Iodine supplements benefit pregnant women in Iran


Iran has an effective and sustained iodized salt program and has been considered as iodine replete since 2000. However, the first national survey of iodine intake among Iranian pregnant women in 2014 reported a mUIC of 87 μg/L, suggesting this vulnerable group was iodine deficient [1]. Given the significance of supplementation for pregnant women, tablets containing 150 μg of iodine (potassium iodide) and 500 μg of folic acid, were produced for the Iranian market. Also, capsules containing multivitamins plus 150 μg of iodide were produced.

The national distribution of Idofolic tablets was initiated in 2016. In all provinces, women were instructed to begin daily consumption of Idofolic 3 months before conception and continue the drug during pregnancy. Women who had started Idofolic 3 months prior to conception or if pregnant, at least for 1 month before interview, entered the current study. The participants were followed-up until the end of pregnancy. Blood and urine samples were collected from pregnant women between October 2018 and March 2019.

A questionnaire was administered to all pregnant women to collect information on the use of supplements, demographic data (e.g., age, parity, and gestational age), and medical history (e.g., thyroid medications, use of vitamin supplements, and history of thyroid disorders).

To reduce day-to-day variations of UIC, each woman provided three spot urine samples during one week in each trimester; the three samples mean was reported for each participant. Venous blood samples were also collected from pregnant women in each trimester to measure thyroid function tests.

Results
The authors enrolled 1128 women (381, 383, and 364 women in the first, second, and third trimesters, respectively).

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The mean age of the participants was 28 ± 6.2 years, and their mean gestational age was 22.7 ± 13.0 weeks.

The overall mUIC (IQR) was 188 μg/L (47–139) in the total cohort. Also, the mUICs were 174 μg/L (110–254), 175 μg/L (116–251), and 165 μg/L (114–235) in the first, second, and third trimesters, respectively (Table 1). In 11 provinces, the mUIC was adequate, except for Fars Province, where it was more than adequate (308 μg/L).

The median iodine content of household salt was 29.6 μg/g. In 85% of household salt, the iodine concentration was ≥ 30 μg/g. Also, more than 95% of households were under iodized salt coverage.

The mUIC of pregnant women in all 12 provinces differed between the two national surveys and was significantly higher after iodine supplementation in all provinces (Figure 1). Also, thyroid function tests were improved after iodine supplementation. Compared to the study done before iodine supplementation, the prevalence of clinical hypothyroidism, clinical/subclinical thyrotoxicosis, TPO-Ab positivity, and isolated hypothyroxinemia decreased significantly, while there was a small increase in subclinical hypothyroidism.

<table>
<thead>
<tr>
<th>Urine iodine (μg/L)</th>
<th>First trimester (n = 381)</th>
<th>Second trimester (n = 383)</th>
<th>Third trimester (n = 364)</th>
<th>Total (n = 1128)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median (IQR)</td>
<td>174 (110–254)</td>
<td>175 (116–251)</td>
<td>165 (114–235)</td>
<td>188 (124–263)</td>
</tr>
<tr>
<td>Range (min–max)</td>
<td>21–796</td>
<td>20–790</td>
<td>19–786</td>
<td>20–798</td>
</tr>
</tbody>
</table>
Iodized salt and targeted iodine supplementation provide ample iodine for women in Iran

**Figure 1** Comparison of percent distribution of median UIC (μg/L) between the first (before iodine supplementation) and the second (after iodine supplementation) national surveys of Iranian pregnant women.

**Conclusions**

The results of this study indicated that iodine supplementation with at least 150 μg of iodine per day appeared to improve the iodine intake of pregnant women in Iran, resulting in a mUIC indicating iodine sufficiency and improved thyroid function. This study highlights the need for the ongoing surveillance of iodine status in pregnant women in Iran and emphasized the importance of raising awareness about increased iodine intake in pregnant women. In Iran, the main source of iodine supply is iodized salt for household use. As universal salt iodization may not be adequate during pregnancy, the authors recommend supplementation of 150 μg of iodine during pregnancy, and if possible, 3 months before attempting pregnancy.

**References**