

A survey assessing modes of maintaining denture hygiene among elderly patients

Ashishtaru Saha, Sudipto Dutta¹, Rana K. Varghese², Vinay Kharsan³, Anil Agrawal⁴

Departments of Prosthodontic and Crown and Bridge, ²Conservative Dentistry and Endodontics, ³Oral and Maxillofacial Surgery and ⁴Public Health Dentistry, New Horizon Dental College, Sakri, ¹Department of Oral Medicine and Radiology, Triveni Institute of Dental Sciences, Bodri, Bilaspur, Chattisgarh, India

Corresponding author (email: <bapi_saha@hotmail.com>)

Dr. Ashishtaru Saha, Department of Prosthodontic and Crown and Bridge, New Horizon Dental College, Sakri, Bilaspur, Chattisgarh, India.

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 (χ^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 leads 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]

Access this article online	
Quick Response Code:	Website: www.jispcd.org
	DOI: 10.4103/2231-0762.142007

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 Nalça, 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.

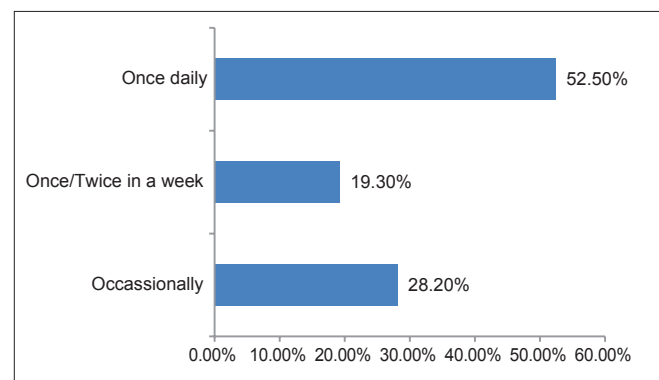
Statistical analysis

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 (χ^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,



Graph 1: Frequency of cleansing dentures by the elderly patients

Table 1: Frequency of denture cleansing by patients of different age groups

Age groups (years)	No.	Once (%)	Once/ twice in a week (%)	Occasionally (%)	Total (%)	P value
45-54	104	27.3	45.2	27.5	20.8	0.001*
55-64	266	42	39.4	19.6	53.2	0.001*
≥ 65	130	24.2	11.1	64.7	26	0.001*

$\chi^2=8.12$, $P<0.05$ is significant, *highly significant

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 patients 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.*^[11] Use of brush with water was lower among our study group population compared to that of Patel *et al.*^[11] (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.*^[11]

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%).

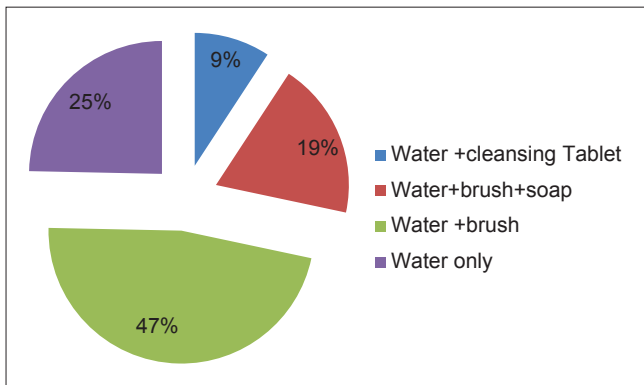
Percentage of patients cleaning their dentures was maximum among those in the age group between 55 and 64 years followed by 45-54 years and >65 years, respectively. When comparison was made with regard to the frequency of denture cleaning, it was found to be significant [Table 1]. Results were similar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

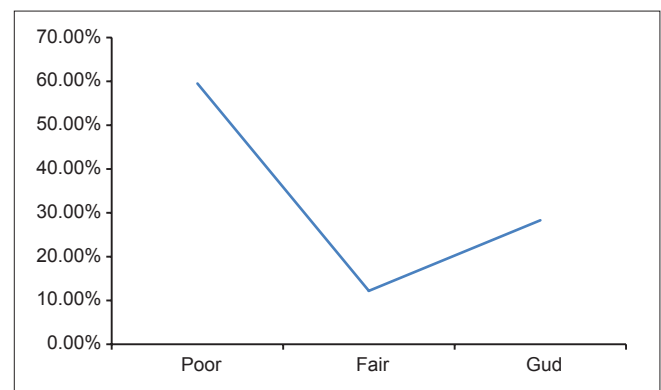
Table 2: Frequency of denture cleansing in dentures of different age groups

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*

$\chi^2=4.54$, $P<0.05$ 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-Jørgensen *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.

REFERENCES

- Patel IB, Madan G, Patel B, Solanki K, Chavda R. Behaviours and hygiene habits of a sample population of complete denture wearers in Ahmedabad. *J Int Oral Health* 2012;4:29-38.
- Budtz-Jørgensen E. Oral mucosal lesions associated with the wearing of removable dentures. *J Oral Pathol* 1981;10:65-80.
- Douglass CW, Gammon MD, Atwood DA. Need and effective demand for prosthodontic treatment. *J Prosthet Dent* 1988;59:94-104.
- Shay K. Denture hygiene: A review and update. *J Contemp Dent Pract* 2000;1:28-41.
- Abelson DC. Denture plaque and denture cleansers: Review of the literature. *Gerodontology* 1985;1:202-6.
- Manderson RD, Ettinger RL. Dental status of the institutionalized elderly population of Edinburgh. *Community Dent Oral Epidemiol* 1975;3:100-7.
- Kanlı A, Demirel F, Sezgin Y. Oral candidosis, denture cleanliness and hygiene habits in an elderly population. *Aging Clin Exp Res* 2005;17:502-7.
- Polyzois GL. Denture cleansing habits. A survey. *Aust Dent J* 1983;28:171-3.
- Apratim A, Shah SS, Sinha M, Agrawal M, Chhaparia N, Abubakkar A. Denture hygiene habits among elderly patients wearing complete dentures. *J Contemp Dent Pract* 2013;14:1161-4.
- Coelho CM, Sousa YT, Daré AM. Denture-related oral mucosal lesions in a Brazilian school of dentistry. *J Oral Rehabil* 2004;31:135-9.
- Dikbas I, Koksall T, Calikkocaoglu S. Investigation of the cleanliness of dentures in a university hospital. *Int J Prosthodont* 2006;19:294-8.
- de Castellucci Barbosa L, Ferreira MR, de Carvalho Calabrich CF, Viana AC, de Lemos MC, Lauria RA. Edentulous patients' knowledge of dental hygiene and care of prostheses. *Gerodontology* 2008;25:99-106.
- Veres EM, Wolfaardt JF, Hnizdo E. Denture cleansers: Part III-A survey of materials and methods employed by denture wearers. *J Dent Assoc S Afr* 1985;40:591-4.
- Peltola MK, Raustia AM, Salonen MA. Effect of complete denture renewal on oral health-a survey of 42 patients. *J Oral Rehabil* 1997;24:419-25.
- Peracini A, Andrade IM, Paranhos Hde F, Silva CH, de Souza RF. Behaviors and hygiene habits of complete denture wearers. *Braz Dent J* 2010;21:247-52.
- Budtz-Jørgensen E. Materials and methods for cleaning dentures. *J Prosthet Dent* 1979;42:619-23.

How to cite this article: Saha A, Dutta S, Varghese RK, Kharsan V, Agrawal A. A survey assessing modes of maintaining denture hygiene among elderly patients. *J Int Soc Prevent Communit Dent* 2014;4:145-8.

Source of Support: Nil, **Conflict of Interest:** None declared.