



## HYPOTHYROIDISM

### Effects of increasing levothyroxine doses on mood in older patients with hypothyroidism

#### BACKGROUND

Many symptoms of hypothyroidism can occur with disorders of other conditions – few symptoms are specific solely to the thyroid. This can make it challenging when treating hypothyroidism and can also give patients unrealistic expectations to the treatment of hypothyroidism. Levothyroxine is the main treatment for hypothyroidism and, indeed, most symptoms that are caused by hypothyroidism resolve once the thyroid hormone levels return to the normal range on levothyroxine. However, there are patients who still complain of some residual hypothyroid symptoms even after achieving normal thyroid hormone levels.

One such symptom is depression, as it is well known that some patients with hypothyroidism may experience depressive symptoms. Depression is more common in older adults in general and they are more prone to develop depression as the result of hypothyroidism. Prior studies have not shown a beneficial effect on mood after starting levothyroxine in depressed older individuals with subclinical hypothyroidism. The current study examined older hypothyroid patients with depressive symptoms who were already on levothyroxine. They examined the effect of increasing the levothyroxine dose on their depressed mood.

#### THE FULL ARTICLE TITLE

Moon JH et al 2020 Effect of increased levothyroxine dose on depressive mood in older adults undergoing thyroid hormone replacement therapy. Clin Endocrinol. Epub 2020 Apr 13. PMID: 32282957.

#### SUMMARY OF THE STUDY

This study was conducted in South Korea. A total of 30 hypothyroid patients (21 women and 9 men) were included in the study. Their average age was 74 year old. Their daily dose of levothyroxine ranged from 25

to 100 mcg (average 59 mcg). All patients had normal TSH and T<sub>4</sub> levels before entering the study. The authors assessed the patients for depression and for symptoms of excess thyroid hormone by two questionnaires; one validated for detecting geriatric depression in the Korean population and the other for hyperthyroid symptoms in Korean population. Then all the patients received an extra 12.5 mcg daily dose of levothyroxine for 3 months followed by their baseline levothyroxine dose for another 3 months. The two questionnaires were completed *first* at the beginning of the study, for the *second time* after taking the higher dose of levothyroxine for 3 months and for the *third time* after taking their baseline levothyroxine dose for 3 months.

Overall 24 patients were able to complete this study. The TSH level remained within the normal range during the study period but was lower after taking the higher dose of levothyroxine for 3 months. The number of study subjects who had depression scores based on Questionnaire at the beginning of the study was significantly higher than general population. The depression scores improved after 3 months of taking the higher levothyroxine dose and remained higher even after returning to the lower baseline dose.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The authors suggest that increasing levothyroxine dose in older hypothyroid adults who were already on levothyroxine might improve depressive symptoms. Importantly, the TSH remained in the normal range on the increased levothyroxine dose. However, this is a very small study and did not have a control group that was not given increased levothyroxine. This study needs to be repeated with much more patients and with a control group before these results can be validated.

— Shirin Haddady, MD, MPH





## HYPOTHYROIDISM, continued

### ATA THYROID BROCHURE LINKS

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

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

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

### ABBREVIATIONS & DEFINITIONS

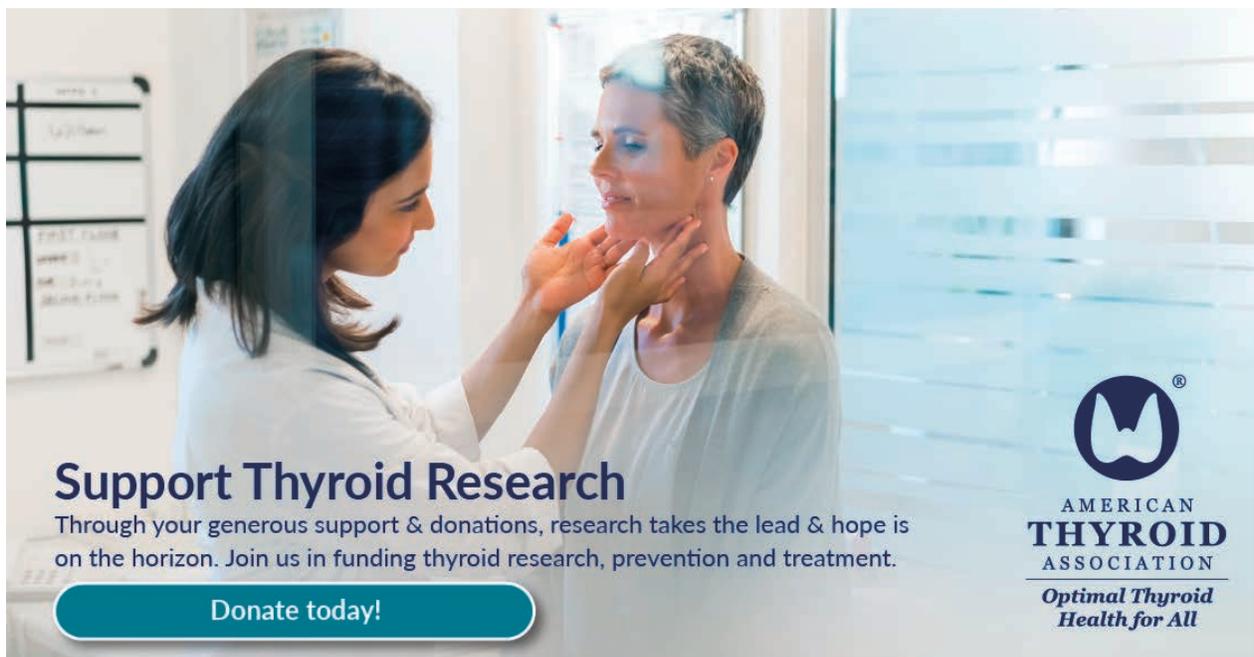
**Hypothyroidism:** a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills

**Subclinical Hypothyroidism:** a mild form of hypothyroidism where the only abnormal hormone level is an increased TSH. There is controversy as to whether this should be treated or not

**Levothyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tirosint™ and generic preparations.

**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.

**Thyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland. T<sub>4</sub> gets converted to the active hormone T<sub>3</sub> in various tissues in the body.



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