



## THYROID AND WEIGHT

### Weight gain and thyroid tests during pregnancy: is there a link?

#### BACKGROUND

The relationship between body weight and thyroid hormone levels is complex. It is known that higher body weight and body mass index (BMI) is linked to higher blood levels of TSH and lower levels of free thyroxine (FT<sub>4</sub>). This pattern is typically seen in hypothyroidism, where TSH levels are high and the FT<sub>4</sub> levels are low. However, T<sub>3</sub> levels are often higher in obesity and high T<sub>3</sub> levels are seen in hyperthyroidism. Weight gain is common in hypothyroidism while weight loss is common in hyperthyroidism.

Thyroid hormone levels also change during pregnancy, as both TSH and FT<sub>4</sub> levels frequently lower while T<sub>3</sub> levels are higher. It is unknown what the correlation is between obesity and pregnancy in terms of thyroid hormone levels. This study looked at thyroid tests during pregnancy and their link with the mother's weight both before and during pregnancy.

#### THE FULL ARTICLE TITLE

M Collares F. Maternal thyroid function, prepregnancy obesity and gestational weight gain—the Generation R Study: a prospective cohort study. Clin Endocrinol (Oxf). June 30, 2017 [Epub ahead of print].

#### SUMMARY OF THE STUDY

This study was done in Rotterdam, Netherlands. About 5,000 patients were studied during pregnancy (on average at 14 weeks of pregnancy). Blood levels of TSH and FT<sub>4</sub> were examined to see if there was a link with the weight and BMI before pregnancy and weight gain during pregnancy.

Higher TSH values were linked to lower risk for being underweight before pregnancy as well as higher risk for excess weight gain during pregnancy. On the other hand, higher FT<sub>4</sub> levels were linked to lower risk for weight gain during pregnancy. Women with hypothyroidism had a higher pre pregnancy weight and also more weight gain during pregnancy. The results were opposite to this in women who had hyperthyroidism.

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

The authors of the study concluded that higher TSH and lower FT<sub>4</sub> levels in the mother were linked to higher BMI before pregnancy and more weight gain during pregnancy. Although the study had its limitations, such as only one time testing during pregnancy, important information was learned. Since hypothyroidism in the mother is known to have adverse outcomes for child development, understanding the link of obesity and thyroid disease during pregnancy would be very helpful.

—Vibhavasu Sharma, MD

#### ATA THYROID BROCHURE LINKS

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

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

Pregnancy and Thyroid Disease: <https://www.thyroid.org/thyroid-disease-pregnancy/>

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.

**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.





## THYROID AND WEIGHT, continued

**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

**Body-mass index (BMI)**: a standardized measure of obesity calculated by dividing the weight in kilograms by the square of the height. A normal BMI is 18.5-24.9, overweight is 25-30 and obese is >30.

