Continued efforts are key to sustaining iodine sufficiency in Macedonia

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A recent publication has classified the Republic of Macedonia as one of eleven countries to achieve sustainable elimination of iodine deficiency (1). This success is a result of cross-sectoral efforts under the guidance of the National Committee for Iodine Deficiency, and significant involvement of the professional and academic community, including its key institutions: Institute of Pathophysiology and Nuclear Medicine, University Clinic for Child Diseases, and University Clinic for Gynecology and Obstetrics.

Universal salt iodization

Prior to 2000, many reports indicated clearly that Macedonia was iodine deficient, with frequent occurrence of endemic goiter (2–4). Moderate iodine deficiency was confirmed by the first nationwide study of 11,486 schoolchildren in 1995–96, which examined the thyroid gland by palpation and ultrasonography and measured urinary iodine excretion (5, 6).

The health authorities quickly recognized that iodine deficiency was an important issue which should be addressed in a timely and collaborative manner. This led to the establishment, in 1997, of a multi-sectoral National Committee for Iodine Deficiency under the auspices of the Ministry of Health. The Committee is made up of representatives of diverse sectors, including policy, professional associations, academia, international community and the salt industry. By 1999, the Committee was ready to adopt regulation on universal salt iodization. The move met with prompt approval from all stakeholders, in particular the industry partners, who have played an instrumental role in supporting its implementation and regular monitoring (5).

The National Committee, in cooperation with the Food Directorate, has implemented a series of activities to enforce and monitor salt iodization more efficiently. In addition to periodic inspection, iodization levels have been assessed in samples of household salt collected from primary schoolchildren taking part in iodine status surveys. Very quickly, the proportion of under-iodized salt dropped from 46% in 2000 to only 6% in 2001. In 2016, a survey analyzed 1,114 samples of household salt to find that only 6 were under-iodized. This success is largely the result of strict control over policy implementation. It has been helped by the fact that Macedonia imports all salt for human consumption through a limited number of importers, and any improperly iodized salt is returned to the importer.

FIGURE 1 Urinary iodine concentration and goiter incidence in Macedonia in studies conducted from 1995 to 2007.
Achieving iodine sufficiency in school-age children

Surveys of iodine status have shown a steady increase in the urinary iodine concentration, in correlation with decreasing thyroid volumes and incidence of goiter (Figures 1 and 2). In 2003, an international team of experts nominated by WHO, UNICEF and ICCIDD declared Macedonia free of iodine deficiency.

Iodine status of pregnant women

The first assessment of iodine status in pregnant women in Macedonia was undertaken in 2001 and included 382 women. The median urinary iodine concentration (UIC) was 140.4 µg/L with 25.1% of women having a UIC below 100 µg/L, which indicates mild iodine deficiency. At the same time, the median UIC in schoolchildren was 164.5 µg/L, within the optimal range. This result implies that iodized salt was not meeting the dietary requirement during pregnancy at the time. A survey in 2006–2007, conducted in a small sample of pregnant women, reported an improved median UIC within the optimal range (150–249 µg/L) (7,8). A new survey was completed in 2017 with financial support from UNICEF. Six hundred pregnant women (200 per trimester) from across Macedonia were recruited at an ante-natal visit to the University Clinic for Gynaecology and Obstetrics in Skopje, the only tertiary facility for gynaecology in Macedonia. The median UIC was 167.5 µg/L, which confirms an adequate iodine intake. In pregnant women who were taking 150 µg iodine per day through vitamin supplements (n=300) the median UIC was 182.5 µg/L, higher than in women who did not take any supplements (n=300, 160.2 µg/L). These results suggest that universal salt iodization alone has been effective at bringing the iodine intakes during pregnancy up to the recommended range. Given its accessibility, iodized salt offers a far more feasible way of achieving and sustaining optimal iodine intakes in this population group than supplementation, which is selectively available only to those who can afford it.

Neonatal TSH screening

To monitor the iodine status post-partum, the University Clinic for Children’s Diseases at the Medical Faculty in Skopje introduced TSH screening in 2002, covering almost 100% of newborns. The aggregate results for the period 2002–2017 in a total of 294,592 neonates report that TSH values greater than 5 mIU/L were found in 3.22% of newborns, indicative of sufficient iodine status.

Conclusions

Thanks to the ongoing efforts of all stakeholders, Macedonia continues to sustain optimal iodine intakes in schoolchildren, pregnant women and newborns. However, to prevent a decline in salt iodization levels and the re-emergence of iodine deficiency, these efforts must continue, in particular regular monitoring of iodine status in school-age children, women of reproductive age, and pregnant women.

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