



IODINE AND THE THYROID

Iodine supplementation lowers the long-term risk of thyrotoxicosis without increasing hypothyroidism

BACKGROUND

Low iodine in the diet (iodine deficiency) is a world-wide health problem affecting about 30% of the population around the world. Iodine deficiency can cause goiters (thyroid enlargements) and hypothyroidism which can lead to neurological problems in children. Iodine supplementation in areas of the world where dietary iodine is low has been very effective in eliminating this problem. However, an unintentional consequence of iodine supplementation in populations that were initially iodine deficient has been a report of an increase of both hyperthyroidism (overactive thyroid) and hypothyroidism (underactive thyroid).

This study was done in Denmark, a country with mild to moderate iodine deficiency that underwent a mandatory iodine fortification program in 2001 (iodine was added to all salt used for commercial bread making and to the salt used for household consumption). This study looked at the thyroid levels in a group of about 300,000 people living in an area in the north of Denmark during 2014-2016, a few years after the mandatory supplementation with iodine in the salt took effect. They identified all cases of hyperthyroidism and hypothyroidism. They also compared the results with those found in an identical survey done during 1997-2000.

THE FULL ARTICLE TITLE

Petersen M et al. 2019 Changes in subtypes of overt thyrotoxicosis and hypothyroidism following iodine fortification. Clin Endocrinol (Oxf). Epub 2019 Aug 9. PMID: 31400012.

SUMMARY OF THE STUDY

The authors identified all cases of hyperthyroidism and hypothyroidism diagnosed during 2014-2016 in a group of about 300,000 people living in an area in the north of Denmark. The authors reviewed the medical records of the patients with abnormal thyroid levels to look for the specific causes of hyperthyroidism and hypothyroidism. They compared these results with those from an identical study done during 1997-2000, just before the mandatory iodine supplementation took effect.

The study found that, during 2014-2016, the rate of hyperthyroidism in this population was about 50 in 100,000 individuals. When they compared these results with the prior survey (before iodine supplementation), they found that the rate of hyperthyroidism was 50% lower. The decrease of hyperthyroidism was mostly due to a decrease in the rate of toxic nodular goiters. The chances of hyperthyroidism decreased in all age groups, but it was most significant in middle age and older individuals. The rates of underactive thyroid disease were not affected.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The results of this study confirm that programs that mandate iodine supplementation in the form of iodized salt are safe and effective. Further, over the long term, iodine supplementation may also lower the chances of hyperthyroidism, presumably by lowering the stimulus to thyroid growth and nodule formation. Finally, the addition of iodine did not increase the chances of hypothyroidism.

— Susana Ebner MD

ATA THYROID BROCHURE LINKS

Iodine Deficiency: <https://www.thyroid.org/iodine-deficiency/>

Goiter: <https://www.thyroid.org/goiter/>

Hypothyroidism (Underactive): <https://www.thyroid.org/hypothyroidism/>

Hyperthyroidism (Overactive): <https://www.thyroid.org/hyperthyroidism/>





IODINE AND THE THYROID, continued

ABBREVIATIONS & DEFINITIONS

Goiter: a thyroid gland that is enlarged for any reason is called a goiter. A goiter can be seen when the thyroid is overactive, underactive or functioning normally. If there are nodules in the goiter it is called a nodular goiter; if there is more than one nodule it is called a multinodular goiter.

Hyperthyroidism: a condition where the thyroid gland is overactive and produces too much thyroid hormone. Hyperthyroidism may be treated with antithyroid meds (Methimazole, Propylthiouracil), radioactive iodine or surgery.

Hypothyroidism: a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

Iodine: an element found naturally in various foods that is important for making thyroid hormones and for normal thyroid function. Common foods high in iodine include iodized salt, dairy products, seafood and some breads.

Toxic nodular goiter: characterized by one or more nodules or lumps in the thyroid that may gradually grow and increase their activity so that the total output of thyroid hormone in the blood is greater than normal.

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