Original Research Article

An assessment of demographics and tobacco habits on oral health related quality of life amongst complete denture wearers of Uttarakhand state

Shradha Chauhan[1], Varun Kumar[1]*, Jyotsna Seth[1]

[1]Dept. of Prosthodontics and Crown & Bridge, Seema Dental College and Hospital, Rishikesh, Uttarakhand, India

Abstract

Background: Tobacco use is a significant public health concern, especially in India, where both smoking and smokeless forms are widely prevalent. Complete denture wearers, often older adults, are particularly susceptible to the negative effects of tobacco on oral health. Oral Health Related Quality of Life (OHRQoL) provides a subjective assessment of oral health's impact on daily living, which traditional dental metrics often overlook.

Materials and Methods: This cross-sectional study was conducted among complete denture wearers above 40 years of age in Uttarakhand. A structured questionnaire, including the OHIP-14 scale, was used to assess participant's OHRQoL in relation to their tobacco usage and demographic data. Inclusion criteria involved voluntary participants using complete dentures, while those uncooperative or unwilling to give consent were excluded.

Results: The study revealed that complete edentulism was more prevalent among females compared to males. Tobacco users, particularly smokers, had significantly higher OHIP-14 scores, indicating poorer OHRQoL. A notable proportion continued tobacco use despite experiencing edentulism. Male participants showed a lower awareness of the correlation between tobacco habits and OHRQoL.

Conclusion: There is a significant association between tobacco use and reduced oral health quality of life among complete denture wearers. These findings highlight the urgent need for targeted tobacco cessation programs and enhanced oral health education, particularly among older adults and males in Uttarakhand.

Keywords: OHRQoL, Tobacco, Complete Denture Wearers, OHIP-14, Demographics.

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1. Introduction

Oral health plays a pivotal role in an individual's general well-being, affecting speech, mastication, self-esteem, and overall quality of life. The concept of Oral health related quality of life (OHRQoL) has gained increasing attention as it provides a patient-centered perspective on oral health, focusing on the functional, psychological, and social impacts of oral conditions rather than solely on clinical indicators.[1]

Complete edentulism, a common consequence of chronic oral diseases and neglect, significantly impairs OHRQoL. The replacement of missing teeth with complete dentures may restore function to some extent, but it cannot fully eliminate the psycho-social burden caused by tooth loss.[2] Additionally, factors such as age, gender, socioeconomic status, and tobacco use can further influence OHRQoL among denture wearers.[3]

Tobacco use, both in smoking and smokeless forms, is a major public health issue in India, which ranks as the second-largest consumer globally. Over 275 million Indians use tobacco in some form, often unaware of its detrimental effects on oral health.[4] Tobacco accelerates periodontal disease, delays healing, and contributes to oral mucosal lesions, especially among denture wearers, thereby further deteriorating OHRQoL.[5]

2. Aim

This study aims to assess the impact of demographics and tobacco habits on Oral Health Related Quality of Life

*Corresponding author: Varun Kumar
Email: drvarun_smile@yahoo.co.in

(OHRQoL) among complete denture wearers in Uttarakhand State.

3. Objectives

1. To assess the edentulous state, tobacco use status, and oral health related quality of life (OHRQoL).
2. To determine the status of awareness between tobacco cessation and oral health related quality of life amongst people.

4. Materials and Methods

In this study, the epidemiological survey aimed to investigate demographics and tobacco habits on oral health related quality of life (OHRQoL) amongst complete denture wearers of Uttarakhand State. The sample group included both male and female denture wearer of Uttarakhand State. The study aimed to collect a total of 300 samples to facilitate a robust and statistically significant analysis.

Subjects were chosen through 'Systematic Random Sampling,' utilizing the patients visiting department of prosthodontics Seema Dental College, Rishikesh and dental camps. Initially, interviews were conducted with the subjects using a pre-prepared questionnaire proforma. Subsequently, intra-oral examinations of the subjects were performed, assisted by a mouth mirror and a light source.

The selection of participants was done on the basis of following:

4.1. Inclusion criteria

1. Participants who are ready to answer the question of questionnaire proforma to fulfil the research criteria and are ready give consent will be included in the study.
2. Individuals above 40 years of age are be included as complete denture wearers.
3. Complete denture wearers participating in the dental camps to be included.

4.2. Exclusion criteria

1. Individuals uncooperative for clinical examination.
2. Individuals unwilling to give consent for the study.
3. Individuals present with any comorbidities like diabetes, hypertension etc.

The determination of the sample size was conducted using Gpower software, focusing demographics and tobacco habits on oral health related quality of life (OHRQoL) amongst complete denture wearers of Uttarakhand State.

Sample size (SS) = $\dfrac{Z^{2*}(p)*(1-p)}{c^2}$

Where:

SS = sample size

Z = Z value (e.g. 1.96 for 95% confidence level)
p = percentage of population

This was found to be 70% for the present study which was expressed as 0.7.

c = confidence level

So, sample size was = $\dfrac{(1.96)^2 \times 0.7 \times 0.3}{(0.05)^2}$

Study protocol

1. Collection of data by way of surveying and oral examination
2. Tabulation of data
3. The data were analyzed using SPSS Version 25.0 (IBM Corp., Armonk, NY, USA).
4. Deriving the results.

A set of 14 questions was compiled in English as well in local language, with all questions being closed-ended. The questionnaire underwent face validity assessment by two experts, resulting in no necessary additions or deletions of questions. Subsequently, five experts were enlisted to evaluate content validity. The content validity ratio (CVR) for all questions exceeded the minimum CVR threshold required for retention in the questionnaire.

For examination purposes, a set of mouth mirrors. Following each visit, the mirrors underwent sterilization at the institution, utilizing an autoclave, making them ready for subsequent use during the next visit. The subjects underwent examination while seated on dental chair.

The collected data underwent a meticulous examination to identify and rectify any errors. Following this comprehensive review, a master chart was generated on the computer using Microsoft Excel software for subsequent analysis.

5. Results

The survey was conducted on patients coming to the department of prosthodontics Seema Dental College and Hospital, Rishikesh and dental camp in surrounding area.

1. Demographic distribution and edentulism prevalence: The study included 300 participants who wore complete dentures, split equally between the age categories of 40–60 and ≥61.
2. With 53.3% of people entirely edentulous, edentulism was more common in older people, especially in those 61 and older. Complete edentulism was more common in females (27.6%) than in males (25.6%).(**Figure 1**)
3. Influence of tobacco use: The relationship between tobacco use and edentulism was statistically significant (p < 0.0001), with past users accounting for the largest percentage of patients who were

completely edentulous (20.6%), followed by current users with a significant prevalence (13%).(**Figure 2**)

4. Smoking and oral health: Among smokers, former smokers had the highest prevalence of partial edentulism (28.3%). Age related variables may have contributed to the much greater rate of complete edentulism (20%) among non-smokers. Across all age categories, smokers and tobacco chewers tended to have lower dental health.

5. OHRQoL assessment (OHIP-14): According to the OHIP14 questionnaire, 38.6% of respondents reported difficulty pronouncing words, 35% felt self-conscious, and 32% had eating difficulties. 42% of respondents said they frequently experienced functional impairment as a result of denture issues, suggesting that denture users who smoke and have low awareness have significant declines in their quality of life.(**Figure 3**)
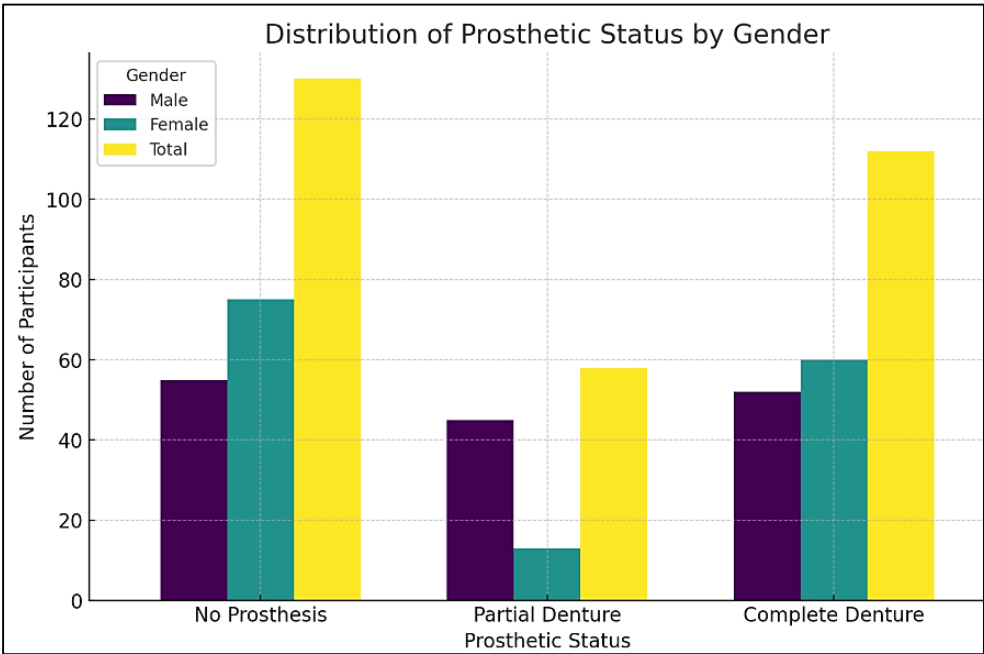

Figure 1: Distribution of prosthetic status by gender
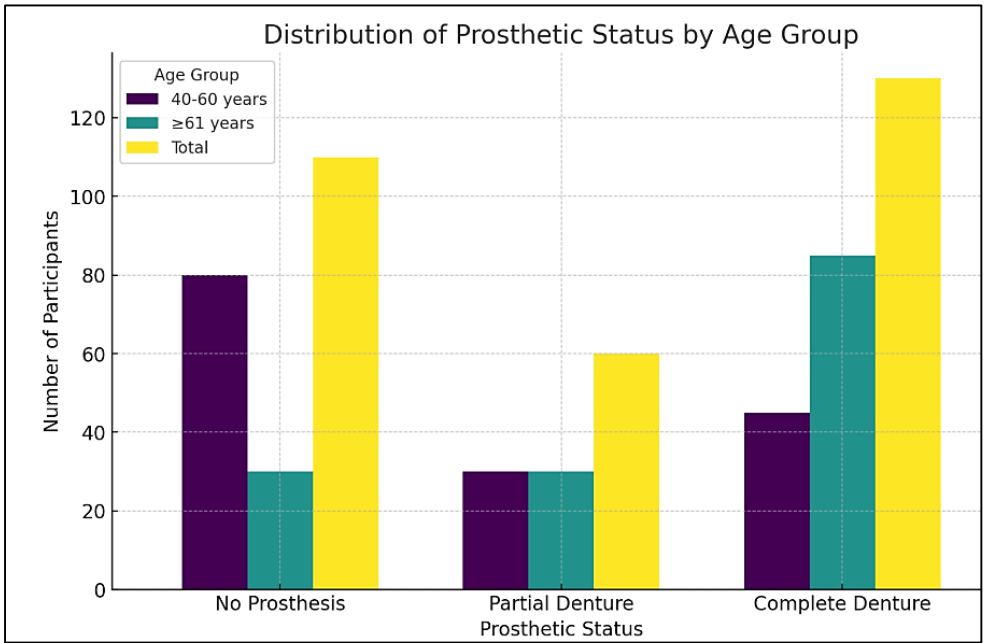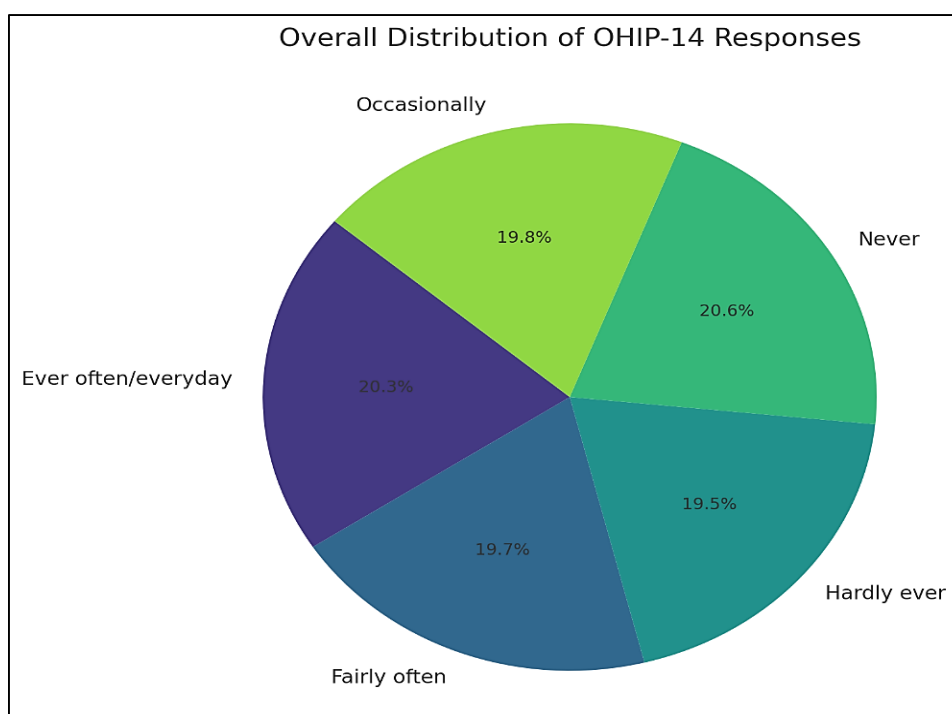

Figure 2: Distribution of prosthetic status by age

Figure 3: Overall distribution of OHIP-14 responses

6. Discussion

The demographic characteristics of denture wearers are influenced by various factors, including age, gender, educational level, and socio-economic status. Understanding these factors is crucial for dental professionals to provide tailored care and address the specific needs of different patient groups.[3]

A study by Polyzois G comparing different prosthetic treatments found that complete denture wearers had significantly higher OHIP-14 scores compared to those with fixed prostheses, indicating a greater negative impact on OHRQoL. Additionally, patients with medical conditions exhibited higher OHIP-14 scores, highlighting the interplay between general health and oral health outcomes.[6]

A cross-sectional study found that the mean rank of every OHIP-14 question was higher in smokers compared to non-smokers, with significant differences observed in all items except for "satisfaction of life."[7]

A study conducted by Jeon KH et al indicates that higher nicotine dependence correlates with increased OHIP-14 scores, reflecting poorer OHRQoL. Additionally, factors such as alcohol consumption, tooth pain, and gum bleeding have been found to negatively correlate with OHRQoL among smokers.[8]

The study population was evenly distributed across two age groups: 40-60 years (Group 1): 72 males (24%) and 78 females (26%). ≥61 years (Group 2): 80 males (26.6%) and 70 females (23.7%) This even distribution ensures that the study findings can be generalized across different age brackets.

The findings of this study align with a community-based study conducted by Shah N et al, focusing on the prevalence of edentulousness, denture wear, and denture need among the Indian elderly. In Shah et al's study, a total of 1240 subjects were examined, with 57.2% being males and 42.7% females. Among the males, 62.9% were partially edentulous, while among the females, 66.8% experienced partial edentulism. Moreover, 20.3% of males and 14.7% of females were completely edentulous, consistent with the observed trends in the present study.[9]

The detrimental effects of tobacco extend to both smoking and smokeless forms, contributing to tooth loss and the subsequent need for prosthetic rehabilitation. Moreover, tobacco users exhibit a higher prevalence of oral potentially malignant disorders (OPMDs), with study conducted by Grech J et al reporting an 11.4% prevalence among tobacco users compared to 1.4% in non-users.[10]

Based on few studies, it is seen that patients are comfortable with receiving advice about quitting tobacco use, from the health professionals. There is also evidence that health professionals can successfully assist individuals to quit tobacco use. Likewise, integrating the tobacco control program into broader national health plans will be done.[11]

Interestingly, non-smokers in this study showed the highest percentage of complete edentulism (20%), likely due to age-related factors, since most non-smokers were older individuals. This observation reflects the complexity of

edentulism etiology, where both biological aging and lifestyle behaviors contribute, as supported by Gupta et al., who emphasize the multifactorial nature of oral health decline in elderly populations.[4]

Additionally, the study observed low awareness about the harmful effects of tobacco on oral health, particularly among male participants, where 30.7% were unaware of the consequences. This indicates a pressing need for targeted oral health education and tobacco cessation programs. As Pollex & Ruffing argue, community and policy-level interventions play a crucial role in tobacco control, especially in regions with high smokeless tobacco consumption like Uttarakhand.[12]

The study highlights a significant correlation between age, prosthetic status, and oral health-related quality of life. The increased prevalence of complete denture usage among older adults reflects higher rates of edentulism, which adversely impacts quality of life. Additionally, tobacco use exacerbates oral health issues, leading to increased tooth loss and associated complications.[13] The 5 A's model (Ask, Advise, Assess, Assist, Arrange) and 5 R's (Relevance, Risks, Rewards, Roadblocks, Repetition) are widely recommended strategies by the US Public Health Service. Studies confirm that using these frameworks in dental and medical practice significantly improves quit rates.[14] Regular dental visits offer a unique opportunity for brief interventions, motivation, and referral to cessation programs. Integrating tobacco cessation into dental care not only improves oral health outcomes but contributes to broader public health goals.[15]

Although this study did not directly evaluate specific oral hygiene practices such as denture cleaning methods or frequency of oral care, the findings indirectly reflect the oral hygiene status of the participants. The high prevalence of edentulism and poorer OHRQoL scores among tobacco users suggest compromised oral health maintenance over time.

The study was conducted in a specific Uttarakhand region, making it less applicable to populations with different socio-economic or cultural backgrounds. Different materials used in denture fabrication were not taken in account so it may affect fitting and comfort.

7. Conclusion

In conclusion, the study substantiates that demographic factors and tobacco use significantly affect oral health-related quality of life among complete denture wearers. These findings highlight the importance of integrating behavioral counseling, prosthetic rehabilitation, and preventive education in routine dental care to improve the quality of life in edentulous populations.

8. Source of Funding

9. Conflict of Interest

None.

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