

## Denture Hygiene among Patients Wearing Complete Dentures Visiting OPD of a Private Dental College in Punjab-Knowledge Attitude and Practices

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### Abstract

**Background:** Complete dentures are removable appliances that can replace missing teeth and help restore smiles. The success of the denture depends not only on accurate clinical and technical procedures but also on denture hygiene care practices followed by the patients.

**Objective:** To access the knowledge attitude and practice regarding denture hygiene among patients wearing complete dentures visiting dental OPD in a private dental college in Punjab.

**Materials and Methods:** A cross sectional study was carried out among 100 complete denture patients who were asked questions regarding denture hygiene through face to face interview in local language. The questionnaire was divided into two parts. First part of the questionnaire was related to demographic details and second part included questions related to knowledge, attitude and practice towards denture cleaning habits. The data was analyzed using SPSS version 20 Chicago: SPSS and other relevant test were applied.

**Results:** The knowledge regarding denture hygiene was found to be fairly good (68%) yet the attitude and practice regarding denture hygiene was found to be very less. 93% cleaned their denture using a toothbrush and a tooth paste and 2% of them used mouthwash to clean their denture. Only 7% use soap water and use of denture brush to clean the denture which is said to be the prescribed method. It was found that only 12% of them used a denture box to keep their dentures.

**Conclusion:** A proper follow up regimen should be made mandatory so that appropriate denture hygiene instructions can be followed by each patient to maintain the longevity of complete dentures.

**Keywords:** Complete Denture; Denture Hygiene; Knowledge; Attitude; Practice

### Introduction

In man, health and disease is a dynamic process. Introduction of new technologies and changing demographics shows increase in life expectancy among elderly. Oral health is considered to be a mirror of general health and maintenance of oral health is of equal importance that of overall body. Teeth should be cleaned properly as these are not only required for chewing but also for esthetics and phonetics [1]. Growth in this aging population has resulted in increase in number of elderly requiring dentures which constitute one of the most important treatment options [2].

There are a number of reasons for loss of teeth which includes dental caries, periodontal disease, and attrition [3]. Complete dentures are used for replacing the entire set of lost teeth and maintain balanced occlusion [4].

Denture cleanliness is also essential to prevent poor aesthetics, bad odor, and the accumulation of plaque/calculus on the mucosa [5,6]. Negligence in keeping denture clean results in developing various oral health related problems like denture stomatitis, bacterial endocarditis and seldom fungal infections. The porous surfaces present in acrylic denture also support microorganisms that in turns may lead to poor oral health [7]. There are a number of ways documented to clean the dentures, brushing being the most common cleansing method; use of specific denture brushes, cleansers and commercially available dissoluble tablets is of paramount importance for good outcomes [8].

Dentists always provide post insertion instructions to motivate the denture wearers to clean and maintain the oral hygiene. Hence, it is the responsibility of the patient to maintain oral hygiene through daily home care routine.

As there is no data available on denture hygiene in the rural area of Punjab, the aim of the study is to evaluate the knowledge, perception and practices of denture cleaning and awareness regarding denture cleaning among complete denture patients.

## **Materials and Methods**

A cross sectional study was carried out among patients requiring and with complete denture visiting the Department of Prosthodontics, Rayat Bahra Dental College and Hospital, Sahauran, Mohali.

After taking the approval from the concerned authorities, the study was carried out for a total of four months from September 2017 till December 2017. The study protocol was explained to the patients prior to the start of the study. The study was based on voluntary participation and all those individuals who refused to participate in the study and those who had any kind of neuromuscular disability were excluded.

Sample size was estimated based on the fact that 95% of the patients follow post insertion instructions given to them and using the same prevalence with 5% error and 95% confidence interval the sample size was determined which was found to be approximately 84. To incorporate for the loss in the sample size was determined to be 100.

The data was collected on a self structured questionnaire through personal face to face interview. The questionnaire was divided into two parts First part of the questionnaire was related to demographic details of participants like age, gender, education status, occupation and time period of denture use. In second part, the knowledge, perception and practice towards denture cleaning habits, methods and frequency, status of information they had received from dentist on post denture insertion care and nocturnal denture wearing habits were noted. The options for attitude were based on 5-point Likert scale. The questionnaire was pre-tested on 10 patients who were not included in the final analysis. Based on the responses provided, few minor modifications were subsequently made in the questionnaire, and its Cronbach alpha ( $\alpha$ ) was found out to be 0.83.

The data was analyzed using SPSS version 20 Chicago: SPSS Inc program to draw the means and percentages. Chi-square test was employed to determine the statistical difference between used to find significant responses ( $p \leq 0.05$ ).

## **Results**

A total of 100 complete denture patients participated in the study of which 63% were males and remaining females with mean age of 57.8 years (36 years to 77 years). Socioeconomic status was recorded using BG Prasad classification and was found that majority of hem (59%) belonged to lower middle class. Majority of the participants were uneducated. Majority of the participants were farmers. The demographic details of the participants are discussed in table 1.

Demographic Data		
Variable	Frequency	Percentage
<b>Age</b>		
35 - 44	07	07
44 - 54	11	11
55 - 64	37	37
65 - 74	41	41
> 75	04	04
<b>Education</b>		
Primary	13	13
Middle	09	09
Secondary	06	06
Senior Secondary	02	02
Graduate	00	00
Post Graduate	00	00
Diploma	01	01
Uneducated	69	69
<b>Socioeconomic Status</b>		
Upper	01	01
Upper middle	15	15
Lower middle	59	59
Lower	17	17
Poor	08	08

**Table 1:** Showing demographic detail of the patients.

### Knowledge among participants regarding denture cleaning

The knowledge of denture hygiene was found to be fairly good among the participants and was directly associated with the duration of denture use. Majority of the patients (68%) believed that the cleaning of the dentures is equally important as that of cleaning of the teeth. 42% of them believed that the dentures should be replaced/repaired once they are damaged. The knowledge regarding denture stomatitis and other related diseases was found to be neatly negligible.

### Attitude of participants regarding denture cleaning

In the present study it was found that majority of the participants (96%) were given denture hygiene instructions which included removal of dentures at night, proper method of cleaning of dentures. Only 13% of the participants agreed to go to a dentist as follow up. Majority of the participants (73%) agreed that the dentures should be cleaned daily.

### Practice of participants regarding denture cleaning

In the present study the knowledge and attitude of the participants was fairly good yet it was not found when the questions regarding denture practice was asked. Only 17% of the participants removed their complete denture at night. Out of the remaining 83%; 57% of

them removed one of the dentures according to their ease and the remaining never removed the dentures at night. 47% of the participants keep their denture in water after removal. Majority of the participants (93%) cleaned their denture using a tooth brush and a tooth paste. Only 2% of them used mouthwash to clean their denture. However, the proper method of cleaning the dentures with soap water and use of denture brushes was found in only 7% of the participants. It was found that only 12% of them used a denture box to keep their dentures (Figure 1).

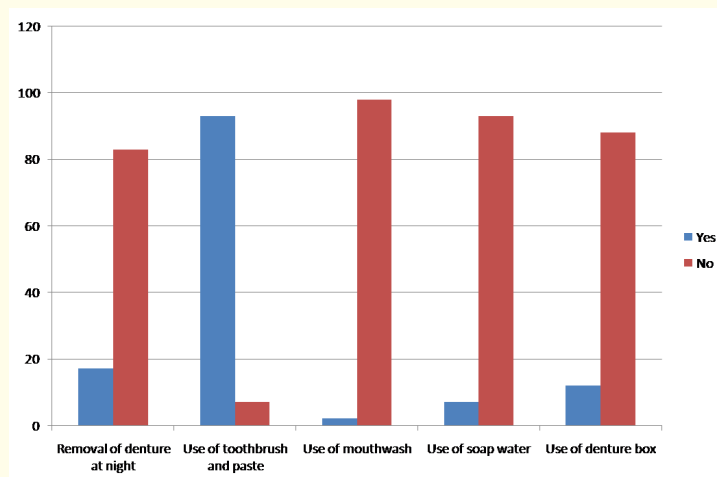


Figure 1: Showing practice of denture cleaning among patients.

## Discussion

Oral care of the mouth and the prosthesis is of foremost importance. In the present study it was found that the knowledge among the patients was fairly good, but appropriate motivation and self care regarding denture hygiene was lacking.

Proper cleansing and disinfecting of complete dentures or any other removable prosthesis is essential for maintenance of oral soft tissue health [5]. Dental plaque accumulates both hard and soft in the oral cavity and is believed that microbial plaque may have a negative or harmful effect at the interface between the prosthesis and oral mucosa [9]. Recent studies have recognized a relationship between denture biofilm and systemic diseases like COPD and heart diseases [10].

It is also observed and well documented that fitting surface of the upper denture is the primary site of *Candida* spp. harboring as compared to the palatal mucosa which is in contact with the denture [11]. The tissue surface of acrylic denture shows micro-porosities which enhances denture plaque adhesion [12]. Polishing improves denture hygiene without affecting retention of the prosthesis. *Candida* spp. isolates are detected more in the material obtained from denture plaque than from the plaque developed on the natural teeth [13].

Majority of the patients (96%) had received post maintenance instructions from their dentist regarding denture cleaning, yet the same is not followed accordingly. This may be due to the fact that the patients leave the dental office totally uninformed on how to care for their complete dentures. Patients do not return to the dentist for maintenance of their dentures generally at the appropriate intervals. Denture hygiene is a common problem encountered by the patients with complete denture [14]. This can be attributed to limited knowledge or mere neglect of the patients towards denture cleanliness. It is therefore instructed that newly made dentures could be a disappointment to a patient if he is deficient in maintaining proper denture hygiene [15].

Education plays an important role and is directly proportional to understanding and mental dexterity which in turn affects denture hygiene maintenance [16]. It was found that majority of the patients in the present study were uneducated (69%) and their attitude towards denture cleanliness was negative. The relation between unhygienic dentures and associated oral infections was also unknown to them.

In the present study only 17% removed both the dentures while 57% of them removed one of the either at night before sleeping. Nocturnal and continuous prosthesis wear could reduce the protective effect of saliva, prevent proper oxygenation of the palatal mucosa and finally increase local trauma to the mucosa. These effects make denture wearers more prone to mucosal mechanical and microbiological injuries and hence increase the risk of denture stomatitis [17]. Researchers have also stated that denture wearing during sleep doubles the risk of pneumonia [18].

Dentures should always be stored in water after removal. In our study, 47% of the patients kept their dentures in water. Drying out of denture can cause dimensional instability, thereby subjecting the material to internal stresses that may result in crack formation and fractures of the denture. Acrylic resins have the properties of water sorption and release, as Polyacids tend to imbibe water, due to polarity related to carboxyl group. Water tends to separate the chain and cause softening and loss of strength. However, it is advocated that patients with recurrent infections should not keep their dentures in water but leave them exposed to air, which seems to be a safe and efficient means of preventing microbial colonization [19].

Dentures can be cleaned mechanically, chemically, or by a combination of the two. Although most patients (93%) clean their dentures by manual brushing, this method when used isolated has been considered one of the least efficient for biofilm control. The brushing method requires manual dexterity and visual acuity which are usually compromised in elderly individual [20]. This is not an ideal method to clean the dentures. Use of a denture brush or soft nylon brush is advocated.

Detergents like soaps contain sodium polyphosphate which acts by reducing the surface tension. Various denture cleansers are commercially available with different active agents, including hypochlorite, peroxides, enzymes and acids. 1% Sodium hypochlorite when used has the ability to dissolve mucin and other organic components being highly effective at removing light stains. It has bactericidal and fungicide action [21]. However, this chemical agent corrodes metal components of prostheses and degrades the acrylic resin components, causing color changes (lightening) and an increase in surface roughness [22].

Dilute acids effectively remove calculus and stain on dentures. Acids dissolve calcareous deposits and denature the proteins. The acid cleansers are commonly a 5% solution of hydrochloric acid, or phosphoric acid. Acetic acid can also be used to dissolve calculus. Diluted vinegar was the least effective among the denture cleansers. This can be explained by the fact that, the primary means of adherence of plaque is through its organic portion.

Peroxides become alkaline solutions of hydrogen peroxide when dissolved in water. Alkaline peroxide cleansers are effective in dissolution of plaque because of its effect on the plaque matrix and are both bactericidal and fungicidal [5]. It acts directly on organic matrix of plaque causing dissolution of polymer structure [23]. Peroxides along with oxidizing agents are the most commonly prescribed cleansing agents which are available in form of tablets contain alkaline perborate, sodium perborate or potassium monopersulfate [24].

2% Chlorhexidine also been suggested and is widely used both for prevention and treatment of oral infections, as antiseptics and disinfectants for removable dentures. It can be used effectively when mixed bacterial and fungal biofilms are present [5].

## **Conclusion**

Adoption of routine oral hygiene practices including mechanical cleaning in conjunction with immersion in denture cleansers is essential to ensure healthy oral environment. This is the key to minimize the risk of opportunistic infections to contribute to good oral and

overall systemic health and to maintain an aesthetically pleasing, odor-free appliance. A proper recall regimen to all the patients should be made mandatory for successful denture hygiene maintenance.

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