ORIGINAL RESEARCH

Effect of Tobacco on lungs disease, oral cavity disease and eyes disease

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Abstract:

Background:

Tobacco use remains a global public health concern, with well-documented detrimental effects on various organ systems. This study aimed to investigate the impact of tobacco consumption on lung disease, oral cavity disease, and eye disease among a cohort of 300 patients. Understanding these associations could provide valuable insights into the multifaceted health risks associated with tobacco use.

Materials and Methods:

A cross-sectional study design was employed to collect data from 300 patients aged 18 to 65 years, at Government medical college Datia. Participants were categorized into two groups: tobacco users and non-users. Data regarding tobacco consumption patterns, medical history, and the presence of lung disease, oral cavity disease, and eye disease were collected through structured interviews and clinical examinations. Statistical analyses, including chi-square tests and logistic regression, were conducted to assess the relationships between tobacco use and the prevalence of the targeted health conditions.

Results:

Among the participants, 150 were tobacco users and 150 were non-users. The prevalence of lung disease was notably higher among tobacco users (32.7%) compared to non-users (14.0%). Similarly, oral cavity disease was more prevalent in the tobacco user group (26.0%) compared to the non-user group (9.3%). In terms of eye disease, tobacco users exhibited a higher prevalence (18.7%) compared to non-users (7.3%). Logistic regression analyses indicated that tobacco users were at significantly greater odds of having lung disease (OR = 2.91, $p < 0.05$), oral cavity disease (OR = 3.54, $p < 0.01$), and eye disease (OR = 2.15, $p < 0.05$) compared to non-users.

Conclusion:

This study underscores the alarming association between tobacco consumption and the increased prevalence of lung disease, oral cavity disease, and eye disease. The findings

emphasize the urgent need for comprehensive tobacco cessation programs and public health initiatives to mitigate the risks associated with tobacco use. Efforts aimed at reducing tobacco consumption could lead to substantial improvements in the overall health and well-being of individuals.

Keywords: tobacco, lung disease, oral cavity disease, eye disease, prevalence, health risks, cross-sectional study, tobacco cessation.

Introduction:

Tobacco consumption remains a global health challenge with significant implications for various organ systems. Studies have consistently demonstrated the adverse effects of tobacco use on lung health (1), oral cavity health (2), and ocular health (3). Despite increased awareness of these risks, tobacco use remains a prevalent behavior, contributing to a range of diseases and complications.

Lung disease is one of the most well-established consequences of tobacco consumption (1). The harmful substances in tobacco smoke can lead to chronic obstructive pulmonary disease (COPD), lung cancer, and other respiratory disorders. Similarly, tobacco use has been linked to oral cavity diseases, including periodontal diseases, oral cancers, and dental health deterioration (2). The chemicals in tobacco products can damage oral tissues and promote the development of these conditions. Additionally, emerging evidence suggests that tobacco use may also impact ocular health, potentially leading to conditions such as age-related macular degeneration and dry eye syndrome (3).

Despite the growing body of evidence, there remains a need for comprehensive studies that investigate the associations between tobacco consumption and the prevalence of lung disease, oral cavity disease, and eye disease within a single cohort. This study aims to address this gap by examining the relationships between tobacco use and these health conditions among a sample of 300 patients. The findings from this study could provide valuable insights into the multi-faceted health risks associated with tobacco consumption and further underscore the importance of tobacco cessation efforts.

Materials and Methods:

Study Design and Participants:

This cross-sectional study involved a cohort of 300 patients aged between 18 and 65 years, at Government medical college Datia. All approval / permission was taken prior to data collection. Informed consent was taken from all participants.

Data Collection:

Structured interviews were conducted with participants to gather information on demographic characteristics, tobacco consumption patterns, and medical history. Participants were categorized into two groups: tobacco users and non-users, based on self-reported tobacco consumption status. Clinical examinations were conducted to assess the presence of lung disease, oral cavity disease, and eye disease. Medical records were reviewed to verify diagnosis and treatment history.

Assessment of Health Conditions:

Lung Disease: Participants' lung health was assessed on basis of clinical,chest x ray & spirometry.Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria were utilized to classify participants' lung health status.

Oral Cavity Disease: Oral examinations were performed to evaluate periodontal health, presence of oral lesions, and overall oral hygiene. The Community Periodontal Index of Treatment Needs (CPITN) was used to assess periodontal health, while any identified oral lesions were classified using established diagnostic criteria.

Eye Disease: Ocular health was assessed through comprehensive eye examinations, including visual acuity testing, intraocular pressure measurement, and fundoscopy. The presence of dry eye syndrome and other ocular disorders was documented.

Data Analysis:

Descriptive statistics were calculated for demographic variables and prevalence rates of lung disease, oral cavity disease, and eye disease among tobacco users and non-users. Chi-square tests were performed to assess associations between tobacco use and the presence of each health condition. Logistic regression analyses were conducted to determine the odds ratios (OR) and 95% confidence intervals (CI) for the associations while controlling for potential confounding factors such as age, gender, and socioeconomic status.

Results:

Demographic Characteristics:

A total of 300 participants were included in the study, with an equal distribution between tobacco users and non-users. The demographic characteristics of the participants are summarized in Table 1.

Prevalence of Health Conditions:

Table 2 presents the prevalence rates of lung disease, oral cavity disease, and eye disease among tobacco users and non-users. Among tobacco users, 32.7% exhibited signs of lung disease, compared to 14.0% of non-users. Similarly, oral cavity disease was more prevalent among tobacco users (26.0%) compared to non-users (9.3%). In terms of eye disease, 18.7% of tobacco users displayed ocular health issues, while the prevalence was 7.3% among non-users.

Associations between Tobacco Use and Health Conditions:

Chi-square tests were conducted to examine the associations between tobacco use and the prevalence of each health condition. The results indicated statistically significant associations ($p < 0.05$) between tobacco use and the presence of lung disease, oral cavity disease, and eye disease.

Logistic Regression Analysis:

Logistic regression analyses were performed to calculate the odds ratios (OR) and 95% confidence intervals (CI) for the associations between tobacco use and each health condition while controlling for potential confounding factors. The results are presented in Table 3. Tobacco users were found to have significantly higher odds of developing lung disease (OR = 2.91, 95% CI: 1.52-5.57), oral cavity disease (OR = 3.54, 95% CI: 1.89-6.63), and eye disease (OR = 2.15, 95% CI: 1.11-4.17) compared to non-users.

Table 1: Demographic Characteristics of Participants

Characteristic	Tobacco Users (n=150)	Non-Users (n=150)
Age (years)	Mean ± SD: 40.2 ± 8.6	Mean ± SD: 38.7 ± 7.9
Gender	Male: 75 (50.0%)	Male: 73 (48.7%)
	Female: 75 (50.0%)	Female: 77 (51.3%)
Socioeconomic Status	Low: 58 (38.7%)	Low: 49 (32.7%)
	Middle: 62 (41.3%)	Middle: 68 (45.3%)
	High: 30 (20.0%)	High: 33 (22.0%)

Table 2: Prevalence of Health Conditions Among Participants

Health Condition	Tobacco Users (%)	Non-Users (%)
Lung Disease	32.7	14.0
Oral Cavity Disease	26.0	9.3
Eye Disease	18.7	7.3

Table 3: Logistic Regression Analysis of Associations

Health Condition	OR	95% CI	p-value
Lung Disease	2.91	1.52 - 5.57	<0.05
Oral Cavity Disease	3.54	1.89 - 6.63	<0.01
Eye Disease	2.15	1.11 - 4.17	<0.05

The results of this study underscore the significant associations between tobacco use and the increased prevalence of lung disease, oral cavity disease, and eye disease. The odds ratios obtained from logistic regression analyses indicate that tobacco users are at greater risk of developing these health conditions compared to non-users. These findings highlight the urgent need for effective tobacco cessation programs and public health interventions to mitigate the adverse effects of tobacco consumption on multiple organ systems.

Discussion:

The present study investigated the relationships between tobacco consumption and the prevalence of lung disease, oral cavity disease, and eye disease among a cohort of 300 patients. The findings revealed significant associations between tobacco use and the increased prevalence of all three health conditions, corroborating existing literature on the adverse effects of tobacco on various organ systems.

Consistent with prior research, our results demonstrated a notable increase in the prevalence of lung disease among tobacco users (4). The damaging effects of tobacco smoke on lung health have been well-established, with substances like nicotine and carcinogens contributing to the development of chronic obstructive pulmonary disease (COPD) and lung cancer. The odds ratio of 2.91 for lung disease among tobacco users highlights the substantial risk posed by tobacco consumption.

Similarly, the study identified a strong link between tobacco use and oral cavity disease, aligning with previous studies on the detrimental impact of tobacco on oral health (5). The prevalence of oral lesions, periodontal diseases, and dental health deterioration were notably higher among tobacco users. The odds ratio of 3.54 for oral cavity disease underscores the need for preventive strategies targeting tobacco use to mitigate oral health complications.

Intriguingly, the study also revealed a significant association between tobacco consumption and eye disease. Although research on the relationship between tobacco and ocular health is limited, emerging evidence suggests that tobacco use may contribute to conditions such as age-related macular degeneration and dry eye syndrome (6-8). The odds ratio of 2.15 for eye disease highlights the potential ocular consequences of tobacco use.

The findings of this study underscore the multifaceted health risks associated with tobacco consumption. The results align with the broader understanding of tobacco's systemic effects, emphasizing the importance of comprehensive tobacco cessation efforts. Addressing tobacco use not only reduces the risk of lung disease, oral cavity disease, and eye disease, but also contributes to overall improvements in public health.

Despite the valuable insights provided by this study, certain limitations warrant consideration. The cross-sectional design precludes the establishment of causal relationships, and the reliance on self-reported tobacco use may introduce reporting biases. Additionally, potential confounding factors such as socioeconomic status were controlled for, but residual confounding cannot be entirely ruled out.

Conclusion

In conclusion, this study contributes to the growing body of evidence highlighting the adverse effects of tobacco consumption on lung health, oral cavity health, and ocular health. The results emphasize the urgent need for comprehensive tobacco cessation programs and public health interventions to mitigate the substantial risks posed by tobacco use.

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