A Systematic Review On The Prevalence Of Oral Cancer Among Tobacco And Non-Tobacco Users In Tamil Nadu

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Abstract

Background: Oral Cancer Is One Of The World's Most Common Types Of Cancer, With Delayed Diagnosis And Poor Prognosis. India Is Among The Leading Countries With A High Rate Of Oral Cancer Due To Its Increased Tobacco Use Rate.

Aim: This Study Aims To Assess The Prevalence Of Oral Cancer Among Tobacco And Non-Tobacco Users In Tamil Nadu.

Materials And Method: A Systematic Review Of Cross-Sectional Studies Were Performed. The Data Was Searched Using Electronic Databases, And 376 Articles Were Screened. The Intervention And Outcomes Were Assessed In The Studies Included In The Systematic Review. The Bias Assessment Done For The Article Was Based On The Newcastle-Ottawa Scale.

Results: Overall Analysis Of The Studies Shows That The Prevalence Of Oral Cancer In Tamil Nadu Has Been Significantly Increasing And That Smokeless Tobacco Causes Oral Cancer Compared With Other Forms Of Tobacco.

Conclusion: The Prevalence Of Oral Cancer In Tamil Nadu Is Increasing Significantly With The Usage Of The Increased Amount Of Tobacco, And Awareness Of The Ill Effects Of Tobacco Usage May Considerably Decrease The Rates.

INTRODUCTION:

Oral cancer is said to be one of the most common types of cancer worldwide, with delayed diagnosis and poor prognosis. Smokeless tobacco products and betel quid with or without tobacco are the major risk factors for oral cancer in India. India has 11.2% of the world's total smokers and 1 million tobacco-related death every year[1]. In adults, the use of tobacco users is more associated with oral cancer than non-tobacco users[2]. It is a serious problem in countries which has a prevalent habit of alcohol consumption, tobacco chewing, and smoking[3]. Tobacco is India's leading cause of morbidity, with 266.8 million current tobacco consumers.

The increasing burden of upper aero-digestive tract cancers in India and tobacco-related cancers constituting 30% of total cancer by 2020 were widely reported, which makes “oral cancer” the leading cancer site for men across India. In addition, infection with human papillomavirus is also identified as one of the associated factors in non-alcoholic and non-smoking individuals in both sexes[4].

Gender distribution in recent years shows that oral cancer is more frequent to occur in the female population than in males. The lack of knowledge, exposure to extreme environmental conditions, and behavioural risk factors are indicators of a wide variation in global incidence. A changing trend in the incidence and prevalence of oral cancer has been observed, with more women and youngsters being affected by oral cancer[5].

Oral squamous cell carcinoma commonly results from potentially malignant lesions or normal epithelium linings. Potentially malignant disorders (PMDs) such as inflammatory oral submucosa, fibrosis, erythroplakia, leukoplakia, candidal leukoplakia, dyskeratosis congenital, and lichen planus are indicators of the preclinical phase of oral cancer[6].

Oral squamous cell carcinoma is the commonest type and accounts for more than 90% of all oral cancers. Regarding symptoms, pain is the most frequent, and the tongue and the floor of the mouth have the highest occurrence rate. OSCC in its initial stages shows an erythroleukoplastic area without symptoms, but in advanced stages, there are ulcers and lumps with irregular margins which are rigid to touch[7]. As per the data from the National Cancer Control Program, the incidence of squamous cell carcinoma in the tongue is showing an increasing trend in Chennai over the past 25 years.

The prevalence of oral mucosal lesions in the elderly population in India was predominantly due to their oral habits when compared to those lesions reported from other countries[8]. Smokeless tobacco users studied prospectively in India had age-adjusted relative risks for premature mortality of 1.2–1.96 (men) and 1.3 (women)[9]. All the patients should be routinely and vigilantly screened for oral mucosal lesions to improve their survival[10]. This study is done to evaluate the prevalence of oral cancer among tobacco and non- tobacco users in Tamil Nadu

MATERIALS AND METHODS:

In this study, a systematic review was carried out to evaluate the prevalence of oral cancer among tobacco and non-tobacco users in Tamil Nadu.

Search Strategy: the articles related to the prevalence of oral cancer in Tamil Nadu were hand searched using electronic databases such as Prospero, Web of Science, Cochrane library, Wiley online library, Grey literature, Science Direct and PubMed. The articles were retrieved from each database based on the mesh representative. A total of 376 articles appeared from the sources, and 129 duplicates were removed. Forty-seven full-text articles were screened. Out of these, five articles were retrieved for review. This systematic review were performed using PRISMA guidelines.

Inclusion Criteria:

1. Articles with full text are included
2. Only cross-sectional studies
3. Original articles
4. Only articles with a correlation of oral cancer are included

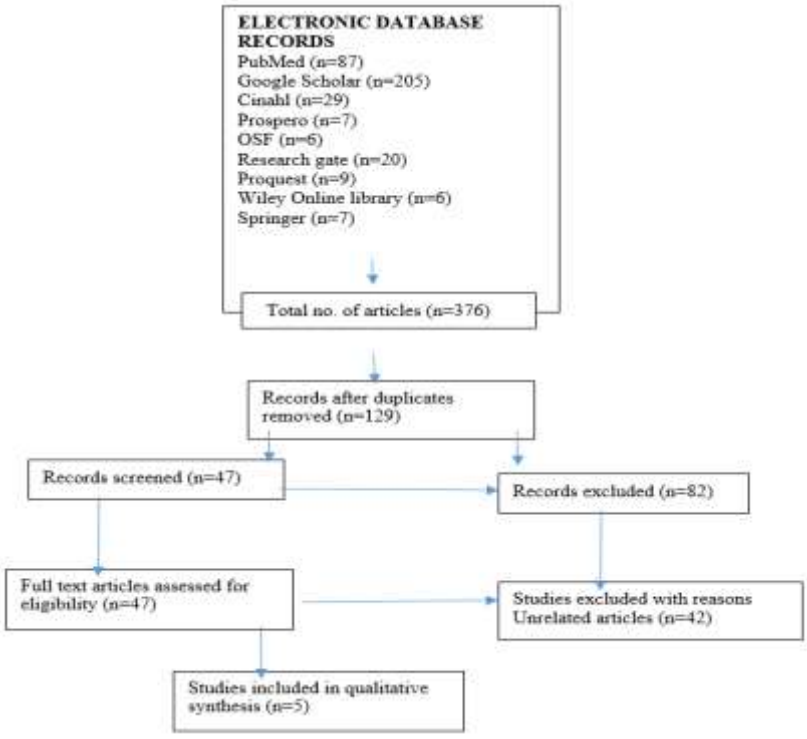
Exclusion Criteria:

1. Articles other than the English language
2. Review article, case-control
3. In vitro and animal studies were excluded

Search Engines:

1. Cochrane library
2. Wiley online library
3. Prospero
4. PubMed
5. Science Direct
6. Grey literature
7. Web of Science

Figure 1: PRISMA Flow Chart Diagram Showing The Number Of Studies Identified, Screened, Assessed For Eligibility, Excluded And Included In The Systematic Review.



RESULTS:

Table 1: Characteristics Of The Studies Selected And Included In Systematic Review

AUTHOR NAME	YEAR	PLACE	STUDY DESIGN	PATIENT AGE	ORIGIN OF SUBJECT
Madan Kumar et al.[11]	2022	Tamil Nadu	Cross-sectional study	21-60	Study group: tobacco users Control group: non-tobacco users
Geeta Sharma et al.[12]	2020	Tamil Nadu	Cross-sectional study	18-20	Subjects with a history of tobacco usage for the last six months
S. Rohini et al.[8]	2018	Tamil Nadu	Cross-sectional study	55-90	Age group 1: 55-60 years Age group 2: 60-70 years Age group 3: 70-80 years Age group 4: 80-90 years
Sree S. Thirukkovalluri et al[4]	2020	Tamil Nadu	Cross-sectional study	< 30	Group 1: Smokeless tobacco users Group 2: smokers Group 3: dual users
Praveena Raman et al[13]	2015	Tamil Nadu	Cross-sectional study	> 18	Study group: tobacco users Control group: non-tobacco users

Table 1: shows the characteristics of the intervention in the included studies. In all above the Prevalence of oral cancer among tobacco and non-tobacco users in Tamilnadu was reviewed.

Table 2: Outcome Of The Studies Included In Systematic Review

AUTHOR NAME	SAMPLE SIZE	PATIENT CHARACTERISTIC	OUTCOME	P VALUE
Madan Kumar et al.[11]	4529	4529 subjects of age 21-60 were selected and divided into two groups based on the usage of tobacco	There was a major difference between the study and the control group	< 0.014
Geeta Sharma et al.[12]	5240	5240 subjects of age 18-60 were selected based on their history of tobacco usage	The oral mucosal lesion is seen higher in patients with cigarette smoking habit than in patients with a habit of chewing gutkha or pan masala	< 0.72
S. Rohini et al.[8]	75	75 subjects of age 55-90 were divided into four groups based on their age	Oral cancer is more common in the age groups 60-70 and 55-60 than in the other two age groups	< 0.06
Sree S. Thirukkovalluri et al[4]	640	640 subjects of age less than 30 years were divided into three groups based on their type of tobacco usage	Oral cancer is more commonly occurring with the use of smokeless tobacco	< 0.019
Praveena Raman et al[13]	500	500 subjects over the age of 18 were selected and divided into two groups based on their usage of tobacco	Oral cancer is more prevalent in tobacco users than in non-tobacco users	< 0.006

Table 2: shows an outcome and result of the oral cancer among tobacco and non-tobacco users in Tamilnadu in above-mentioned studies.

Table 3: Bias Analysis Of The Studies

AUTHOR NAME	**SELECTION**				**COMPARABILITY**	**OUTCOME/ EXPOSURE**	
	SAMPLE REPRESENTATION	**SAMPLE SIZE**	**NON-RESPONDENTS**	**RISK FACTOR**		**ASSESSMENT OF THE OUTCOME**	**STATISTICAL TEST**
Madan Kumar et al.[11]	*	*	*	*	*	-	*
Geeta Sharma et al.[12]	*	*	*	*	*	-	*
S. Rohini et al.[8]	*	-	-	*	*	*	-
Sree S. Thirukkovalluri et al[4]	*	-	-	*	*	*	-
Praveena Raman et al[13]	*	-	-	*	*	*	-

Table 3: shows the bias analysis of all the included studies. It is categorized as * Denotes low-risk bias, - Denotes high-risk bias

DISCUSSION:

Oral malignancy is one of the most common types of malignancy in the world. It is commonly caused by the use of tobacco products. In India, it is the major causal factor for the prevalence of oral cancer. Tobacco can be consumed in two forms smoked and smokeless. In India smokeless form of tobacco is being used more than the smoked form. The lack of facilities for early diagnosis and intervention contributes heavily towards cancer-related morbidities. To prevent disease awareness among people and early detection is required.

The study conducted by Madan Kumar et al. in the year 2022 discussed the prevalence of oral mucosal lesions among 4529 subjects of age 21-60 in Tamil Nadu, and they were divided into two groups based on their tobacco usage. The

subject with definite malignancy was seen in the group with tobacco usage, and it has found to be statistically significant ($p<0.014$).[11]

The study conducted by Geeta Sharma et al., in the year 2020, conducted research among 5240 participants of age group 18-60 in Tamil Nadu, and they were divided into groups based on their tobacco usage. The prevalence of oral cancer is seen to be higher than the evaluated value in this study ($p<0.72$).[12]

The study conducted by S. Rohini et al. in the year 2018 in Tamil Nadu among 75 subjects belonging to the age group of 55-90 years, and they were divided into four groups based on their age. The four groups are age groups between 55-60, 60-70,70-80 and 80-90 years of age. The prevalence of oral cancer was most commonly seen in the age group between 60-70 and 55-60. The prevalence of squamous cell carcinoma in the elderly age group seems to be significantly higher than the evaluated value ($p<0.06$).[8]

In the study conducted by Sree S. Thirukkovalluri et al. in the year 2020 in Tamil Nadu, 640 subjects under 30 years of age were divided into three groups based on their type of tobacco use. People smoking smoked tobacco were grouped into one group, and people using a smokeless form of tobacco were grouped into another group. In contrast, the third group consisted of people using both smoked and smokeless forms of tobacco. The prevalence of oral cancer is more among the population using smokeless tobacco ($p<0.019$).[4]

The study conducted by Praveena Raman et al. conducted a study among 500 participants in the year 2015 in Tamil Nadu who were over the age of 18 and were divided into two groups based on their tobacco usage. Subjects of both sexes using any form of tobacco were included in this study. Among the study and control group, people using tobacco seem to have a high prevalence rate of oral carcinoma than non-tobacco users ($p<0.006$).[13]

The overall analysis of the studies shows that the prevalence of oral cancer in Tamil Nadu has been significantly increasing than noted previously. It is significant that usage of tobacco has a higher risk of oral cancer than non-usage. The prevalence of cancer is more in the smokeless form of tobacco than in the smoked form among the various types of tobacco. Smokeless tobacco products (gutkha and pan masala) have been banned from being sold in the state of Tamil Nadu since 2013. But it has been reported that the ban is being violated in Chennai since it is cheaply and widely available as there is lacking information about the contents of the product and warnings of health damage.

LIMITATIONS:

Only cross-sectional studies were taken into account. Many studies which outfit the criteria have been excluded. Many studies have been only from urban areas, and little information from rural areas has been obtained.

CONCLUSION:

The prevalence of oral cancer in Tamil Nadu is increasing significantly with the usage of the increased amount of tobacco. It seems to be more in the Chennai district than in other places, which may be mainly due to early detection in urban areas than in rural areas. Awareness among the general population of the prevalence of cancer and its early detection and intervention preventing a decrease in mortality rate is significantly less.

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