



HYPOTHYROIDISM

Thyroid blood tests and general well-being, mood and brain function

BACKGROUND

Patients who have hypothyroidism (an underactive thyroid gland) require thyroid hormone replacement and normal thyroid hormone levels are important for general health and for proper brain functioning. Some symptoms of hypothyroidism are fatigue, decreased energy, slow thinking, weight gain and feeling colder than usual. Thyroid function is usually assessed by a blood tests measuring thyroid stimulating hormone (TSH) levels as well thyroid hormone levels. TSH is opposite to thyroid hormone levels as a lower TSH corresponds to higher thyroid hormone levels and a higher TSH corresponds to lower thyroid hormone levels. While it is clear that thyroid hormone replacement improves most symptoms of hypothyroidism, existing research has been unclear if correcting hypothyroidism with thyroid hormone therapy leads to improved general health and brain abilities. This study was done to examine if thyroid hormone replacement doses at the upper end of the normal range (corresponding to TSH values at the lower end of the normal range) is associated with improved general health and cognitive outcomes.

THE FULL ARTICLE TITLE

Samuels M et al. Effect of thyroid function variations within the laboratory reference range on health status, mood and cognition in levothyroxine treated subjects. *Thyroid* 2016 Jun 23. [Epub ahead of print]

SUMMARY OF THE STUDY

This was a study of 123 adults from one center, all of whom had hypothyroidism (from various causes) and were taking thyroid hormone replacement medication (levothyroxine). All of the individuals had blood TSH levels in the normal range and no recent changes in their dose of levothyroxine. The subjects were split into two groups: those with a low-normal TSH (0.34–2.5 mIU/) and those with a high-normal TSH (2.51–5.6). Everyone underwent extensive testing to measure their general health status and well-being (by questionnaire),

mood, and cognitive function. The tests for cognitive function focused on executive function (i.e. decision-making) and memory.

The majority of patients in this study were women of all age ranges. The most common reason for taking thyroid hormone was primary hypothyroidism, which includes Hashimoto's hypothyroidism. Overall, there were no associations found between blood TSH levels (all within the normal range) and measures of general health, well-being, mood, and cognitive function. The authors conclude that taking higher amounts of thyroid hormone within the normal range (resulting in lower blood TSH values within the normal range) does not alter these outcomes.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study shows that higher doses of thyroid hormone to treat hypothyroidism (corresponding to a lower TSH but still within the normal range) do not necessarily have increased health benefits. Specifically, the participants in this study did not have any differences in general health, general well-being, mood, or brain function. The relationships between thyroid status and hypothyroid symptoms are complex. Further research in this field will be helpful to understand why some patients with hypothyroidism who are treated with thyroid hormone replacement continue to have symptoms.

— Angela M. Leung, MD, MSc

ATA THYROID BROCHURE LINKS

Hypothyroidism: <http://www.thyroid.org/hypothyroidism/>

Thyroid Hormone Treatment: <http://www.thyroid.org/thyroid-hormone-treatment/>

Thyroid Function Tests: <http://www.thyroid.org/thyroid-function-tests/>

**HYPOTHYROIDISM**, continued**ABBREVIATIONS & DEFINITIONS**

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

Hashimotos thyroiditis: the most common cause of hypothyroidism in the United States. It is caused by antibodies that attack the thyroid and destroy it.

TSH: thyroid stimulating hormone — produced by the pituitary gland that regulates thyroid function; also

the best screening test to determine if the thyroid is functioning normally.

Thyroid hormone therapy: patients with hypothyroidism are most often treated with Levothyroxine in order to return their thyroid hormone levels to normal. Replacement therapy means the goal is a TSH in the normal range and is the usual therapy.

Thyroid Awareness Monthly Campaigns

The ATA will be highlighting a distinct thyroid disorder each month and a portion of the sales for Bravelets™ will be donated to the ATA. The month of August is **Thyroid and Pregnancy Awareness Month** and a bracelet is available through the [ATA Marketplace](#) to support thyroid cancer awareness and education related to thyroid disease.

