

---

# Effect of thyroid disorder on female

**Noor Ibrahim Hasan – Samarra University / College of Applied Sciences**

**Abstract :** Women are more likely than men to have thyroid disease. One in eight women will develop thyroid problems during her lifetime. Thyroid hormones interact with reproductive hormones, estrogens and progesterone, to preserve normal function of the ovaries and maturation of the egg (oocyte). If the thyroid gland releases too much (hyperthyroidism) or too little (hypothyroidism) thyroid hormones, the balance of reproductive hormones can be impaired with consecutive thyroid-related fertility problems such as ovulation disorders, irregular periods, and trouble getting pregnant or carrying a baby to term. Since thyroid disease is a common endocrine disorder in women of childbearing age, the first thing to do when you have troubles getting pregnant is to have your thyroid checked, especially if thyroid disease runs in your family.

**Problems with menstrual period:** thyroid helps control the menstrual cycle. Too much or too little thyroid hormone can make the periods very light, heavy, or irregular. Thyroid disease also can cause the periods to stop for several months or longer, a condition called amenorrhea. If the body's immune system causes thyroid disease, other glands, including the ovaries, may be involved. This can lead to early menopause (before age 40).

**Problems getting pregnant :** When thyroid disease affects the menstrual cycle, it also affects ovulation. This can make it harder for woman to get pregnant.

**Problems during pregnancy :** Thyroid problems during pregnancy can cause health problems for the mother and the baby.

**Introduction :** The thyroid gland regulates the body's metabolism and growth, and secretes several hormones: thyroxine (T4), triiodothyronine (T3), and calcitonin. Thyroid problems can affect female patients of any age. It is located in the front lower part of the neck. Hormones released by the gland travel through the bloodstream and affect nearly every part of the body, from the heart and brain, to the muscles and skin.

The functions of the thyroid gland have much to do with a woman's reproductive system, particularly if the thyroid is overactive or underactive. Effects of this imbalance in hormone levels may have the following effects on a woman's body:

The overactive thyroid "hyperthyroidism"

Hyperthyroidism is a disorder in which your thyroid gland makes and releases more thyroid hormone than your body needs. Your doctor may say you have an "overactive thyroid," or refer to the condition as "overactive thyroid disease."

Thyroid gland is located in the front of your neck. Hormones released by the thyroid affect nearly every part of your body from your brain to your skin and muscles. They play a crucial role in controlling how your body uses energy, a process called metabolism. This includes how your heart beats and even how you burn calories.

Women are five to 10 times more likely to develop hyperthyroidism than men.

The causes of hyperthyroidism include:

**Graves' disease :** the most common cause of hyperthyroidism is an autoimmune condition called Graves' disease. The body's immune system creates an antibody that causes the gland to make an

---

excessive amount of thyroid hormone. Graves' disease runs in families, and usually affects younger women.

**Thyroiditis:** thyroiditis is inflammation of the thyroid. A virus or problem with the immune system causes the gland to swell, leaking thyroid hormone into the bloodstream. There are several types of Thyroiditis.

**Subacute:** a sudden, painful form of Thyroiditis of unknown cause. The thyroid usually heals on its own after a few months. The thyroid can become underactive for a while before it returns to normal.

**Postpartum:** this type of Thyroiditis affects women after pregnancy. One to two women out of every 10 women develop hyperthyroidism after having a baby. It usually lasts a month or two, followed by several months of underactive thyroid (hypothyroidism). In most women, the thyroid returns to normal.

**Silent:** this type is similar to postpartum Thyroiditis but is not related to pregnancy. The thyroid produces too much hormone but patients do not develop a painful thyroid gland. Some people may develop hypothyroidism afterwards.

**Thyroid nodule:** one or more lumps, or nodules, can grow in the thyroid gland, gradually increasing the gland's activity and the amount of thyroid hormone in your blood.

If one nodule causes hyperthyroidism, it is called a single toxic nodule.

If several nodules cause the thyroid to become overactive, the condition is called toxic multinodular goiter.

**Excess iodine:** you may also develop hyperthyroidism if you eat, drink, or are otherwise exposed to substances that contain a high amount of iodine. Iodine is used by the body to make thyroid hormone. Kelp or seaweed supplements and the medication amiodarone (Cordarone, Pacerone), once used to treat irregular heartbeats, are examples of medicines that contain a lot of iodine.

**Thyroid medications:** taking too much thyroid hormone medication can wreak havoc on your thyroid gland and cause hyperthyroidism. If you have been prescribed thyroid replacement hormone (for hypothyroidism), never take an extra dose, even if you missed one, without first talking to your doctor.

Symptoms of hyperthyroidism may be vague and can often mimic other illnesses and conditions. If you have a very mild form of hyperthyroidism, you may not notice any symptoms. Symptoms are often particularly subtle in the elderly. However, an overactive thyroid often leads to discomfort or even disability that disrupts your everyday activities or routines.

Thyroid enlargement, called a goiter, occurs in most people with hyperthyroidism. You may see or feel a lump in the front of your neck. Sometimes only your doctor will be able to detect a goiter.

Other symptoms of hyperthyroidism include:

Anxiety, nervousness, and irritability

Frequent, loose bowel movements

Difficulty sleeping

Double vision

Eyes that bulge out, or "protrude" (in patients with Graves' disease)

Hair changes, including brittle hair, thinning hair, and hair loss from scalp

Irregular heart beat (arrhythmia), especially in older adults

Menstrual cycle changes, including lighter bleeding and less frequent periods

Muscle weakness, especially in the thighs and upper arms

---

Rapid fingernail growth

Rapid heartbeat, usually over 100 beats per minute

Shaky hands

Sweating

Thinning skin

Weight loss despite increased appetite

The underactive thyroid “hypothyroidism”

Hypothyroidism, also called underactive thyroid disease, is a common disorder. With hypothyroidism, your thyroid gland does not make enough thyroid hormone.

The most common cause of hypothyroidism is Hashimoto's thyroiditis. "Thyroiditis" is an inflammation of the thyroid gland. Hashimoto's thyroiditis is an autoimmune disorder. With Hashimoto's, your body produces antibodies that attack and destroy the thyroid gland. Thyroiditis may also be caused by a viral infection.

Other causes of hypothyroidism include:

Radiation therapy to the neck area: treating certain cancers, such as lymphoma, requires radiation to the neck. Radiation damages the cells in the thyroid. This makes it more difficult for the gland to produce hormone.

Radioactive iodine treatment: this treatment is commonly prescribed to people who have an overactive thyroid gland, a condition known as hyperthyroidism. However, radiation destroys the cells in the thyroid gland. This usually leads to hypothyroidism.

Use of certain medications: certain medicines to treat heart problems, psychiatric conditions, and cancer can sometimes affect the production of thyroid hormone. These include amiodarone (Cordarone), lithium, interferon alpha, and interleukin-2.

Thyroid surgery : surgery to remove the thyroid will lead to hypothyroidism. If only part of the thyroid is removed, the remaining gland may still be able to produce enough hormone for the body's needs.

Too little iodine in the diet: the thyroid needs iodine to produce thyroid hormone. Your body doesn't make iodine, so you need to get it through your diet. Iodized table salt is rich in iodine. Other food sources of iodine include shellfish, saltwater fish, eggs, dairy products, and seaweed.

Pregnancy : the reason isn't clear, but sometimes, inflammation of the thyroid occurs after pregnancy. This is called postpartum thyroiditis. Women with this condition usually have a severe increase in thyroid hormone levels followed by a sharp drop in thyroid hormone production. Most women with postpartum thyroiditis will regain their normal thyroid function.

Problems with the thyroid at birth: some babies may be born with a thyroid gland that did not develop correctly or does not work properly. This type of hypothyroidism is called congenital hypothyroidism. Most hospitals in the U.S. screen babies at birth for this disease.

Pituitary gland damage or disorder: rarely, a problem with the pituitary gland can interfere with the production of thyroid hormone. The pituitary gland makes a hormone, called thyroid-stimulating hormone (TSH), which tells your thyroid how much hormone it should make and release.

Disorder of the hypothalamus: an extremely rare form of hypothyroidism can occur if the hypothalamus in the brain does not produce enough of a hormone called TRH. TRH affects the release of TSH from the pituitary gland.

---

Primary hypothyroidism is caused by a problem with the thyroid gland itself.

Secondary hypothyroidism occurs when another problem interferes with the thyroid's ability to produce hormones. For example, the pituitary gland and hypothalamus produce hormones that trigger the release of thyroid hormone. A problem with one of these glands can make your thyroid underactive.

Sometimes, an underactive thyroid that results from a problem with the hypothalamus is called tertiary hypothyroidism.

Women, particularly older women, are more likely to develop hypothyroidism than men. You are also more likely to develop hypothyroidism if you have a close family member with an autoimmune disease. Other risk factors include:

- Race (being white or Asian)

- Age (growing older)

- Prematurely graying hair

Autoimmune disorders such as type 1 diabetes, multiple sclerosis, rheumatoid arthritis, celiac disease, Addison's disease, pernicious anemia, or vitiligo

- Bipolar disorder

- Down syndrome

- Turner syndrome

Symptoms of hypothyroidism may be vague and can often mimic other conditions. They may include:

- Changes in the menstrual cycle

- Constipation

- Depression

- Dry hair and hair loss

- Dry skin

- Fatigue

- Greater sensitivity to cold

- Slow heart rate

- Swelling of the thyroid gland (goiter)

- Unexplained weight gain or difficulty losing weight

- Carpal tunnel syndrome

- Complications of Hypothyroidism

Untreated, hypothyroidism may cause:

- Heart problems

- Infertility

- Joint pain

- Obesity

Thyroid problems in a pregnant woman can affect the developing baby. During the first three months of pregnancy, the baby receives all thyroid hormone from its mother. If the mother has hypothyroidism, the baby does not get enough thyroid hormone. This can lead to problems with mental development.

---

Extremely low levels of thyroid hormone can cause a life-threatening condition called myxedema. Myxedema is the most severe form of hypothyroidism. A person with myxedema can lose consciousness or go into a coma. The condition can also cause the body temperature to drop very low, which can cause death.

### Hyperthyroidism Diagnosis

Blood tests can confirm a diagnosis of hyperthyroidism. Blood tests include those for thyroid-stimulating hormone (TSH). This is a hormone released by the pituitary gland to stimulate the thyroid to make thyroid hormone. Other blood tests include measures of thyroid hormone levels (typically elevated) and thyroid-stimulating antibody (called thyroid-stimulating immunoglobulin test) to check for Graves' disease. If your test results are abnormal, your doctor may also order the following tests:

- Thyroid ultrasound to check for nodules or inflammation

- Radioactive iodine uptake test to see your thyroid absorption of iodine

- Thyroid scan to see where iodine is in the thyroid

There are several different ways to treat hyperthyroidism. Before choosing the one that's best for you, your doctor will consider your age, overall health, severity of your symptoms, and specific cause of your overactive thyroid.

Treatment options include:

- Anti-thyroid drugs. These medications, including propylthiouracil (PTU) and methimazole (Tapazole), help prevent the thyroid gland from making new hormone. This doesn't permanently damage the thyroid, but some people may have serious side effects.

- Radioactive iodine (RAI) taken by mouth. Overactive thyroid cells quickly absorb this iodine and soon die. This prevents the release of thyroid hormone. Any remaining radioactive iodine disappears from the body within a few days. It may take a few months for the therapy to relieve hyperthyroidism symptoms, and a second dose may be needed. People who have this treatment will develop an underactive thyroid (hypothyroidism), and will need thyroid hormone supplements for the rest of their life. This therapy cannot be done during pregnancy.

- Surgery to remove all or part of the thyroid, called a thyroidectomy. Most people who have this procedure eventually develop an underactive thyroid and will need to take thyroid hormone-replacement medication for the rest of their life.

- Beta-blockers to slow down your heart rate. These medicines do not lower your thyroid hormone levels but help relieve symptoms related to a rapid heart rate.

After treatment, you will need regular blood tests to check your thyroid hormone levels. Your doctor may need to adjust your medication dose from time to time.

### Complications of Hyperthyroidism

It is important to maintain regular, lifelong visits with your doctor if you have hyperthyroidism. Untreated or improperly treated, an overactive thyroid can lead to severe, even life-threatening problems.

Complications linked to hyperthyroidism include:

- Irregular heart rhythm (atrial fibrillation)

- Congestive heart failure

- Miscarriage

- Osteoporosis and bone fractures (hyperthyroidism causes your bones to lose calcium faster than

---

usual)

Thyrotoxic crisis is a sudden worsening of hyperthyroidism symptoms that can be deadly if not treated right away. Seek immediate medical help if you or someone you know has hyperthyroidism and develops the following symptoms:

Agitation or signs of delirium

Confusion

Decreased awareness

Fever

Restlessness

Very fast pulse

Thyroid disease in pregnancy can affect the health of the mother as well as the child before and after delivery. Thyroid disorders are prevalent in women of child-bearing age and for this reason commonly present as an intercurrent disease in pregnancy and the puerperium.[1] Uncorrected thyroid dysfunction in pregnancy has adverse effects on fetal and maternal well-being. The deleterious effects of thyroid dysfunction can also extend beyond pregnancy and delivery to affect neurointellectual development in the early life of the child. Demand for thyroid hormones is increased during pregnancy which may cause a previously unnoticed thyroid disorder to worsen. Still, the overall lack of evidence precludes a recommendation for universal screening for thyroid disorder in all pregnant women

#### References

1. Clinical Practice Guideline. J Clin Endocrinol Metab 2012;
2. De Groot L, Abalovich M, Alexander EK, Amino N, Barbour L et al. Management of Thyroid Dysfunction during Pregnancy and Postpartum: An Endocrine Society
3. Green BB, Weiss NS, Daling JR. Risk of ovulatory infertility in relation to body weight. Fertility and Sterility
4. Healy DL, Trounson AO, Andersen AN. Female infertility: causes and treatment. Lancet 1994; 343
5. Krassas GE, Poppe K, Glinioer D (2010) Thyroid function and human reproductive health. Endocr.Rev. 2010
6. Meikle AW. The interrelationship between thyroid dysfunction and hypogonadism in men and boys. Thyroid 2004; 14 (Suppl 1): S17-S25.
7. Poppe, K, Glinioer D, Tournaye H et al. Thyroid function and assisted reproduction. In: The Thyroid and Reproduction, METS Riga 2008. Georg Thieme Verlag
8. The Hormone Foundation's Patient Guide to the Management of Maternal Hypothyroidism Before, During, and After Pregnancy. De Groot LJ, Stagnaro-Green A,