

INPLASY PROTOCOL

Influence of Smoking or Drinking on Thyroid Cancer: a Meta-Analysis

To cite: Wang et al. Influence of Smoking or Drinking on Thyroid Cancer: a Meta-Analysis. Inplasy protocol 2021110110. doi: 10.37766/inplasy2021.11.0110

Wang, FL¹; Zhou LY²; Zhu, D³; Chen, Y⁴; Liang, JM⁵; Yang, CZ⁶.

Received: 30 November 2021

Published: 30 November 2021

Corresponding author:
Fenglin Wang

wangfenglin1996@163.com

Author Affiliation:
Graduate School of Hebei
North University.

Support: No.

Review Stage at time of this submission: Data analysis - Completed but not published.

Conflicts of interest:
None declared.

Review question / Objective: Smoking and alcohol consumption and the risk of thyroid cancer.

Condition being studied: Thyroid cancer, the most common endocrine tumor, has a detection rate that is four times higher in women than men. Thyroid cancer continues to rise worldwide and is the fifth most common cancer among American women. Though the incidence of thyroid cancer has increased the mortality rate has not changed significantly. It is critical to identify the risk factors for thyroid cancer and eliminate them to reduce the incidence of thyroid cancer. Most diagnosed cases are attributed to overdiagnosis, but risk factors such as iodine deficiency and radiation exposure, and even genetic mutations have been reported. Generally speaking smoking and alcohol intake are carcinogenic factors. Cigarette smoke contains more than 4,800 identified compounds, many of which are harmful to humans. Smoking may increase the risk of disease progression, may reduce the effectiveness of treatment, and ultimately lead to relapse. Smoking has a great influence on human health. According to the World Health Organization, the number of smokers worldwide is increasing. Cigarette smoke contains several chemicals and endocrine disruptors that affect the endocrine system. To the best of our knowledge, there has not been a meta-analysis of recent published data on smoking and alcohol consumption. Therefore, in this study, we conducted a meta-analysis of observational studies, such as cross-sectional, cohort, and case-control studies, to determine the association between smoking and alcohol consumption and the risk of thyroid cancer.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 30 November 2021 and was last updated on 30 November 2021 (registration number INPLASY2021110110).

INTRODUCTION

Review question / Objective: Smoking and alcohol consumption and the risk of thyroid cancer.

Condition being studied: Thyroid cancer, the most common endocrine tumor, has a detection rate that is four times higher in women than men. Thyroid cancer continues to rise worldwide and is the fifth

most common cancer among American women. Though the incidence of thyroid cancer has increased the mortality rate has not changed significantly. It is critical to identify the risk factors for thyroid cancer and eliminate them to reduce the incidence of thyroid cancer. Most diagnosed cases are attributed to overdiagnosis, but risk factors such as iodine deficiency and radiation exposure, and even genetic mutations have been reported. Generally speaking smoking and alcohol intake are carcinogenic factors. Cigarette smoke contains more than 4,800 identified compounds, many of which are harmful to humans. Smoking may increase the risk of disease progression, may reduce the effectiveness of treatment, and ultimately lead to relapse. Smoking has a great influence on human health. According to the World Health Organization, the number of smokers worldwide is increasing. Cigarette smoke contains several chemicals and endocrine disruptors that affect the endocrine system. To the best of our knowledge, there has not been a meta-analysis of recent published data on smoking and alcohol consumption. Therefore, in this study, we conducted a meta-analysis of observational studies, such as cross-sectional, cohort, and case-control studies, to determine the association between smoking and alcohol consumption and the risk of thyroid cancer.

METHODS

Search strategy: Alcohol drinking or drinking behavior or alcohol consumption or drinking or smoke or smoke behavior AND (thyroid neoplasms or thyroid tumor or thyroid cancer).

Participant or population: 352,180 thyroid cancer patients and 18,031,090 participants without thyroid cancer.

Intervention: Smoking or Drinking.

Comparator: Alcohol intake and risk of thyroid cancer, Smoking and risk of thyroid cancer.

Study designs to be included: cross-sectional, cohort, and case-control studies.

Eligibility criteria: Thyroid cancer is a common malignant tumor of endocrine system, and thyroid cancer is classified as differentiated thyroid cancer. DTC, medullary thyroid cancer (MTC) and anaplastic thyroid cancer (ATC), in which DTC is further divided into papillary thyroid cancer (PAPillary thyroid cancer) Cancer, PTC) and follicular thyroid cancer (FTC).

Information sources: PubMed, EMBASE, Web of Science and Cochrane library

Main outcome(s): Are smoking or alcohol consumption protective or risk factors for thyroid cancer Risk factors or protective factor.

Quality assessment / Risk of bias analysis: Newcastle Ottawa Scale(NOS).

Strategy of data synthesis: To calculate a pooled OR or RR with 95% CI, we used adjusted ORs or RRs and 95% CIs reported in individual articles whenever possible. We evaluated heterogeneity in the results across studies using Higgins, which measures the percentage of total variation across the studies[11]. An I² value greater than 50% was considered to indicate substantial heterogeneity. The overall effects were analyzed with a fixed-effects model if the heterogeneity was low; otherwise, a random-effects model was applied. We also examined publication bias of the studies included in the final analysis using Begg's funnel plot or Egger's test. Trim-and-fill method was utilized when publication bias existed[12]. Statistical analyses were conducted using the Stata SE ver. 15.1 software package.

Subgroup analysis: Subgroup study was conducted according to Sex, continent, subtypes of thyroid cancer, type of study and smoking status Sex, continent, subtypes of thyroid cancer, type of study, smoking status.

Sensitivity analysis: Stata software was used for sensitivity analysis, and the sensitivity of the article was reflected by the change of effect size after deleting one of the articles.

Country(ies) involved: China.

Keywords: Thyroid neoplasms, Alcohol drinking, smoking, thyroid cancer, Meta-analysis.

Contributions of each author:

Author 1 - Fenglin Wang.

Author 2 - Luyao Zhou.

Author 3 - Di Zhu.

Author 4 - Ying Chen.

Author 5 - Caizhe Yang.

Author 6 - Jiemei Liang.