Elimination of iodine deficiency in Fiji

Iodine deficiency was recognized as a public health problem in Fiji in 1996 and universal salt iodization was introduced. A new national study shows the remarkable success of Fiji’s IDD elimination program.


Background
In 1994, UNICEF worked with the Ministry of Health, the Ministry of Education and WHO to survey iodine status in Fiji. The survey was done in three areas on the island of Viti Levu (Ba, Sigatoka and Suva). It found that the prevalence of goiter as determined by ultrasound and palpation in school children and pregnant women in Viti Levu was ca. 45%. The mean urinary iodine (UI) concentration in 15 schools in the Ba, Sigatoka, and Suva areas ranged from 2-94 µg/L, with an average value of 26 µg/L, indicating moderate-to-severe IDD. It also reported that salt iodine levels were insufficient and ranged from <0.01 to 3.21 mg/100g salt.

As a result a Cabinet Paper was produced that recommended that non-iodized salt be included in the list of prohibited imports for Fiji. The paper was approved and recommendations gazetted in February 1996. The report also recommended regular monitoring of iodine in salt imports and the prevalence of IDD. The 1996 Gazette notice gave to the Central Board of Health (CBH) under the MOH the responsibility for the certification of iodized salt imports, and Pure Food Inspectors monitor the imports and the standards.

Study design
Due to the high costs required for a large scale cross-sectional survey, a smaller sentinel survey was done. Sentinel districts were chosen because they had moderate or severe IDD in the 1994 study before implementation of salt iodization. The study included the following:

- collection of spot urine samples from school children (8-12 years) and pregnant women
- structured interview of pregnant women regarding diets and knowledge
- structured interview of school children regarding demographics and knowledge
- semi-quantitative assessment of iodine level of salt samples brought by the school children from their homes

In addition to the original schools in the 1994 study, the study also included schools and the antenatal clinics from Labasa to assess IDD in north Fiji. The survey included 18 schools and 4 antenatal units from Ba, Sigatoka, Suva and Labasa. The urinary iodine levels were measured at the Endocrinology Laboratory at Westmead Hospital, in Sydney, Australia. A total of 979 urine samples from school children and 292 urine samples from pregnant women were analyzed, while 883 samples of salt were tested for iodine.
As shown in the figure on this page, school children in Fiji are clearly iodine sufficient with a median UI of 237 µg/L. Also, only ca. 4% of the population had a UI less then 50 µg/L. However, knowledge about the importance of iodine was low: the majority (78.6%) of the children didn’t know if iodine was important while 12.7% said iodine wasn’t important and 8.7% said iodine was important for health. Similar results were obtained from the questionnaire for pregnant mothers. Of the 883 salt samples tested, 98.4% (868) met the current Fiji mandated standards (minimum 15 ppm), when tested using rapid test kits.

The UI results from the pregnant women are shown in the figure on this page. They were clearly iodine sufficient with a median UI of 227 µg/L. There was an association between consumption of maize flour and soy milk and a low spot UI value in the pregnant women.

Women with a low UI value were 6.15 times more likely to have been consuming soy milk compared to those without iodine deficiency. The majority of the population were regularly using salt in cooking, indicating that the use of salt as a carrier for iodine remains a good choice.

Conclusions
This was the first follow up study to evaluate the effect of the USI program in Fiji since its implementation in 1996. The implementation of USI has been highly effective. Another recent study by health inspectors and dieticians using MBI test kits for determining salt iodine levels in various areas of Fiji and found that 99.6% of the 3890 samples randomly selected at household levels had adequate iodine content of above 15ppm. These results are similar to results of this study where 98.4% of salt was adequately iodized.

Moreover, of the 10 programmatic indicators that ICCIDD recommends as being essential for sustained IDD elimination, Fiji has 9 in place. But some of the programmatic indicators have been achieved very recently. Hence, it remains important that the National Micronutrient Fortification Committee continues to assess and monitor the iodine status of Fiji to ensure sustainable elimination of IDD. Although there is room for improvement, and reinforcement of the iodine program will need to continue, this study shows that progress achieved in the control of IDD in Fiji over the past decade is remarkable.