplementation, diagnosis and treatment of vitamin A deficiency at school medical inspections and hospitals, and provision of supplementary food fortified with vitamin A. Following the 1995–96 survey, vitamin A policy was reformulated, and the provision of vitamin A megadoses routinely to children and postpartum mothers was introduced. Achieved coverage rates have not been reported.

Iodine-deficiency disorders have long been recognized as an endemic problem in the southwest wet zone of Sri Lanka. Provision of potassium iodide to pregnant women and adolescent girls in high-risk areas was among the early interventions initiated in the 1950s. Surveys at that time revealed an increased prevalence of goiter in spite of interventions, which indicated that the increased prevalence of goiter was not due to iodine deficiency or was due to ineffective intervention.

Studies showed that the prevalence of goiter remained high in schoolchildren (19%) and pregnant women (63%). Based on these findings, a national program on salt iodization was adopted, and a universal salt iodization law was enacted from 1995. A follow-up national survey of iodine-deficiency disorders (2000) indicated a reduction in prevalence in one district (Kalutara) where the iodine-deficiency disorders control program had been implemented for more than five years, although the national data showed an increase in the prevalence of iodine-deficiency disorders from 19% to 21%. Moreover, the highest prevalence was

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