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Prevalence of iodine deficiency in Europe in 2010

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Résumé


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Mots clés : Iode ; Déficience ; Europe ; Thyroïde ; Prévalence

Abstract

The adverse effects of iodine deficiency (ID) — intellectual impairment, damaged reproduction, goiter and hypo- and hyperthyroidism — are well known and easily corrected with salt iodization, but they continue to impair health and socioeconomic development, with more than two billion people at risk worldwide. During the major global expansion of salt iodization over the past four decades, much of Europe has remained iodine deficient. Although every European country endorsed the goal of eliminating iodine deficiency at the 1992 World Health Assembly, control of iodine deficiency has received low priority in much of Europe. However, there has been recent progress in the region and the number of children with low iodine intakes has decreased by ca. 30% since 2003. This paper presents an estimate of the prevalence of iodine deficiency in Europe in 2010, based on a systematic review to update the WHO Vitamin and Mineral Nutrition Information System (VMNIS) database.

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Keywords: Iodine; Deficiency; Europe; Thyroid; Prevalence

1. Introduction

The adverse effects of iodine deficiency — intellectual impairment, damaged reproduction, goiter and hypo- and hyperthyroidism — continue to impair health and socioeconomic development, with more than two billion people at risk worldwide [1]. In 2003, based on national medians of urinary iodine concentration (UIC) for 40 European countries, only 19 had adequate iodine nutrition and only nine had household coverage of iodized salt of at least 90% [2]. Over the past decade, compared to other WHO regions, Europe has had the largest percentage of iodine-deficient school age children, as well as the lowest household coverage by iodized salt, despite its relative wealth and high standard of health care. More recently, there have been concerns that salt iodization could undercut efforts to reduce salt consumption in Europe to curb hypertension [3].

2. Methods

We have estimated the prevalence of ID in Europe in 2010 using data compiled in the WHO Vitamin and Mineral...
Table 1

The number of people with low iodine intake in the European region, and the number of countries classified as iodine deficient based on national (or when unavailable, subnational) median UI, in 2010, 2007 and 2003\(^{a,b}\).

<table>
<thead>
<tr>
<th>WHO region Europe</th>
<th>Insufficient iodine intake (UI &lt; 100 µg/L)</th>
<th>School age children</th>
<th>General population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Countries with insufficient intake (no.)</td>
<td>Proportion (%)</td>
<td>Total no. (millions)</td>
</tr>
<tr>
<td>2010</td>
<td>14</td>
<td>43.6</td>
<td>28.6</td>
</tr>
<tr>
<td>2007(^{b})</td>
<td>19</td>
<td>52.4</td>
<td>38.7</td>
</tr>
<tr>
<td>2003(^{b})</td>
<td>23</td>
<td>59.9</td>
<td>42.2</td>
</tr>
</tbody>
</table>


\(^{b}\) Source [6].

Nutrition Information System (VMNIS) database on ID [4] updated by a systematic literature review. The inclusion criteria were:

- studies using a cross-sectional population-based sample frame;
- studies using standard UIC assay techniques;
- studies presenting the data as median UIC and/or proportion (%) of the population less than 100 µg/L [5].

For each country, the most recent national survey in school age children (if not available, preschool children, adolescents or adults) within 15 years (1994–2009) was selected. For countries where a national survey was not available, all eligible subnational studies carried out within the selected study frame were pooled and presented as a weighted national estimate. The median UIC obtained from the survey data was used to classify countries according to the international criteria of public health significance of iodine nutrition. The regional prevalence of insufficient iodine intake was estimated based on the proportion of the population with a UIC less than 100 µg/L [5]. The 2010 estimate was compared to data from 2003 and 2007 [6].

4. Discussion

Why is Europe lagging behind the rest of the world in salt iodization and control of ID? Many governments still equate iodine deficiency with goitre and may be unaware of the adverse effects of ID on reproduction and fetal brain development. However, recent controlled trials have shown that mild-to-moderate ID, as present in Europe, impair cognition [7,8]. Nutritional deficiencies get little attention on the European public health agenda with its main focus on lifestyle-related and communicable diseases. Legislation on iodized salt, where enacted, varies from country to country, as do the types and amounts of iodine compound used for fortification. This creates difficulties for food trade and results in an increased number of non-iodized food products on the market. Few countries regularly monitor the impact of their iodized salt programmes. In Europe, an increasingly smaller amount of salt is consumed as table salt (e.g. in the United Kingdom only 15% of all salt consumed) [3]. Thus, it is crucial that salt in processed foods be iodized, but legislation in most countries does not cover the food industry. Finally, current recommendations for salt consumption by WHO and other bodies are less than 5 g per day [3], and if adopted by European pop-
Table 2

<table>
<thead>
<tr>
<th>Sufficient (100–299 μg/L)</th>
<th>Deficient (&lt; 100 μg/L)</th>
<th>Excess (&gt;300 μg/L)</th>
<th>Insufficient data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Macedonia</td>
<td>Albania</td>
<td>Armenia</td>
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<td>Azerbaijan</td>
<td>Montenegro</td>
<td>Belgium</td>
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<td>Belarus</td>
<td>Netherlands</td>
<td>Estonia</td>
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<td>Bosnia and Herzegovina</td>
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<td>Ireland</td>
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<td>Finland</td>
<td>Sweden</td>
<td>Norway</td>
<td>Greece</td>
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<tr>
<td>Iceland</td>
<td>Turkmenistan</td>
<td>Tajikistan</td>
<td>Italy*</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>Luxembourg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* National coverage of iodized salt in these countries is incomplete and some regions likely remain deficient.

5. Conclusion

Several actions should be implemented to eradicate iodine deficiency in Europe. Methods for effective control programmes should be standardized by harmonization of relevant legislation and regulations in the countries of an enlarged European Union (EU), including the surveillance of the iodine status of national populations. Use of iodized salt by the food industry should be strongly encouraged. Education of health authorities and the public on the need to prevent iodine deficiency by consuming iodized salt should take into account policies to reduce salt consumption. Iodine supplementation for the most susceptible groups – pregnant women and young infants – may be useful where there is insufficient iodized salt. Many of these issues could be addressed within the EU by a coalition of WHO, Unicef and the International Council for the Control of Iodine Deficiency Disorders (ICCIDD), in cooperation with groups such as the European Thyroid Association, national endocrine societies, and the European Salt Producers Association. The recent Lancet series on child development [9], as well as the World Bank [10], recommend governments put a high priority on salt iodization to promote health and economic development. Although this recommendation was aimed at developing countries, it applies equally well to Europe.

Disclosure of interest

The authors declare that they have no conflicts of interest concerning this article.

References