A survey assessing modes of maintaining denture hygiene among elderly patients

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Abstract

Objective: To determine the denture hygiene habits in complete denture wearers. Materials and Methods: In this study, a self-administered structured questionnaire was developed to know the attitude of the patients from the Department of Prosthodontics regarding denture hygiene. The study sample consisted of totally 500 subjects, which included 284 (56.8%) males and 216 (43.2%) females. Data were analyzed using SPSS version 15.0 with Chi-square ($\chi^2$) test at $P < 0.05$. Results: Nearly half of the subjects cleaned their dentures daily once. Participants from the younger age group and who had been wearing dentures since 2 years maintained better frequency of cleaning. The majority of these subjects used water and brush for denture cleansing. After seeing the condition, more than half of the dentures were rated as poor (60%). There was significant difference between all the groups on comparison ($P = 0.001$). Conclusion: Poor condition of complete dentures seen in the population is mainly due to irregular cleansing habits and also less usage of cleansing solutions. Dentists should give proper instructions regarding maintenance of denture hygiene.

Key words: Cleansing habits, denture, denture hygiene, elder patients, elderly, hygiene

INTRODUCTION

Rehabilitative treatment is successful only when patients are motivated and aware of correct prosthesis use and hygiene. The quality of the denture fitting surface, occlusal relations, denture age, and hygiene are important factors contributing to the prevalence of oral mucosal lesions associated with denture use.\(^1\)

Lesions of the oral mucosa associated with wearing of removable dentures may represent acute or chronic reactions to microbial denture plaque, a reaction to constituents of the denture base material, or a mechanical denture injury. The lesions constitute a heterogeneous group with regard to pathogenesis. They include denture stomatitis, angular cheilitis, traumatic ulcers, denture irritation hyperplasia, flabby ridges, and oral carcinomas.\(^2\)

Tooth loss in any adult population is highly likely to increase as the population ages because the factors that lead to the loss of teeth – dental caries, loss of periodontal support, a history of dentoalveolar trauma, a history of dental care – are additive over time. For this reason, the rates of complete tooth loss are customarily the highest in the oldest age groups.\(^3\)

Complete dentures are the most common treatment for total loss of teeth in a dental arch. Although the prevalence of total tooth loss continues to decline among adults in the United States, population shifts have resulted in a sustained, even slightly increasing, demand for complete dentures.\(^4\)
Care of dentures and the mucosal tissues of the edentulous mouth can be important for overall health, especially in older persons. In addition, there may be greater social consequences of mouth malodor due to unclean oral prosthesis for someone whose dietary intake is strongly linked to socialization, such as an older person who attends a senior activities center for meals. Unclean dentures causing or contributing to oral mucosal disease and/or impairment in eating, therefore, may have a more profound effect on a frail elder than on a younger, healthier person.[5,6]

Peracini et al. reported 58.49% of the patients using immersion for cleaning and among the substances used for immersion of the dentures, water was the most frequently used (38.71%) followed by sodium hypochlorite (33.87%). In the study by Baran and Naça, 42.9% of the patients immersed their dentures in water and only 1.6% immersed them in hypochlorite solution. Hoad-Reddick et al. found that a combination of methods (brushing and soaking) was used more frequently.[1]

Patients should be instructed to rinse their dentures and their mouths after meals whenever possible. The mucosal surfaces of the residual ridges and the dorsal surface of tongue also should be brushed daily with a soft brush; denture cleansers may also be used. However, it has been observed that the majority of denture wearers do not pay necessary attention to the cleanliness. This may be due to decreasing manual abilities due to advanced age.[6‑8]

So, this cross-sectional study aimed to investigate the denture hygiene habits among old age denture wearers.

MATERIALS AND METHODS

The present cross-sectional survey was conducted among denture wearer patients coming for follow-up in the Department of Prosthodontics and Implantology in New Horizon Dental College, Sakri, Bilaspur, Chhattisgarh, India from April 2013 to March 2014.

The study sample consisted of a total of 500 participants; out of them, 284 (56.8%) were males and 216 (43.2%) were females. They were further categorized according to age groups as 45-54 years (Group I), 55-64 years (Group II), and ≥65 years (Group III).

After obtaining ethical clearance from New Horizon Dental College, a questionnaire was developed and given to the patients for filling them. The questionnaire was later tested among a group of 30 patients to know the appropriateness and understand the ability. The purpose of the survey was explained to the subjects and their written consent was obtained.

The questionnaire contained demographic information such as age, sex, time of wearing, and other questions to know the attitude of denture hygiene habits, frequency of cleaning, and nocturnal denture wearing habits.

Statistical analysis

Data were analyzed using SPSS version 15.0. Descriptive statistics were obtained, and frequency distribution, means, and standard deviation were calculated. Simple descriptive statistics were used together with Chi-square ($\chi^2$) test at $P < 0.05$.

RESULTS

Out of the total sample size of 500 subjects who participated in the study, 104 belonged to the age group of 45-54 years, 266 subjects were of 55-64 years of age, and 130 were ≥65 years of age.

Overall, 52.50% participants cleaned their dentures almost once a day [Graph 1]. Table 1 shows that significantly most of the elderly patients in the age group of 45-54 years cleaned their dentures twice daily, i.e. 45.2% and 39.4% of the subjects in the age group of 55-64 years maintained denture hygiene once/twice a week. Whereas more than half of the participants,
i.e. 64.7%, from the oldest age group (≥65 years) cleaned their dentures occasionally ($P = 0.001$).

Regarding the age of dentures, it was observed that most of the study subjects (45.4%) who had been wearing dentures since 2 years cleaned it once/twice daily. Most of the participants who had been wearing them from 3 to 5 years (52.1%) cleaned them once daily. Also, most people who had been wearing them since a long time, i.e. 6-8 years, rarely maintained denture hygiene [Table 2].

Regarding the method of maintaining denture cleanliness, most of the participants maintained it with water only (19.10%) whereas very few cleaned it with a combination of water and cleansing tablets (9.23%) [Graph 2].

After seeing the condition, the dentures were rated as good (around 29.0%), fair (around 11.0%), and poor (around 60%) [Graph 3].

**DISCUSSION**

In the present study, most of the patients used to clean the dentures with water alone (47%). This value was higher than that reported by Apratim et al.\[9\] and lower than that reported by Patel et al.\[1\]. Use of brush with water was lower among our study group population compared to that of Patel et al.\[1\] (25.13%). Other studies conducted by Coelhe et al.\[10\] and Dikbas et al.\[11\] reported much higher values in comparison to the present study.

Where 19.1% of the subjects maintained denture hygiene with water along with brush and soap and these findings are comparable to Patel et al.\[1\].

Patients using water with cleansing tablets constituted 9.23% in contrast to the values reported in the studies of De Castellucci Barbosa et al.\[12\] (8%), Abelson\[5\] (17.1%), and Veres et al.\[13\] (63%).

The above-mentioned results can be because of lack of awareness among patients or improper instructions given to them after the insertion of denture by the dentist.

Mechanical methods, such as toothbrushes, are recommended for routine cleaning. However, they may lead to surface abrasion, which is undesirable for aesthetic and biological reasons. Denture pigmentation and abrasions are associated with toothpaste and toothbrush use.\[14\] Peracini et al.\[15\] reported 58.49% of the patients doing cleaning by immersion and among the substances used for immersion of the dentures, water was the most frequently used (38.71%).

Percentage of patients cleaning their dentures was maximum among those in the age group between 55 and 64 years followed by 45-54 years and >65 years, respectively. When comparison was made with regard to the frequency of denture cleaning, it was found to be significant [Table 1]. Results were similar to those reported by Abelson et al.\[5\].

Cleaning frequency according to the age of the denture was also found to be significant. But it was noticed that older dentures were cleaned more occasionally.

### Table 2: Frequency of denture cleansing in dentures of different age groups

| Denture age (years) | No. | Once (%) | Once/ twice in a week (%) | Occasionally (%) | Total (%) | $P$ value |
|---------------------|-----|----------|---------------------------|-----------------|----------|----------|
| 0-2                 | 178 | 28.2     | 45.4                      | 26.4            | 35.6     | 0.001*   |
| 3-5                 | 213 | 52.1     | 34.8                      | 13.1            | 42.6     | 0.000*   |
| 6-8                 | 109 | 23.1     | 17.6                      | 59.3            | 21.8     | 0.001*   |

$\chi^2=3.54, P<0.05$ is significant, *highly significant

**Graph 2:** The method of denture cleansing

**Graph 3:** Line diagram showing the condition of dentures at the time of examination
than new dentures [Table 2]. Results were similar to those of Apratim et al.,[9] Budtz-Jorgensen et al.,[16] and Manderson and Ettinger.[6]

Present conditions of the dentures were also analyzed in the present study. Most of the dentures were in good condition (50.3%), followed by fair (29.5%) and poor (20.2%) conditions.

Improper denture hygiene leads to various lesions of the oral mucosa associated with wearing of removable dentures. This may represent acute or chronic reactions to microbial denture plaque, a reaction to the constituents of the denture base material, or a mechanical denture injury. The lesions constitute a heterogeneous group with regard to pathogenesis. They include denture stomatitis, angular cheilitis, traumatic ulcers, denture irritation hyperplasia, flabby ridges, and oral carcinomas.

CONCLUSION

In the present study, most of the patients were unaware of the measures of cleaning dentures. Maximum patients used water alone to clean the dentures. Mechanical method of cleaning dentures using toothbrush was lower among our participants. Only a negligible number used chemical method, i.e. immersion in cleansing solution, in combination with mechanical method. Socio-economic factor can be another reason for neglecting the use of denture cleaning aids by our study group participants. Awareness needs to be increased among denture wearers by conducting educational and motivational camps. Further research with an oral examination of the patients is required to correlate the various factors studied.

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