# Evaluation of knowledge and awareness of periodontal health among tobacco consumers

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**Abstract: AIM & OBJECTIVE: The questionnaire study was aimed to evaluate the knowledge and awareness of periodontal health among smoking and smokeless tobacco consumers**

**MATERIALS & METHODS: A cross sectional study was carried out using a questionnaire consisting of 15 close ended questions, which was carried out among 110 target respondents. The questions were formulated to evaluate the knowledge and awareness relating to periodontal health among tobacco consumers.**

**RESULTS: The results showed that about 70% of patients who were smokeless tobacco consumers had a poor knowledge of awareness on periodontal health status and about 30% of the respondents were smoking tobacco consumers.**

**CONCLUSION: The study concluded that tobacco consumers had a very poor knowledge of awareness regarding periodontal health.**

**Index Terms: "Tobacco consumer", "periodontal health status", "smoked tobacco", "smokeless tobacco", "awareness survey".**

## I. INTRODUCTION

Oral health is a mirror to systemic disorders of which periodontal health being the important segment of oral health. Globally there is a growing trend of tobacco consumption which is a known risk factor for many periodontal diseases. Though there are smoked and smokeless forms of tobacco, each form has its own detrimental implications over the periodontal health. It is necessary to motivate the patients to quit habits, destroying the healthy status of the periodontium and also to spread awareness and knowledge about its effects on treatment aspects. The present study was done to assess the awareness and knowledge of periodontal health status among tobacco consumers using a self-administered objective type of questionnaire. Tobacco consumption is known to be a potential risk factor for periodontitis, however only a few studies evaluated the periodontal status of smoking and smokeless tobacco consumers, Therefore the present study aimed to find the variation in periodontal status among smoking and smokeless tobacco users.

Periodontitis is an inflammatory condition affecting the supporting structures of teeth. It primarily results from specific microorganisms or groups of such microorganisms found in dental plaque. While dental plaque is the primary cause of periodontal diseases, several risk factors can alter the body's response to microbial attack. These factors include diabetes, tobacco use**,** pathogenic bacteria**,** and deposits on teeth caused by microbes[1].

Numerous cross-sectional and longitudinal studies have consistently demonstrated that smokers exhibit greater prevalence of increased pocket depth measurements**,** attachment loss**,** and alveolar bone loss compared to non-smokers. These findings highlight the strong association between smoking and periodontal disease[2].

Tobacco smoking occurs through various common forms, including cigarettes**,** beedis**,** and hookahs**.** Among these, cigarettes are the most prevalent. Tobacco smoke contains over four thousand toxins, including harmful substances such as carbon monoxide, oxidizing radicals, carcinogens like nitrosamines, and addictive psychoactive substances like nicotine. These components have detrimental effects on health[3].

It is reported that nicotine has adverse reaction on health of periodontium and alveolus. Even the lowest level of consumption has been reported with alveolar bone loss in a very young age.[4] The association between cigarette smoking and periodontal diseases represent a significant oral health problem. It is also noted that tobacco smoking not only causes detrimental effects that can be appreciated clinically, it can also affect at the molecular and cellular levels by causing immunosuppression, exaggerated inflammatory cellular responses and impaired stromal cell functions of oral mucosa.[5]

The most consistently reported periodontal effects of smokeless tobacco are mucosal lesions that may also affect the gingiva, gingival recession, and various forms of periodontal disease. The oral mucosal lesions—white, folded, and striated surfaces that are slightly elevated and diffusely demarcated from the surrounding mucosa have been estimated to occur in from 16% to 63% of smokeless tobacco users. Gingival recession has been reported in smokeless tobacco users by many but not all clinical surveys.[6]

## II. MATERIALS AND METHODS

In this cross-sectional study, about 110 self-administered questionnaires were distributed among the patients, with the habit of tobacco usage during their waiting time at the waiting hall of the OPD, Department of periodontology, college of dental sciences, Davangere between the months of January to March 2024.

Target respondents were chosen based on the eligibility criteria before individual distribution of the questionnaire; the study purpose was clearly explained to the eligible respondents on sight in their local language along with informed consent. The filled questionnaires were collected after 10 to 15 minutes. The study protocol was approved by the institutional ethical committee and the questionnaire comprised of 15 questions with reference to question framed by Global Adult Tobacco Survey (GATS), September 2020.

The questionnaire was available in English as well as in regional local language (Kannada). An objective type of questionnaire was formulated as it is easy for local people to understand, each questionnaire was categorized into 2 domines – 1) sociodemographic variables such as age, gender, marital status, and level of education. 2) Questions relating to knowledge of awareness of periodontal health effects with regards to tobacco consumption, participation in the study was voluntary, and those patients who were not ready to participate were excluded from the study. Since there is no universally recommended index to evaluate knowledge and awareness, all the results of the study were calculated and expressed in terms of percentage.

Inclusion criteria were:

[1] Patients who were dentulous/partially dentulous with minimum of 10 natural dentition.
[2] Patients with habits of tobacco consumption (smoked or smokeless forms)
[3] Patients with no other systemic disorders.

Exclusion criteria were:

[1] Patients who were completely edentulous.
[2] Patients with Systemic disorders or medically compromised patients.
[3] Patients who are already undergoing treatment for periodontal problems.
[4] Patients with any other habits other than tobacco consumption.

## III. STATISTICAL ANALYSIS

Descriptive and inferential statistical analysis has been carried out in the present study. Student's t test has been used to find the significance of correlation between two groups

Chi-square test was used to find the significance of correlation on categorial scale between smokers and smokeless tobacco users.

## IV. RESULTS:

### SOCIODEMOGRAPHY:

The study population included a total of 110 study respondents. The study population were under the age group of 30-60 years Out of the entire study population 55 were smokers and 55 were found to be smokeless tobacco consumers. The respondents were predominantly male as compared to females. Secondary schooling was the highest level of education of most study respondents.

| | Smokeless | Smoking |
|---|---|---|
| Average age of initiation | 30.3333 | 36.9444 |
| Average frequency of usage per day | 1.6863 | 6.4259 |

**AWARENESS OF EFFECT OF SMOKED TOBACCO CONSUMPTION ON PERIODONTAL DISEASE AND SPECIFIC ORAL HEALTH:**

Our study population of smoking tobacco consumers were not aware that tobacco consumption can be an added risk factor for development of cancerous lesion in the oral cavity, oral malodour, bone loss in relation to surrounding structures of teeth. Also, the motivational drive for those who attempted to quit the habit were through nicotine replacement therapy. The study reveals that cigarettes being the most commonly used form of smoking tobacco with the frequency 5 to 10 cigarettes per day with the average of 6.4 per day. The age of initiation of study respondents were between 36.9. The maximum number of study participants had the urge to consume tobacco as the 1st thing in the morning.

**AWARENESS OF EFFECT OF SMOKELESS TOBACCO CONSUMPTION ON PERIODONTAL DISEASE AND SPECIFIC ORAL HEALTH:**

There were about 65% of the respondents who were aware that smokeless tobacco products can cause brownish discoloration of teeth, most of the smokeless tobacco consumers agreed that they developed burning sensation in the mouth and ulcerations after using tobacco products. Around 65% respondents chose arecanut with tobacco as their most preferred form of smokeless tobacco. About 60% of the respondents noticed bleeding while brushing, these respondents were smokeless tobacco consumers. Around 35% of study respondents who were smokeless tobacco consumers noticed roughness or palpable bands in relation to area used to place smokeless tobacco.

**V. DISCUSSION:**

Though various researchers have acknowledged that tobacco consumption has a direct effect on both systemic health and oral health, there is a positive relationship to exist between smokeless tobacco consumption and its injury to the periodontium[4].

Smoking is directly related risk factor for periodontal diseases[7]. The National Noncommunicable Disease Monitoring Survey (NNMS) findings from 2021 revealed that 32.8% of adults aged 18-69 years used either smoked or smokeless forms of tobacco, with 28% using tobacco daily. Among adults, 12.6% smoked, while twice this proportion used smokeless tobacco (24.7%)**.** Notably, tobacco use exceeds 40% in the North-eastern states of India**,** with the highest prevalence observed in Tripura (64.5%)**.** According to GATS-2, smokeless tobacco use is more prevalent than smoking across most states and union territories. However, the prevalence of smoking relative to smokeless tobacco is highest in Meghalaya**,** Jammu and Kashmir**,** Himachal Pradesh**,** Uttarakhand**,** Haryana**,** and Andhra Pradesh**.** Additionally, the predominant use of tobacco in rural areas and the dual use of tobacco (both smoked and smokeless forms) among men are noteworthy[8].

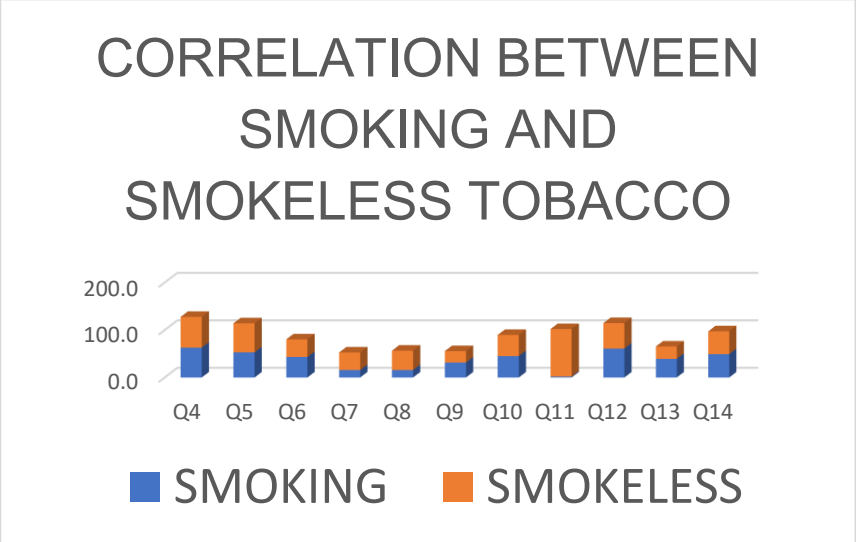
In this study it was found that most of the respondents began the habit of tobacco consumption after their secondary education, the males belonging to the age group of 20-50 were majorly found to be smokers, it is clear that low socioeconomic status and literacy are related. The smokeless tobacco consumption such as gutka, pan masala, areca nut was found to be more among people with less literacy knowledge, this makes it clear that smokeless tobacco consumption is more prevalent among people belonging to lower socio-economic background.

Oral health is a mirror to general health, oral health conditions pertaining to the periodontium such as bone loss, pocket formation, mobile teeth are usually unnoticed in the initial stages due to lack of awareness and its knowledge and it is usually noticed only during the advanced stages due to the severity of the disease hence, it becomes crucial to prevent periodontal damage.

Therefore, we conclude, on the basis of the responses to the questionnaire that about 70% have poor knowledge regarding the periodontal health and smoking and 30% showed poor knowledge regarding the association of smokeless tobacco and periodontal health, hence there is a need to initiate large scale awareness programs regarding the tobacco consumption and periodontal health to motivate the patients to quit these harmful habits.

## VI. CONCLUSION:

Within the limitation of the study, with the sample size of only 110, the results conclude that smokers have a significantly less awareness compared to smokeless tobacco users about the ill effects of smoking on periodontium, with the results of the present study, it can be concluded that there needs lot of research with respect among the population of tobacco consumers and ill effects that it causes to the periodontium, proper training and counselling is crucial for tobacco consumers to motivate them in quitting the habit, more studies are still required on a large sample size on a large scale of respondents from different localities. Periodontist and also people with medical background are held equally responsible for educating the patients about the harmful effects of tobacco consumption and also to motivate and support the patients in all possible ways for cessation of the habit.




DEPARTMENT OF PERIODONTICS, CODS - DAVANGERE

ASSESSMENT OF PERIODONTAL HEALTH AMONG CHEWERS OF SMOKELESS TOBACCO AND SMOKING TOBACCO IN DAVANGERE POPULATION

ದಾವಣಗೆರೆ ಜನಸಂಖ್ಯೆಯಲ್ಲಿ ಹೊಗೆರಹಿತ ತಂಬಾಕನ್ನು ಜಗಿಯುವವರಲ್ಲಿ ಮತ್ತು ತಂಬಾಕು ಸೇದುವವರಲ್ಲಿ ಒಸಡಿನ ಆರೋಗ್ಯದ ಮೌಲ್ಯಮಾಪನ

Date :

ದಿನಾಂಕ :

Name /ಹೆಸರು

Age /ವಯಸ್ಸು

Gender/ ಲಿಂಗ

Education/ ಶಿಕ್ಷಣ

Occupation/ ಉದ್ಯೋಗ

Marital status /ವೈವಾಹಿಕ ಸ್ಥಿತಿ

Questionnaires/ಪ್ರಶ್ನಾವಳಿಗಳು:

1. Types of tobacco you use?

   Smokeless tobacco – Gutka/Snuff/Areca nut with tobacco/pan masala

   Smoking tobacco – Beedi/Cigarettes

   ನೀವು ಬಳಸುವ ತಂಬಾಕಿನ ವಿಧಗಳು?

   ಹೊಗೆರಹಿತ ತಂಬಾಕು - ತಂಬಾಕು/ಪಾನ್ ಗುಟ್ಕಾ/ನಶ್ಯ/ಅಡಿಕೆ

   ಧೂಮಪಾನ ತಂಬಾಕು - ಬೀಡಿ/ಸಿಗರೇಟು

2. Age of initiation of mentioned habit?

   ಉಲ್ಲೇಖಿಸಿದ ಅಭ್ಯಾಸದ ಆರಂಭಿಕ ವಯಸ್ಸು?

3. Frequency of usage per day?

   Smokeless- 1packet/ 2packet/ more than 2packet

   Smoking – 1-5/ 5-10/ more than 10

   ದಿನಕ್ಕೆ ಬಳಕೆಯ ಆವರ್ತನ?

   ಹೊಗೆರಹಿತ - 1 ಪ್ಯಾಕೆಟ್ / 2 ಪ್ಯಾಕೆಟ್ / 2 ಪ್ಯಾಕೆಟ್ ಗಿಂತ ಹೆಚ್ಚು

   ಧೂಮಪಾನ - 1-5/ 5-10/ 10 ಕ್ಕಿಂತ ಹೆಚ್ಚು

4. Are you aware of developing brownish discoloration of teeth (stains & calculus) due to habitual usage of tobacco product? YES/NO

ತಂಬಾಕು ಉತ್ಪನ್ನದ ಅಭ್ಯಾಸದಿಂದಾಗಿ ಹಲ್ಲುಗಳ ಕಂದು ಬಣ್ಣ (ಕಲೆಗಳು ಮತ್ತು ಕಲನಶಾಸ್ತ್ರ) ಉಂಟಾಗುವ ಬಗ್ಗೆ ನಿಮಗೆ ತಿಳಿದಿದೆಯೇ? ಹೌದು/ಇಲ್ಲ

5. Are you aware of developing cancerous lesion in oral cavity due to habitual usage of tobacco product? YES/NO

ತಂಬಾಕು ಉತ್ಪನ್ನದ ಅಭ್ಯಾಸದಿಂದಾಗಿ ಬಾಯಿಯಲ್ಲಿ ಕ್ಯಾನ್ಸರ್ ಗಾಯ ಉಂಟಾಗುವ ಬಗ್ಗೆ ನಿಮಗೆ ತಿಳಿದಿದೆಯೇ? ಹೌದು/ಇಲ್ಲ

6. Did you notice burning sensation in mouth? YES/NO

ಬಾಯಿ ಉರಿಯುತ್ತಿರುವುದನ್ನು ನೀವು ಗಮನಿಸಿದ್ದೀರಾ? ಹೌದು/ಇಲ್ಲ

7. Did you get ulcers after using tobacco product? YES/NO

ತಂಬಾಕು ಉತ್ಪನ್ನವನ್ನು ಬಳಸಿದ ನಂತರ ನಿಮಗೆ ಬಾಯಿ ಹುಣ್ಣು ಬಂದಿದೆಯೇ? ಹೌದು/ಇಲ್ಲ

8. Did you notice bleeding while brushing? YES/NO

ಬ್ರಷ್ ಮಾಡುವಾಗ ರಕ್ತಸ್ರಾವವಾಗುತ್ತಿರುವುದನ್ನು ನೀವು ಗಮನಿಸಿದ್ದೀರಾ? ಹೌದು/ಇಲ್ಲ

9. Are you aware that this habit could lead to bone loss in relation to surrounding structures of teeth? YES/NO

ಈ ಅಭ್ಯಾಸವು ಹಲ್ಲುಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಮೂಳೆ ನಷ್ಟಕ್ಕೆ ಕಾರಣವಾಗಬಹುದು ಎಂದು ನಿಮಗೆ ತಿಳಿದಿದೆಯೇ? ಹೌದು/ಇಲ್ಲ

10. Do you feel any oral malodor? YES/NO

ಬಾಯಿಯ ದುರ್ವಾಸನೆಯನ್ನು ನೀವು ಗಮನಿಸಿದ್ದೀರಾ? ಹೌದು/ಇಲ್ಲ

11. Did you notice any roughness/palpable bands present in relation to the area used for chewing? YES/NO

ಜಗಿಯಲು ಬಳಸುವ ಜಾಗಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ಯಾವುದೇ ಒರಟುತನ / ಸ್ಪಷ್ಟವಾದ ಬ್ಯಾಂಡ್ ಗಳು ಇರುವುದನ್ನು ನೀವು ಗಮನಿಸಿದ್ದೀರಾ? ಹೌದು/ಇಲ್ಲ

12. Did you find any food lodgement while and after eating? YES/NO

ಆಹಾರವನ್ನು ಸೇವಿಸುವಾಗ ಮತ್ತು ನಂತರ ಯಾವುದೇ ಆಹಾರವು ಸಿಕ್ಕಿಹಾಕಿಕೊಂಡಿರುವುದನ್ನು ನೀವು ಕಂಡುಕೊಂಡಿದ್ದೀರಾ? ಹೌದು/ಇಲ್ಲ

13. Do you have the urge to use tobacco as the 1st thing in the morning? YES/NO

ಬೆಳಿಗ್ಗೆ ಮೊದಲ ಕೆಲಸವಾಗಿ ತಂಬಾಕನ್ನು ಬಳಸಲು ನಿಮಗೆ ಪ್ರಚೋದನೆ ಇದೆಯೇ? ಹೌದು/ಇಲ್ಲ

14. Have you tried to stop/quit the habit? YES/NO

ನೀವು ಅಭ್ಯಾಸವನ್ನು ನಿಲ್ಲಿಸಲು / ಬಿಡಲು ಪ್ರಯತ್ನಿಸಿದ್ದೀರಾ? ಹೌದು/ಇಲ್ಲ

15. If yes, mention/choose any of the following methods?

- Counselling
- Nicotine replacement therapy
- Traditional medication
- Telephone support line
- Tried without the above mentioned

ಹೌದು ಎಂದಾದರೆ, ಈ ಕೆಳಗಿನ ಯಾವುದಾದರೂ ವಿಧಾನವನ್ನು ನಮೂದಿಸಿ / ಆರಿಸಿ

- ಸಮಾಲೋಚನೆ
- ನಿಕೋಟಿನ್ ಬದಲಿ ಚಿಕಿತ್ಸೆ
- ಸಾಂಪ್ರದಾಯಿಕ ಔಷಧೋಪಚಾರ
- ದೂರವಾಣಿ ಬೆಂಬಲ ಮಾರ್ಗ
- ಮೇಲೆ ತಿಳಿಸಿದವುಗಳನ್ನು ಹೊರತುಪಡಿಸಿ ಬೇರೆ ರೀತಿಯಲ್ಲಿ ಪ್ರಯತ್ನಿಸಲಾಗಿದೆ

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