

Clinical Thyroidology[®] for the Public



AMERICAN THYROID ASSOCIATION
Optimal Thyroid Health for All



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Sachmechi I et al. Efficacy of levothyroxine sodium soft gelatin capsules in thyroidectomized patients taking proton pump inhibitors: an open-label study. *Thyroid* 2023;33(12):1414-1422; doi: 10.1089/thy.2023.0382. PMID: 37885233.

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Can Vitamin D supplementation prevent autoimmune thyroid disease leading to hypothyroidism?

Hypothyroidism is quite common, most often as a result of autoimmune thyroid disease. In some studies, lower vitamin D levels correlate with an increased risk of autoimmune thyroid disease. This study was performed to answer the question of whether vitamin D supplementation could decrease the chances of developing hypothyroidism.

Waterhouse M et al. The effect of vitamin D supplementation on hypothyroidism in the randomized controlled D-Health Trial. *Thyroid* 2023;33(11):1302-1310; doi: 10.1089/ty.2023.0317. PMID: 37698908.

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Gestational diabetes mellitus (GDM), is common. Hypothyroidism in adults is associated with resistance to insulin and altered glucose metabolism. Further, type 2 diabetes and thyroid disorders have been reported to be related. Studies have investigated correlations between thyroid disease and GDM, with varying results. In this study, the authors conducted a large study to investigate the association between thyroid function test results in early pregnancy and the subsequent risk of developing GDM.

Huang K et al 2023 Association between maternal thyroid function in early pregnancy and gestational diabetes: A prospective cohort study. *J Clin Endocrinol Metab*. Epub 2023 Aug 30;dgad518. PMID: 37647889.

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Predicting thyroid cancer outcomes using machine learning: a move toward precision medicine

The ATA Risk Stratification System is a widely used method to estimate the prognosis and recurrence risk of thyroid cancer based on specific features and helps to guide treatment and follow-up for thyroid cancer patients. The goal of this study was to develop a comprehensive data-driven model to predict the risk of thyroid cancer persistence/recurrence by including all available patient- and cancer-related features at the time of initial treatment. The performance of this model, which determines the impact of each feature on prognosis was compared to the ATA Risk Stratification System.

Grani G, et al. A data-driven approach to refine predictions of differentiated thyroid cancer outcomes: a prospective multicenter study. *J Clin Endocrinol Metab* 2023;108(8):1921-1928; doi: 10.1210/clinem/dgad075. PMID: 36795619.

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Is my race and income going to affect my thyroid cancer outcomes?

Poor socioeconomic factors have been shown to contribute to poor thyroid cancer outcomes in adults. In particular, adults of certain races and with poor socioeconomic have been shown to correlate with more advanced stages of thyroid cancer at diagnosis and poorer outcomes with thyroid cancer treatments. This study was done to analyze the effect of race and socioeconomic status on the outcomes of thyroid cancer in the pediatric population.

Zhao HH and Wilhelm SM Pediatric thyroid cancer: socioeconomic disparities and their impact on access to care. *Surgery* 2023;18:S0039-6060(23)00600-1; doi: 10.1016/j.surg.2023.08.036. PMID: 3783694.



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Editor's Comments

Welcome to another issue of *Clinical Thyroidology for the Public!* In this journal, we will bring to you the most up-to-date, cutting edge thyroid research. We also provide even faster updates of late-breaking thyroid news through X (previously known as Twitter) at [@thyroidfriends](https://twitter.com/thyroidfriends) and on [Facebook](https://www.facebook.com/thyroidfriends). Our goal is to provide patients with the tools to be the most informed thyroid patient in the waiting room. Also check out our friends in the **Alliance for Thyroid Patient Education**. The **Alliance** member groups consist of: the *American Thyroid Association®*, *Bite Me Cancer*, *the Graves' Disease and Thyroid Foundation*, *the Light of Life Foundation*, *MCT8 – AHDS Foundation*, *ThyCa: Thyroid Cancer Survivors' Association*, *Thyroid Cancer Alliance* and *Thyroid Federation International*.

We invite all of you to join our **Friends of the ATA** community. It is for you that the American Thyroid Association® (ATA®) is dedicated to carrying out our mission of providing reliable thyroid information and resources, clinical practice guidelines for thyroid detection and treatments, resources for connecting you with other patients affected by thyroid conditions, and cutting edge thyroid research as we search for better diagnoses and treatment outcomes for thyroid disease and thyroid cancer. We thank all of the *Friends of the ATA* who support our mission and work throughout the year to support us. We invite you to help keep the ATA® mission strong by choosing to make a donation that suits you — it takes just one moment to give online at: www.thyroid.org/donate and all donations are put to good work. The ATA® is a 501(c)3 nonprofit organization and your gift is tax deductible.

April is **Hashimotos Disease Awareness Month**.

In this issue, the studies ask the following questions:

- How do hypothyroid patients actually take levothyroxine?
- Which levothyroxine pill is better with low stomach acid?
- Can Vitamin D prevent hypothyroidism?
- What is the relationship between thyroid function and gestations diabetes?
- Can AI predict thyroid cancer outcomes?
- Is my race and income going to affect my thyroid cancer outcomes?

We welcome your feedback and suggestions. Let us know what you want to see in this publication. I hope you find these summaries interesting and informative.

— Alan P. Farwell, MD



HYPOTHYROIDISM

Thyroid hormone replacement therapy in patients with hypothyroidism: Understanding patient outcomes.

BACKGROUND

Hypothyroidism is a common clinical condition. In this condition, the thyroid gland is not producing enough thyroid hormone. The treatment of this condition is replacement of the thyroid hormone, usually in the form of a medication called levothyroxine. However, a significant proportion of patients with hypothyroidism (up to 15%) experience persistent symptoms that affect their quality of life, and the reasons for this are not well understood.

This study aimed to investigate how patients use levothyroxine in real life, focusing on taking the medication regularly, timing of taking the medication, and drug interactions. The study also assessed the effectiveness of levothyroxine in keeping thyroid levels in the normal range as indicated by TSH levels, and health-related quality of life questionnaires (HRQoL) to determine whether correct levothyroxine use is associated with better thyroid health.

THE FULL ARTICLE TITLE

Mehuys E et al 2023 Investigating levothyroxine use and its association with thyroid health in patients with hypothyroidism: A community pharmacy study. *Thyroid* 33:918–926. PMID: 37184683.

SUMMARY OF THE STUDY

This clinical study was done in Belgium in 2018/2019. The study enrolled 856 adults who had been using levothyroxine for at least 2 years and were 18 years of age or older. The average age of the participants was about 61 years. Most of the patients were female. Participants completed questionnaires. Patient adherence to treatment including the timing of the dose and whether it was taken

regularly were reviewed. The authors also studied whether other medications were taken at the same time and what was the effect of levothyroxine on patient's health quality. Blood test data for TSH levels were reviewed to look at whether treatment was keeping the thyroid levels in the normal range.

The study showed that 25% of patients did not have a normal blood level of TSH. Further, 28% were missing doses based on prescription refills, with the main reason unintentional owing primarily due to forgetfulness. Only 39% of the patients reported taking the medication at the recommended time 30 min before eating. About 7% of participants also used medications that could interfere with levothyroxine absorption and did not follow the recommended dosing instructions with regard to timing. However, the health questionnaires did not show a significant impact on the thyroid health or quality of life assessed by the patients themselves.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The study showed that treatment with levothyroxine was not always optimal. This included whether patients were taking the medication as prescribed daily, at the correct time and without any interfering medications. However, it did not appear to affect the quality of life for most patients. Further studies to look at and understand the effect of thyroid hormone treatment on the outcomes of quality of life in patients on thyroid hormone replacement therapy are needed. Healthcare providers should continue to emphasize patient education on the importance of timing and dosing of the medication.

—Vibhavasu Sharma, MD, FACE



HYPOTHYROIDISM, continued

ATA RESOURCES

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

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

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

ABBREVIATIONS & DEFINITIONS

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

Levothyroxine (T4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

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.



HYPOTHYROIDISM

Which thyroid pill is better for a stomach with low acid?

BACKGROUND

Hypothyroidism, or an underactive thyroid, is very common. Treatment is usually in the form of thyroid hormone replacement in the form of levothyroxine (L-T4). Currently, L-T4 comes mainly in the form of solid tablets. The exception to this is Tirosint, which is a gelatin pill containing liquid L-T4.

L-T4 tablets need an acidic stomach to be best absorbed. Proton pump inhibitors (PPI's) are very commonly used medications to decrease the stomach acid and can cause poor L-T4 absorption. This leads to an increase in TSH and the need to adjust the L-T4 dose. Patients may need more frequent tests and dose changes to find the right L-T4 dose. There are few reports that absorption of L-T4 in the form of Tirosint may not be affected as much from acid changes in the stomach.

The authors designed this study to find out the effects of switching from a standard L-T4 tablet to the same dose of L-T4 soft capsules in patients whose thyroid glands were removed and who were taking PPI's.

THE FULL ARTICLE TITLE

Sachmechi I et al. Efficacy of levothyroxine sodium soft gelatin capsules in thyroidectomized patients taking proton pump inhibitors: an open-label study. *Thyroid* 2023;33(12):1414-1422; doi: 10.1089/thy.2023.0382. PMID: 37885233.

SUMMARY OF THE STUDY

Adults with a history of hypothyroidism due to removal of their thyroid were studied. Patients were taking different brand or generic forms of L-T4 tablets with a dose between 88 and 250 mcg/day. Their thyroid tests were stable for at least 6 weeks and TSH level was between 0.3 and 4 mIU/L. They were on long term PPI treatment for

gastroesophageal reflux (GERD) or other diseases. Patients with other conditions known to effect L-T4 absorption were excluded. After 4-6 weeks they were switched to Tirosint soft capsules at the same dose and thyroid tests were done at 6 and 12 weeks. L-T4 dose change was permitted if necessary due to low or high TSH levels.

Out of the 47 patients included, 45 completed the study. Patients were around 55 years old; most were women. Average thyroid hormone dose was 144.54 mcg daily. Overall, after the patients switched from L-T4 tablets to soft gelatin capsules at the same dose, the TSH level significantly decreased and thyroid hormones increased by 6 weeks and even more at 12 weeks, especially in those who did not miss any doses.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study showed that in patients who had their thyroid gland removed and needed to take PPI's and were also taking L-T4 tablets, switching to soft gelatin capsules caused an increase in thyroid hormone levels and a decrease in TSH. This study did not have a lot of patients, there was no control group to confirm the results, and whether there was a difference in symptoms of hypothyroidism was not checked. Regardless, the findings of this study are important for patients who are having problems with keeping thyroid hormone levels under control while taking PPI's. Soft gelatin capsules may be an alternative to increasing monitoring frequency to adjust L-T4 tablet dosage. These formulas may cost several times more than the standard tablets and patients should have a discussion with their doctors to decide whether this is a good option for them. We still need more studies to find out whether this strategy is safe, cost-effective and more beneficial.

— Ebru Sulanc, MD



HYPOTHYROIDISM, continued

ATA RESOURCES

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

ABBREVIATIONS & DEFINITIONS

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

Thyroidectomy: surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a *total thyroidectomy*. When less is removed, such as in removal of a lobe, it is termed a *partial thyroidectomy*.

Levothyroxine (T4): the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tyrosint™ and generic preparations.

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. *Suppressive therapy* means that the goal is a TSH below the normal range and is used in thyroid cancer patients to prevent growth of any remaining cancer cells.

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.



HYPOTHYROIDISM

Can Vitamin D supplementation prevent autoimmune thyroid disease leading to hypothyroidism?

BACKGROUND

Hypothyroidism is quite common. The most common cause is autoimmune thyroid disease, which is the cause of hypothyroidism in about 2% of the population. This occurs when the body develops antibodies that get confused and attack the thyroid. These can block or destroy the thyroid, causing hypothyroidism. There are known risk factors for developing hypothyroidism, such as increasing age and female sex. However, the question of whether there are some factors in the environment, such as food or vitamin deficiencies, that can cause autoimmune thyroid disease remains unanswered.

In some studies, lower vitamin D levels correlate with an increased risk of autoimmune thyroid disease. On the other hand, vitamin D supplementation seems to slightly decrease the chance of developing a combined group of autoimmune diseases. This study was performed to answer the question of whether vitamin D supplementation could decrease the chances of developing hypothyroidism.

THE FULL ARTICLE TITLE

Waterhouse M et al. The effect of vitamin D supplementation on hypothyroidism in the randomized controlled D-Health Trial. *Thyroid* 2023;33(11):1302-1310; doi: 10.1089/ty.2023.0317. PMID: 37698908.

SUMMARY OF THE STUDY

This study was part of a larger evaluation looking at the effect of Vitamin D on various diseases. The D-Health Trial was a large trial conducted between 2014 and 2020 among >20,000 Australians ages 60 to 84 years. Trial participants received 60,000 international units of cholecalciferol (Vitamin D3) monthly or placebo for up to 5 years. The current study included 17,851 subjects and examined the effect of D3 supplementation on the development of hypothyroidism. Subjects were considered to have

preexisting hypothyroidism if they filled a prescription of levothyroxine within 12 months of randomization. They were considered to develop hypothyroidism if there was a new prescription of levothyroxine after 12 months of randomization.

After an average of 4 years of follow up 293 subjects were considered to have developed hypothyroidism. They tended to be older, female, obese or had poorer self-reported overall health. The incidence of hypothyroidism was slightly lower in women in the vitamin D group, but not significantly so. There was no significant difference in men.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This D-Health trial did not show any significant benefit of vitamin D supplementation on the development of hypothyroidism over 4 years. While this study did have a large sample size, the endpoint of hypothyroidism was determined by what we would call a surrogate marker (getting a prescription for levothyroxine) rather than a true diagnosis with blood tests. Since thyroid hormone levels were not used to determine thyroid status, we cannot know the reasons for patients receiving a prescription for levothyroxine. Neither baseline nor treatment vitamin D levels were measured so we cannot determine whether there could be a different outcome in patients starting with low vitamin D levels or those who had significant increase in levels with treatment. In addition, we don't know if the results would be different in patients who are at increased risk such as those with autoimmune markers for thyroid disease but normal thyroid tests. Thus, this study does not support the use of high dose vitamin D to prevent hypothyroidism in the general population.

— Marjorie Safran, MD



HYPOTHYROIDISM, continued

ATA RESOURCES

Hashimoto's Thyroiditis: <https://www.thyroid.org/hashimotos-thyroiditis/>

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

ABBREVIATIONS & DEFINITIONS

Autoimmune thyroid disease: a group of disorders that are caused by antibodies that get confused and attack the thyroid. These antibodies can either turn on the thyroid (Graves' disease, hyperthyroidism) or turn it off (Hashimoto's thyroiditis, hypothyroidism).

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





THYROID AND PREGNANCY

Thyroid function testing to predict gestational diabetes mellitus: a significant association but with limited clinical implication

BACKGROUND

Gestational diabetes mellitus (GDM), meaning the new development of diabetes during pregnancy related to the stress of being pregnant, is common. Overall, GDM is diagnosed in between 3 and 20% of pregnancies and is associated with excessive growth of the babies. Additionally, there is an increased risk of developing obesity, diabetes, and heart disease later in life for both the affected mother and her child.

The thyroid gland's hormones are essential regulators of the body's metabolic systems, including how the body handles sugar. Hypothyroidism in adults is associated with resistance to insulin and altered glucose metabolism. Further, type 2 diabetes and thyroid disorders have been reported to be related. Studies have investigated correlations between thyroid disease and GDM, with varying results.

In this study, the authors conducted a large study to investigate the association between thyroid function test results in early pregnancy and the subsequent risk of developing GDM.

THE FULL ARTICLE TITLE

Huang K et al 2023 Association between maternal thyroid function in early pregnancy and gestational diabetes: A prospective cohort study. *J Clin Endocrinol Metab*. Epub 2023 Aug 30;dgad518. PMID: 37647889.

SUMMARY OF THE STUDY

This was a study of 26,742 pregnant women included in the China Birth Cohort Study. Women were included if they had single pregnancies, no history of thyroid disease or thyroid function-altering medication, no history of diabetes, and normal blood glucose concentrations at their first pregnancy visit. Thyroid function was assessed based on blood drawn at the first prenatal visit between 6 to 13+ weeks of pregnancy and included measurements of free thyroxine (FT₄), thyroid stimulating hormone (TSH),

and thyroid peroxidase antibodies (TPOAbs). All women underwent an oral glucose tolerance test between 24 and 28 weeks of pregnancy, and the diagnosis of GDM was made in accordance with the criteria established by the American Diabetes Association.

A total of 3985 pregnant women (14.9%) were diagnosed with GDM. The risk of GDM was higher in women who were older, had a higher body-mass index (BMI) prior to getting pregnant, or were smokers. Further, more women with GDM had prior pregnancies and more had achieved pregnancy by assisted reproductive technology (ie in-vitro fertilization). Thyroid function test results showed higher average TSH (1.60 vs 1.52 mIU/L), and lower average FT₄ (16.27 vs. 16.38 pmol/L) concentrations in women with GDM than in those without GDM. Also, more women with GDM were TPOAb-positive than those without GDM (11.3% vs. 12.5%). Overall, the occurrence of GDM was significantly associated with TSH but not with FT₄ or TPOAb positivity. GDM risk increased significantly with higher TSH in the group of women with a TSH ≤ 1.24 mIU/L, but not in those with TSH > 1.24 mIU/L.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

In a large study of pregnant women with no history of thyroid disease or diabetes, there might be an association between a high normal TSH in the first trimester and GDM assessed by oral glucose-tolerance test midpregnancy. This was mainly the case within a subset of women with low concentrations of TSH. There was no clear association with subclinical hypothyroidism. Other risk factors for GDM included higher maternal age, higher prepregnancy BMI, conception by assisted reproductive technology, and smoking. Importantly, the TSH levels were all in the normal range and this does not address whether the risk of GDM could be limited by treatment with thyroid hormone.

— Alan P. Farwell, MD



THYROID AND PREGNANCY, continued

ATA RESOURCES

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

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

ABBREVIATIONS & DEFINITIONS

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 (T4): the major hormone produced by the thyroid gland. T4 gets converted to the active hormone T3 in various tissues in the body.

TPO antibodies: these are antibodies that attack the thyroid instead of bacteria and viruses, they are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States.

Gestational diabetes mellitus (GDM): development of diabetes during pregnancy in women not previously being diagnosed with diabetes. This is thought to be related to the stress of being pregnant. The diabetes usually resolved after delivery of the baby.



THYROID CANCER

Predicting thyroid cancer outcomes using machine learning: a move toward precision medicine

BACKGROUND

Thyroid cancer has an excellent overall prognosis with a low recurrence rate and very few patients actually die from the disease. This is because the cancer is very slow growing and we have very effective treatments, including surgery and radioactive iodine therapy. The latter acts as a magic bullet to seek out and destroy thyroid cancer cells. Because of the excellent prognosis, the treatment of thyroid cancer has changed to a more conservative approach involving more limited surgery, selective use of radioactive iodine therapy and less frequent follow-up. It is important to differentiate between the majority of patients with low-risk thyroid cancer and those with more aggressive features to recommend adequate treatment and follow-up. The ATA Risk Stratification System is a widely used method to estimate the prognosis and recurrence risk based on specific features and helps to guide treatment and follow-up for thyroid cancer patients. However, more recent research has showed that additional factors may affect the recurrence rate in thyroid cancer, while questioning the importance of several previously reported factors.

The goal of this study was to develop a comprehensive data-driven model to predict the risk of thyroid cancer persistence/recurrence by including all available patient- and cancer-related features at the time of initial treatment. The performance of this model, which determines the impact of each feature on prognosis was compared to the ATA Risk Stratification System.

THE FULL ARTICLE TITLE

Grani G, et al. A data-driven approach to refine predictions of differentiated thyroid cancer outcomes: a prospective multicenter study. *J Clin Endocrinol Metab* 2023;108(8):1921-1928; doi: 10.1210/clinem/dgad075. PMID: 36795619.

SUMMARY OF THE STUDY

The study evaluated 4773 consecutive thyroid cancer patients with at least one follow-up registered in the Italian Thyroid Cancer Observatory (ITCO) database. This database collects data on thyroid cancer patients followed at 40 different academic and non-academic healthcare settings across Italy. The study was designed to provide a picture of real-world practice, where the participating centers managed the thyroid cancer patients independently without any general guidance or restrictions within the network. The study data included demographic data, family history of cancer, how the cancer was discovered, cancer pathology data, surgery and radioactive iodine therapy data, and results of the follow-up tests. The study patients were followed for an average of 26 months (range: 6–84 months). The initial treatment consisted of total thyroidectomy and radioactive iodine therapy in 51% of patients, total thyroidectomy alone in 45%, and lobectomy alone in 3% of patients. The response to treatment and the risk of persistent/ recurrent disease was calculated using the ATA Risk Stratification System. Among the 4773 study patients, 52% were classified as having a low risk, 39% as having an intermediate risk, and 9% as having a high risk of persistent or recurrent cancer.

A decision-tree risk prediction model was used to assign a risk index for persistence/recurrence to each patient. This statistical model allows the investigation of the contribution of different patient- and cancer related features to the thyroid cancer recurrence risk. Two models were created, the first algorithm including all available variables, while the second algorithm excluded the variables used by physicians to decide whether to proceed with radioactive iodine treatment, since these variables were taken into consideration when recommending this treatment.



THYROID CANCER, continued

The two decision-tree models showed better performance as compared with the ATA Risk Stratification System. The second decision-tree model increased the sensitivity to detect structural disease from 37% to 49% in high-risk patients and improved the capacity to rule out the presence of persistence/recurrence by an additional 3% in low-risk thyroid cancer patients. Several factors not included in the ATA risk stratification system, such as age, gender, body-mass index (BMI), circumstance of cancer diagnosis, family history of thyroid cancer, surgical method, presurgical cytology result from thyroid nodule biopsy were found to affect the prediction of thyroid cancer persistence or recurrence.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study's results suggest that machine learning systems using large databases can improve prediction of thyroid cancer persistence or recurrence. Inclusion of additional variables than those used in current risk-stratification systems can improve the risk assessment. This represents an important step towards precision medicine in predicting thyroid cancer recurrence.

—Alina Gavrilă, MD, MMSC

ATA RESOURCES

Thyroid Cancer (Papillary and Follicular): <https://www.thyroid.org/thyroid-cancer/>

Thyroid Surgery: <https://www.thyroid.org/thyroid-surgery/>

Radioactive Iodine Therapy: <https://www.thyroid.org/radioactive-iodine/>

ABBREVIATIONS & DEFINITIONS

Thyroid cancer: papillary thyroid cancer and follicular thyroid cancer are the most common types of thyroid cancer.

Cancer recurrence: this occurs when the cancer comes back after an initial treatment that was successful in destroying all detectable cancer at some point.

Thyroidectomy: surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a total thyroidectomy. When less is removed, such as in removal of a lobe, it is termed a partial thyroidectomy. When one lobe of the thyroid is removed, it is termed lobectomy.

Radioactive iodine therapy: this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. I-131 is the destructive form

used to destroy thyroid tissue in the treatment of thyroid cancer and with an overactive thyroid. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (Thyroid Scan) or to take pictures of the whole body to look for thyroid cancer (Whole Body Scan).

Thyroid biopsy: a simple procedure that is done in the doctor's office to determine if a thyroid nodule (growth) is benign (non-cancerous) or cancer. The doctor uses a very thin needle to withdraw cells from the thyroid nodule. Patients usually return home or to work after the biopsy without any ill effects.

Decision-tree analysis: a statistical method used to predict an outcome in a large dataset by organizing the dataset in an inverted tree pattern with nodes and branches based on key features that can influence the outcome.



THYROID CANCER

Is my race and income going to affect my thyroid cancer outcomes?

BACKGROUND

Thyroid cancer is common. While most patients with thyroid cancer are adults, thyroid cancer also occurs in children. Overall, the prognosis is very good due, in large part, to effective treatments. However there are some factors that may contribute to worse outcomes. Some studies have previously shown that socioeconomic and racial inequalities can affect thyroid cancer care. Indeed, poor socioeconomic factors have been shown to contribute to poor thyroid cancer outcomes in adults. In particular, adults of certain races and with poor socioeconomic have been shown to correlate with more advanced stages of thyroid cancer at diagnosis and poorer outcomes with thyroid cancer treatments. More studies need to be done with the pediatric population.

This study was done to analyze the effect of race and socioeconomic status on the outcomes of thyroid cancer in the pediatric population.

THE FULL ARTICLE TITLE

Zhao HH and Wilhelm SM Pediatric thyroid cancer: socioeconomic disparities and their impact on access to care. *Surgery* 2023;18:S0039-6060(23)00600-1; doi: 10.1016/j.surg.2023.08.036. PMID: 3783694.

SUMMARY OF THE STUDY

From the National Cancer database, pediatric patients below the age of 18 with a diagnosis of thyroid cancer were categorized into races of White, Black, and Hispanic. Patients' socioeconomic factors such as insurance coverage and incomes were estimated based on their ZIP code entered into the American Community survey data.

The percentage of patients traveling more than 300 miles to receive their care increased from 7.2% in 2004-2008

to 14.1% in 2015-2019. Patients who waited 30-60 days for their initial thyroidectomy increased from 25% in 2001-2008 to 33.8% in 2016-2019. White patients travelled further for their care than Black or Hispanic patients. Lower income families and Medicaid patients were likely to travel further for their care than higher income families and patients with private insurance. Black and Hispanic patients were more likely to wait longer than 30 days for their initial thyroidectomies than White patients.

Black patients had poorer overall survival rates at 5 and 10 years as well as higher mortality rates compared to Hispanic and White patients. Hispanic patients tended to have more lymph node involvement with their thyroid cancer than White or Black patients. Medicaid patients had worse 10-year survivals for both differentiated and advanced thyroid cancer than patients with private insurance.

WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that income, insurance type, race, and ethnicity impact access to care and overall survival in pediatric patients with thyroid cancer. The underlying etiology in prolonged treatment wait times, need for travel to receive care, and worse outcome are unclear and warrant further investigation. These data indicate that patients should be encouraged to seek all available resources to optimize their medical care and reduce the gap in access to care. Providers should be flexible in offering appointments for patients who live a long distance from their medical facility.

— Pinar Smith, MD



THYROID CANCER, continued

ATA RESOURCES

Thyroid Cancer (Papillary and Follicular): <https://www.thyroid.org/thyroid-cancer/>

ABBREVIATIONS & DEFINITIONS

Papillary thyroid cancer: the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

Cancer metastasis: spread of the cancer from the initial organ where it developed to other organs, such as the lungs and bone.



ATA® Alliance for Thyroid Patient Education

GOAL The goal of our organizations is to provide accurate and reliable information for patients about the diagnosis, evaluation and treatment of thyroid diseases. We look forward to future collaborations and continuing to work together toward the improvement of thyroid education and resources for patients.



ThyCa: Thyroid Cancer Survivors' Association, Inc.™
www.thyca.org



MCT8 - AHDS Foundation

THYROID CANCER ALLIANCE



American Thyroid Association®

www.thyroid.org

ATA® Patient Resources:

www.thyroid.org/thyroid-information/

Find a Thyroid Specialist: www.thyroid.org

(Toll-free): 1-800-THYROID

thyroid@thyroid.org

Bite Me Cancer

www.bitemecancer.org

info@bitemecancer.org

Graves' Disease and Thyroid Foundation

www.gdatf.org

(Toll-free): 877-643-3123

info@ngdf.org

Light of Life Foundation

www.checkyourneck.com

info@checkyourneck.com

MCT8 – AHDS Foundation

mct8.info

Contact@mct8.info

Thyca: Thyroid Cancer Survivors' Association, Inc.

www.thyca.org

(Toll-free): 877-588-7904

thyca@thyca.org

Thyroid Cancer Alliance

www.thyroidcanceralliance.org

www.thyroidcancerpatientinfo.org

Rotterdam, The Netherlands

Thyroid Federation International

www.thyroid-fed.org

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