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Iodine supplementation for pregnant women: a cross-sectional national interventional study

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Abstract

Background

Although Iran has been considered iodine replete since 2000, the first national survey of iodine intake among Iranian pregnant women in 2014 indicated that despite the adequate intake of iodine by the general population, this vulnerable group has moderate iodine deficiency. Therefore, in this national cross-sectional interventional study, we aimed to assess the iodine intake and thyroid function of Iranian pregnant women 2 years after implementing national iodine supplementation for this vulnerable group.

Materials and methods

In this cross-sectional study, we conducted a national interventional survey of pregnant women. A total of 1200 pregnant women (400 women from each trimester) from 12 provinces of Iran were recruited from the antenatal care clinics from October 2018 to March 2019. The median urinary iodine concentration (MUIC), as an indicator of iodine status in three spot urine samples, was measured, along with the serum total T4 (TT4), thyrotropin (TSH), thyroglobulin (Tg), thyroid peroxidase antibody (TPO-Ab), and iodine content of household salt.

Results

The mean age of the cohort was 28 ± 6.2 years, with the mean gestational age of 22.7 ± 13.0 weeks. The overall MUIC (IQR) of pregnant women was 188 μg/L (124.2–263 μg/L). Also, the MUICs in the three trimesters of pregnancy were 174 μg/L (110–254), 175 μg/L (116–251), and 165 μg/L (114–235), respectively. The MUICs ≥ 150, 100–149, and < 100 μg/L were found in 63, 19.8, and 16.2% of the subjects, respectively. The mean TT4 level was 12 ± 4.5 μg/dL, and the median (IQR) level of TSH was 2.37 mIU/L (1.66–3.18 mIU/L). According to our local reference range, 118 (10.5%) pregnant women had subclinical hypothyroidism, 6 (0.53%) women had isolated hypothyroxinemia, and 65 (5.7%) women were TPO-Ab positive. Also, the median (IQR) level of Tg was 10.08 μg/dL (5.7–20.4 μg/dL),

and the median iodine content of household salt was 29.6 μg/g; the iodine content was ≥ 30 μg/g in 85% of household salt. The results showed that more than 95% of households were under iodized salt coverage.

Conclusion

The results of this study indicated that iodine supplementation with at least 150 μg of iodine per day improved the iodine intake of pregnant women. Except for subclinical hypothyroidism, the prevalence of clinical hypothyroidism, clinical/subclinical thyrotoxicosis, TPO-Ab positivity, and isolated hypothyroxinemia decreased significantly, which emphasizes the importance of iodine supplementation during pregnancy.

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Ethics declarations

Conflict of interest

The authors have no conflicts of interest.

Ethical statement

The manuscript is currently being considered for publication has not been published in whole or in part in another journals.

Informed consent

Written consent was obtained from all participants.

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