

Smoking and Thyroid Dysfunction: A Systematic Review and Meta-Analysis

Dr. Shattuck Hannan*

Department of Radiology, Faculty of Medicine, King Abdulaziz University, Jeddah, KSA

Abstract

The purpose of this study was to investigate any connections between smoking behaviour and thyroid volume and function in Jeddah. The King Abdul-Aziz University Hospital's Radiology Department screened a total of 226 volunteers, 128 of whom were men and 98 of whom were women. They were divided into smokers and non-smokers; there were 99 smokers, 48 of whom smoked cigarettes and 51 of whom smoked shisha, and 127 non-smokers. A questionnaire was distributed at the radiology department to collect the data. 166 subjects underwent thyroid ultrasounds and thyroid function tests, and the results were analysed with SPSS version 22 and Microsoft Excel. The study was conducted using random selection, and the results showed that the majority of cases were in the 20 to 30 year age range, high body mass index (BMI) was 33.1 kg/m² in those over 60, and the highest percentage of smokers was in the 20 to 30 year age range (40.02%). The thyroid was imaged by ultrasonography, which revealed 96 (58%) normal cases, 46 (28%) abnormal "solid" cases, and 24 (14%) abnormal "cyst" cases. In comparison to those who did not smoke cigarettes or shisha (47.9% and 47.3% respectively), a smaller percentage of smokers of both (15.4% and 5.6%) had an enlarged thyroid gland. For smoking cigarettes and shisha, the difference between these frequencies was statistically significant (Chi-square = 9.446 and 11.424, $p = 0.002$ and $p = 0.001$, respectively). As a result, it may be inferred from this study's findings that there are no significant direct correlations between smoking and thyroid volume or function. Yet, it is usually advised against smoking because of other known risks.

Keywords: Thyroid volume; Thyroid function; Ultrasound

Introduction

The gland, or butterfly-shaped organ, known as the thyroid, is responsible for manufacturing the hormone. The organ is located behind the Adam's apple and on the neck's front side. Where the isthmus is uniting, it is made up of two lobes or wings, the right lobe (Dexter) and left lobe (sinister). It is challenging to distinguish the upper and bottom border of the glands with the vertebral levels since they alter position with these while swallowing. T₃, T₄, and calcitonin are two different forms of thyroid producing hormones. Organs like the kidney, liver, and spleen convert more than 80% of T₄ into T₃. When the thyroid produces too much hormone (hyperthyroidism) or not enough hormone (hypothyroidism), a number of various illnesses may result (hypothyroidism). Hashimoto's disease, Graves' disease, goitre, and thyroid nodules are four prevalent thyroid conditions. An enlarged thyroid, larger protruding eyes, and indicators of an accelerated metabolism, such as a quick pulse and elevated blood pressure, can all be seen during a routine physical examination. Also, doctors will request blood testing to look for low TSH and high levels of T₄, both of which are indicators of Graves' illness. A radioactive iodine uptake test may also be used to assess how rapidly the thyroid absorbs iodine, which is [1-6] essential for healthy thyroid function. Graves' disease is consistent with a high iodine absorption. The thyroid's function is impacted by chemicals found in tobacco smoking. Thyroid enlargement is more common in smokers, and it's possible that mild thyroid enlargement in smokers is an indication of a more modest thyroid disorder. A prior study found that the risk of developing Graves' disease is double for smokers compared to nonsmokers. Smoking is said to make Graves' disease patients' eye issues worse. In people with Hashimoto's thyroiditis, smoking may increase the risk of hypothyroidism. The objective of a study is to assess the epidemiological data supporting a causal relationship between cigarette use and thyroid eye disease (TED). approach is systematic analysis of published epidemiological research, including appraisal of their quality, and analysis of the data in light of accepted causality standards. There were

14 publications total, describing 15 research. Smokers had a higher risk of disease progression or less successful treatment results. The general population and patients with Graves' disease should be informed about the dangers of smoking and TED. These results show that smokers with Graves' illness or TED should receive adequate assistance in quitting. Investigations have been done into how smoking affects how well endocrine glands function. It has been discovered that nicotine is the tobacco smoke component that affects the endocrine system most. The purpose of the current study was to investigate any potential links between smokings.

Subject and Methods

This prospective, randomised, and observational study was carried out in the Radiology Department of King Abdul-Aziz University Hospital in Jeddah. 226 people were randomly selected for the study groups, primarily health sciences students and their friends and family. According to their responses to a questionnaire, they were divided into two groups: 127 non-smokers and 128 smokers. There were 128 men and 98 women among them.

Ultrasound

One of the group's radiologists performed thyroid ultrasounds (US) on 166 of the participants after receiving ethical permission and patient consent forms from volunteers. The volunteers were evaluated

*Corresponding author: Dr. Shattuck Hannan, Department of Radiology, Faculty of Medicine, King Abdulaziz University, Jeddah, KSA, E-mail: mashann@gmail.com

Received: 1-Mar-2023, Manuscript No: jhcnp-23-91600, **Editor assigned:** 3-Mar-2023, PreQC No: jhcnp-23-91600 (PQ), **Reviewed:** 17-Mar-2023, QC No: jhcnp-23-91600, **Revised:** 20-Mar-2023, Manuscript No: jhcnp-23-91600 (R) **Published:** 27-Mar-2023, DOI: 10.4172/jhcnp.1000191

Citation: Hannan S (2023) Smoking and Thyroid Dysfunction: A Systematic Review and Meta-Analysis. J Health Care Prev, 6: 191.

Copyright: © 2023 Hannan S. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

while lying flat with their heads slightly extended. It was crucial to use high-frequency 5–7 MHz to give a short wavelength for low penetration in the thyroid scan, which was carried out with a linear array transducer. In order to check for apparent pathology and tracheal deviation, a survey scan that [7-9] starts transversely down the midline was performed. Following that, volunteers' heads were slightly tipped to the contralateral side and they underwent a transverse scan. Then, gauge the width of each thyroid lobe and isthmus. The transverse scan rotating into the longitudinal and medial to lateral scans is used to measure the anterior and posterior diameters. With the head tilted to the other side, this was done for the other lobe. Both longitudinal and transverse images of the isthmus were scanned. Finally, a transverse scan of the neck was performed on either side to look for any disease, such as enlarged lymph nodes or jugular vein thrombosis. Due to their modest size, the parathyroid glands are rarely visible. Measurements were taken in the event of any anomaly, such as a large, solid cyst, nodules, or tumours, and a colour Doppler examination was carried out to look at the lesion's blood supply.

A blood test

For situations where the screening US revealed an anomaly, blood samples were taken, and they were immediately tested for the TSH test, which measures [10] thyroid function. Individuals who received favourable results were contacted and directed to the clinic for additional testing and medical care.

Analytical statistics

The Statistical Software for the Social Sciences (SPSS Inc., Chicago, IL, USA) version 22 and Microsoft Excel were used to analyse the data. The Pearson chi-square 2 test was used to determine the statistical significance of the difference in frequencies. A two-sided test with a p value of 0.05 or lower was considered statistically significant.

Discussion

Almost all of the body's metabolic activities are under the direction of the thyroid gland. The most prevalent thyroid condition is characterised by abnormal thyroid hormone production. Hypothyroidism is caused by insufficient hormone synthesis, whereas hyperthyroidism is characterised by an excess of thyroid hormone. According to the study's findings, there were 128 (57%) more male cases than female cases among the randomly chosen cases, and 98 (43%) more male cases overall. The majority of the cases, or 119 instances, were between the ages of 20 and 30. With only 12 instances, the age group over 60 had a lower incidence of cases. The other age categories were somewhat close with 20 to 30 instances each. The vast majority of instances scanned (88 cases) were males in the 20 to 30 year age range, and the fewest cases (2 cases) were patients above the age of 60, as shown in figure 1. Age categories vs BMI among 226 individuals showed that the age group over 60 years old had the highest registered

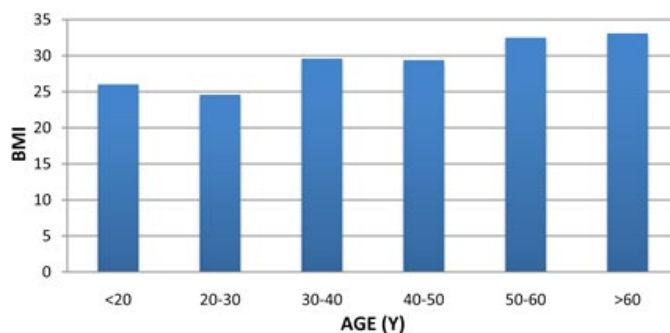


Figure 1: Shows the age groups versus BMI histogram for 226 patients.

BMI (33.1 kg/m²). Ages 50 to 60 were quite close to patients above the age of 60, and their body mass index was 32.5 kg/m². The patients in these groups are obese (keep in mind that the BMI range for obesity is between 30 and 40 kg/m²).

Conclusion and Recommendations

This research found no direct, statistically significant relationships between smoking and thyroid volume or function. Yet, it is usually advised against smoking because of other known risks. The authors suggest additional research be done due to the small sample size of smokers.

Competing Interests

The authors say they have no competing interests.

References

- JW Acharibasam, R Wynn (2018) Telemental health in low-and middle-income countries a systematic review. *Int J Telemed Appl*.
- Somberg J (2009) Health Care Reform. *Am J Ther* 16:281-282.
- Wahner-Roedler DL, Knuth P, Juchems RH (1997) The German health-care system. *Mayo Clin Proc* 72:pp. 1061-1068.
- McNally, EM (2009) Healing health care. *J Clin Invest* 119:1-10.
- Weinstein JN (2016) An "industrial revolution" in health care: the data tell us the time has come. *Spine* 41:1-2.
- Marshall E C (1989) Assurance of quality vision care in alternative health care delivery systems. *J Am Optom Assoc* 60:827-831.
- Cutler (2021) Building health care better means reining in costs. In *JAMA Health Forum* 2:pp. e210117-e210117.
- Lindeque BG (2009) American Health Care System Disaster. *Orthopedics (Online)* 32:551.
- Ampomah IG, Malau-Aduli BS, Malau-Aduli AE, Emeto, T I (2020) Effectiveness of integrated health systems in Africa: a systematic review. *Medicina* 56:271.
- MY Arafat, S Zaman, MDH Hawlader (2021) Telemedicine Improves Mental Health in COVID-19 Pandemic.