



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 10, Issue, 06(J), pp. 33214-33218, June, 2019

**International Journal of
Recent Scientific
Research**

DOI: 10.24327/IJRSR

Research Article

ASSESSMENT OF DENTURE CLEANLINESS AND HYGEINE HABITS AMONG COMPLETE DENTURE WEARING PATIENTS IN KASHMIRI POPULATION-AN ORIGINAL RESEARCH

¹Falak Naz, ²Sandeep kaur Bali, ³Shabir Ahmed Shah and ⁴Jawahir Ahmad Ganai

¹Resident, Department of Prosthodontics, Govt Dental College and Hospital Srinagar Kashmir , J&k.

²Professor & HOD, Department of Prosthodontics, Govt Dental College and Hospital Srinagar Kashmir , J&k

³Professor, Department of Prosthodontics & HOD Dental Materials, Govt Dental College and Hospital Srinagar Kashmir , J&k

⁴Resident, Department of Periodontics, Govt Dental College and Hospital Srinagar Kashmir , J&k

DOI: <http://dx.doi.org/10.24327/ijrsr.2019.1006.3630>

ARTICLE INFO

Article History:

Received 4th March, 2019

Received in revised form 25th

April, 2019

Accepted 18th May, 2019

Published online 28th June, 2019

Key Words:

Denture hygiene, Cleaning habits, Denture stomatitis, Kashmiri population, Patient education

ABSTRACT

Complete dentures are the most common treatment modalities for rehabilitation of elderly completely edentulous individuals. After the insertion of complete dentures an important phase of denture maintenance and follow up begins. However most patients neglect this phase either due to lack of motivation or improper patient education. So, the purpose of this study was to determine denture cleanliness of a sample population of Kashmir, as well as to investigate denture cleaning habits and attitudes. 500 denture-wearing patients visiting Department of Prosthodontics, Govt Dental College Srinagar Kashmir were surveyed via questionnaire to identify types and frequency of use of denture cleaning methods. Their dentures were also clinically examined to determine denture cleanliness using denture cleanliness index. The oral mucosa was also examined and rated. Results showed that the most common regimen employed was brushing with toothpaste (40.8% of patients). Results also showed that 72% of patients claimed their dentists did not inform them how to clean their dentures. Only 17% of patients had clean dentures. Older dentures tended to be dirtier than newer ones and had a higher incidence rate of accompanying denture stomatitis. Since, in this population sample, most denture wearers did not clean their dentures satisfactorily, so, a need arises to launch a patient education tool in order to demonstrate and reinforce oral and denture hygiene habits among the patients. This would ensure an overall improvement in oral as well as general health.

Copyright © Falak Naz et al, 2019, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Changing demographics have shown an increase in life expectancy and the growing numbers of elderly.¹ With this increase, tooth loss is highly likely to escalate as the population ages because the factors that leads to the loss of teeth – dental caries, loss of periodontal support, a history of dento-alveolar trauma, are additive over time. For this reason, the rates of complete tooth loss are customarily the highest in the oldest age groups,² resulting in a corresponding increase in the number of elderly requiring dentures³. Newly made dentures could be a disappointment to a patient if he is deficient in maintaining proper denture hygiene.⁴ Correct prosthetic use and care are of great importance to patients, not only for aesthetic and functional reasons, but also for the health of the supporting tissues and appropriate conservation of the prosthesis itself.⁵ When edentulous patients are fitted with

complete dentures, an important phase of oral and denture care begins⁶. Daily hygiene has been reported to be the main means of preventing mucosal inflammation⁷. Improperly cleaned dentures may cause halitosis, poor esthetics, and inflammatory changes of oral mucosa such as denture-induced stomatitis.⁸⁻¹¹ The main aim of cleaning the denture is to remove the plaque adhering to the denture which in turn will eliminate the cause of denture stomatitis and reduce the presence of micro-organisms on the denture which have been known to act as a reservoir of micro-organisms involved in systemic diseases like aspiration pneumonia, endocarditis and diabetes.¹²⁻¹⁴ It is clearly an important duty of the dental profession, at a time when the number of elderly is rapidly rising, to ensure that the denture wearing public know how to clean their dentures properly and to advise them to maintain high standards of both oral hygiene and denture hygiene. A number of different

*Corresponding author: **Falak Naz**

Resident, Department of Prosthodontics, Govt Dental College and Hospital Srinagar Kashmir , J&k.

cleaning regimes are available for patients to clean their dentures and they can be classified into either chemical or mechanical methods. Several studies¹⁵⁻²³ have investigated patients denture-cleaning habits; however, Patients oral and denture hygiene habits, frequency of use, and methods of choice for denture cleaning may vary in different communities as well as among individuals. So, this study was designed to determine the denture cleanliness of completely edentulous patients who visited our Prosthodontics clinic at Govt Dental College Srinagar Kashmir for follow up or fabrication of new dentures, as well as to investigate denture-cleaning habits and the attitudes involved.

MATERIALS AND METHODS

The present cross-sectional survey was conducted among complete denture wearer patients coming for follow-up or fabrication of new dentures in the Department of Prosthodontics at Govt dental college Srinagar Kashmir from April 2017 to March 2018. The survey was performed by means of a self administered questionnaire and clinical examination of patients oral mucosa and cleanliness of their dentures. The questionnaire contained demographic information like name, age, address, gender, period of wearing, and other questions like frequency of cleaning, materials used for cleaning, to check for any difficulty while wearing the denture and whether patients had ever been instructed how to clean their dentures. After obtaining ethical clearance from the ethical committee, a questionnaire was developed and given to the patients after taking their consent for filling them. A total of 562 complete denture wearing patients were assessed. Subjects who did not complete the questionnaire and were uncooperative were excluded from the survey yielding a sample of 500 subjects. Out of them, 284 (56.8%) were males and 216 (43.2%) were females. The ages of the patients were between 50 and 81 years (mean, 65 years). Only acrylic denture wearers were included in the survey. To standardize the effect of diurnal variations, meals and tooth brushing, the investigation was carried out at midmorning at least 2 h after drinking, eating or any oral hygiene procedure.

Examination of Denture Cleanliness

Quality of patient denture hygiene was assessed using the DCI -denture cleanliness index(Myronas *et al.* 2014)²⁴, which grades the severity of denture hygiene according to the amount of staining on the denture fitting surface. A liquid plaque disclosing dye (Plaqsearch) was applied to the fitting surface as this is where denture plaque is most likely to accumulate and therefore the aspect of denture where patients need to clean most effectively. The stained denture was then assessed according to the DCI rubric (Table 1), with scores ranging from 0 (best) to 4 (worst).

Table 1 DCI -Denture Cleanliness Index (Myronas *et al.* 2014)²⁴

0	Clean denture. No plaque is visibly seen, no staining, no plaque detectable
1	Denture is visibly clean. Little staining (<25% staining of fit surface)
2	Denture has visible plaque and/or debris. Moderate staining of fit surface (25-50% staining of the fit surface)
3	Denture has visible plaque and/or debris. Severe staining of fit surface (>50% staining of the fit surface)
4	Denture has visible calculus deposit(s), on any surface
*	Visible defects in denture, in addition to any of the above score (Defects defined as those which are potentially plaque retentive, those which require repair or remake of denture)

RESULTS

Distribution of patients among 3 denture age groups was as follows: 200 patients had dentures that were 0 to 5 years old, 161 patients had dentures that were 6 to 10 years old, 139 patients had dentures that were 11 to 30 years old. 56% of patients wore their dentures during daytime only, 38% patients wore for the full 24 hours, and 6% wore either during eating only or for social reasons . Frequency of denture cleaning is shown in Figure 1. Dentures were cleaned daily by 70.0% of the patients, 2 to 3 times weekly by 14%, and once weekly by 10%; 6% claimed to be unable to remember how frequently they cleaned their dentures. Of the patients performing daily cleaning, 42.7% were doing it once, 32.3% twice, and 25.0% 3 times a day. Respondents used a variety of methods for cleaning their dentures (Table 2)The most preferred regimen (56.56% of the patients) was brushing only, while the least used method was soaking in cleansing tablets (1.28%).Among brushing only regimen brushing with tooth paste(40.8%) was the most commonly followed denture hygiene habit. Only 28% of respondents claimed to have been provided proper instructions and demonstration by dentist.

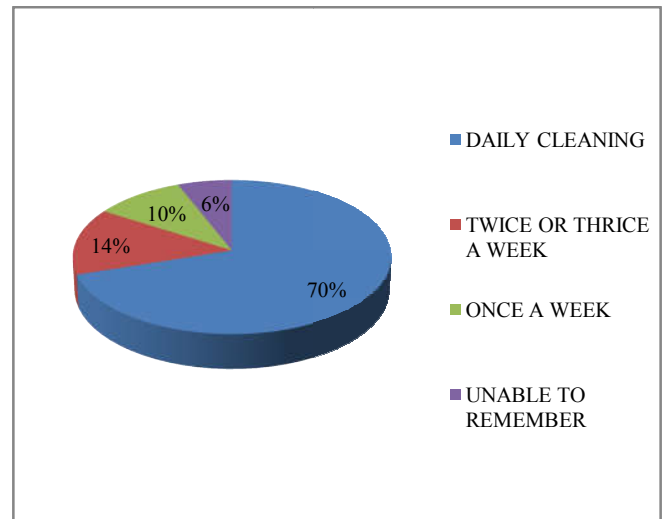


Figure 1 Frequency of denture cleaning among subjects

Table 2 Various Cleaning Regimens Followed By Patients

Cleaning method	Percentage of subjects
BRUSHING ONLY	
Brushing with water only	3.8%
Brushing with soap	11.96%
Brushing with toothpaste	40.8%
Total	56.56%
SOAKING ONLY	
Soaking in hypochlorite	4.27%
Soaking in cleansing tablets	1.28%
Total	5.55%
COMBINATION	
Brushing and soaking in hypochlorite	24.7%
Brushing and soaking in mouthwash	2.59%
Brushing and soaking in cleansing tablets	10.6%
Total	37.89%

Examination

Results of denture cleanliness are shown in Figure 2. The vast majority of patients (83%) had scores of 3 or greater, which is very poor. Only 17% of patients had DCI Score of less than 3. There was a significant correlation between denture cleanliness and prior instruction ($P = .0001$). The majority of patients with clean dentures were previously instructed by their dentists. Stomatitis was observed in 59% of all respondents. There was no statistically significant correlation between denture stomatitis and frequency of denture cleaning ($P > .05$).

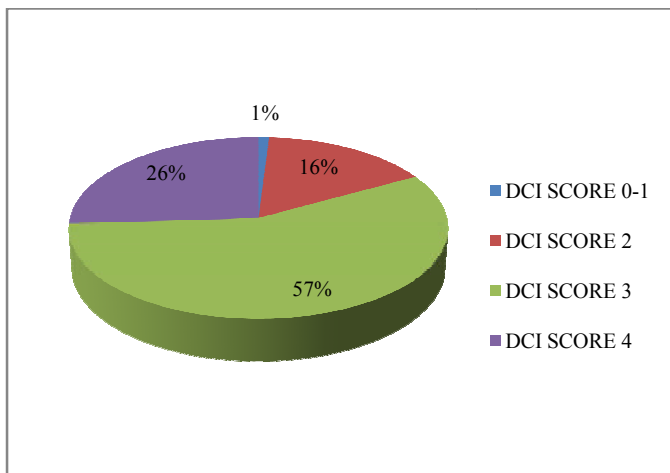


Figure 2 Distribution of Dentures Regarding Cleanliness As Per Dci-Score)

DISCUSSION

The oral cavity contains a number of different surfaces and areas that bacteria can colonise and where plaque can accumulate and develop. A denture presents an additional such environment, which is inherently porous, hard, and non-shedding in nature, and which can facilitate further bacterial growth and development of plaque.²⁵ An issue also arises if there are surface defects or other flaws in the denture which are either (a) inherent and due to the fabrication process or (b) acquired due to general use or from cleaning. Surface imperfections and roughness can increase the surface area on which bacteria can adhere and potentially colonise.²⁵⁻²⁷

Hence, Oral mucosal lesions are relatively common among complete denture wearers, particularly among those with loose fitting dentures and/or poor denture hygiene²⁸. According to Lombardi and Budtz-Jorgensen²⁹, old complete dentures may predispose patients to denture stomatitis, because the denture surface may contain porosities that make proper cleaning difficult. Other authors have stated that prosthesis age, associated with inappropriate user habits and poor hygiene³⁰, can lead to or aid in the progression of denture stomatitis^{30,31}.

Good oral health can be achieved through regular denture care and maintenance. Denture cleanliness is essential to prevent malodor, poor aesthetics and the accumulation of plaque/calculus with its deleterious effects on the mucosa. There are innumerable solutions, pastes and powders available for cleaning dentures with a variety of claims about their relative efficacies.⁹

Dentists and denture patients should realize that microbial plaque on dentures may be harmful to both the oral mucosa and the general health. Hence, it is the responsibility of the patient

to maintain oral hygiene through daily home care routine³². Studies have shown that the majority of denture wearers do not demonstrate adequate denture hygiene, and some continue to wear their dentures at night despite this being linked with poor oral health compared to those who take their dentures out at night.^{30,33,34} This can be attributed to a definite lack of motivation, basic knowledge or simply carelessness and neglect³. Patient education remains one of the best tools to help prevent the onset of diseases that can occur due to poor denture hygiene, mechanical plaque control, good denture wearing habits, and regular visits to the dentist are the best ways of minimising and treating denture related pathology such as denture-related stomatitis²⁴. Therefore, it is very important for dentists' to educate their patients regarding daily denture cleansing regimen to prevent undesirable circumstance³. Our survey described a detailed patient behaviour on denture cleansing regimen. The survey revealed the denture cleansing habits of 500 complete denture wearing subjects who visited the department of Prosthodontics for follow up or for fabrication of new dentures. Among the cleaning habits brushing only was the most preferred regimen employed by 56.56% of patients. Among them most of the patients (40.8%) were using toothpaste along with brushing. Similar results were found by Dikbus *et al*³⁵, Ozkan *et al*²⁰. Jagger and Harrison⁹ also reported similar results in their Survey. Brushing along with soaking in hypochlorite was the next commonly followed regimen contributing to 24.7% of the total sample. Among users who preferred only the soaking method, soaking in a household cleanser of the hypochlorite type was the most used method (77%). Results were in agreement with the survey conducted by Dikbus *et al*³⁵. Regarding frequency of cleaning, previous surveys^{15,18,20} showed similar results for the number of patients who clean daily (between 74.1% and 83.0%), which is consistent with our results (70.0%). Prior instruction from a clinician appears to have a positive influence on the cleanliness of dentures. It was recorded that only 140 of 500 patients were instructed in denture cleaning protocol and only 90 of those patients actually had clean dentures. This observation emphasizes the importance of patient education and demonstration of cleaning protocol. In this study, The DCI scoring system was used to assess the cleanliness of dentures. It provided a simple method of quickly determining the denture hygiene status of patients in general dental practice, as well as providing a means of visual illustration in order to educate and highlight any areas of concern to our patients. A direct relationship was observed between denture stomatitis and poor denture hygiene, which is consistent with previous studies.^{8,15,30,36} In the present study, 59% of respondents exhibited signs of stomatitis. Several authors have reported variations in the occurrence of denture stomatitis ranging from 11% to 67%^{20,23,37-39}

Hence, as clinicians we are obligated to provide patients with the necessary information and motivation required to look after their dentures as well as to assess patients' compliance to said instructions as by doing so this can improve patients' oral and denture plaque control.^{40,41}

CONCLUSION

The majority of denture wearers in the study population did not clean their dentures satisfactorily, likely a result of negligence of both clinicians (inadequate hygiene instruction) and patients

(failure to seek periodic recalls or follow hygiene instructions). The problem can be addressed by employing the tool of Patient education on appropriate denture hygiene care which will led to an improvement in their overall denture cleanliness. The Denture Cleanliness Index provides the clinician with an easy tool to assess denture cleanliness, provide tailored denture hygiene instruction, and assess patient compliance. Thereafter, denture hygiene instructions and oral hygiene instructions should be provided to all denture wearing patients to reduce the chances of developing oral disease.

Bibliography

1. United Nations Population Division. World Population Prospects: The 2002 Revision, New York, NY, USA: United Nations; 2003. Accessed from: <http://www.un.org/esa/population/publications/wpp2002/WPP2002-HIGHLIGHTSrev1.PDF>. [Last accessed on 2012 Jan 10].
2. Douglass CW, Gammon MD, Atwood DA. Need and effective demand for prosthodontic treatment. *J Prosthet Dent* 1988;59:94-104.
3. Suresan V, Mantri S, Deogade1 S, Sumathi K .Denture hygiene knowledge, attitudes, and practices toward patient education in denture care among dental practitioners of Jabalpur city, Madhya Pradesh, India . *J Indian Prosthodont Soc.* 2016 Jan-Mar;16(1):30-5.
4. Ahlawat P, Darki HA, Zahir Y, Saini D. Survey on availability and usage of denture adhesives in Malaysia: A preliminary study. *Asian J Pharm Health Sci* 2012;2:286. Available from: <http://www.ajphs.com/wp-content/uploads/2012/10/AJPHS-Vol2-Issue1-12.pdf>. [Last accessed on 2014 Aug 08].
5. Barbosa LC, Ferreira MR, Calabrich CF. Edentulous patients' knowledge of dental hygiene and care of prostheses. *Gerodontology* 25(2):99-106 · July 2008
6. Keneth S. Dental hygiene: a review and update. *J Contemp Dent Pract* 2000; 2: 28-41. Available at: <http://www.thejcdp.com/issue002/shay/0102028.htm> (last accessed 15 February 2000).
7. Budtz-Jorgensen E. Materials and methods for cleaning dentures. *J Prosthet Dent* 1979; 42: 619-623.
8. Abelson DC. Denture plaque and denture cleansers. *J Prosthet Dent* 1981;45:376-379.
9. Jagger DC, Harrison A. Denture cleansing—The best approach. *Br Dent J* 1995;178:413-417.
10. Nakamoto K, Tamamoto M, Hamada T. In vitro study on the effects of trial denture cleansers with berberine hydrochloride. *J Prosthet Dent* 1995;73:530-533.
11. Sheen SR, Harrison A. Assessment of plaque prevention on dentures using an experimental cleanser. *J Prosthet Dent* 2000; 84:594-601.
12. Awano S, Ansai T, Takata Y *et al.* Oral health and mortality risk from pneumonia in the elderly. *J Dent Res* 2008; 87: 334-339.
13. Scannapieco FA. Pneumonia in nonambulatory patients. The role of oral bacteria and oral hygiene. *J Am Dent Assoc* 2006; 137: 21S-25S.
14. Sjogren P, Nilsson E, Forsell M *et al.* A systematic review of the preventive effect of oral hygiene on pneumonia and respiratory tract infection in elderly people in hospitals and nursing homes: effect estimates and methodological quality of randomized controlled trials. *J Am Geriatr Soc* 2008; 56: 2124-2130
15. Hoad-Reddick G, Grant AA, Griffiths CS. Investigation into the cleanliness of dentures in an elderly population. *J Prosthet Dent* 1990;64:48-52.
16. Collis JJ, Stafford GD. A survey of denture hygiene in patients attending Cardiff dental hospital. *Eur J Prosthodont Restorative Dent* 1994;3:67-71.
17. Neill DJ. A study of materials and methods employed in cleaning dentures. *Br Dent J* 1968;124:107-115.
18. Murtooma H, Kononen M, Laine P. Age and maintenance of removable dentures in Finland. *J Oral Rehabil* 1992;19:123-128.
19. Bunnett CA, Calwell E, Clifford TJ. Effect of verbal and written education on denture wearing and cleansing habits. *Eur J Prosthodont Restorative Dent* 1993;2:79-83.
20. Kulak-Ozkan Y, Kazazoglu Y, Arıkan A. Oral hygiene habits, denture cleanliness, presence of yeast and stomatitis in elderly people. *J Oral Rehabil* 2002;29:300-304.
21. Osborne J, Maddick I, Gould A, Ward D. Dental demands of old people in Hampshire. *Br Dent J* 1979;146:351-355.
22. Polyzois GL. Denture cleansing habits. A survey. *Aust Dent J* 1983; 28:171-173.
23. Schou L, Wight C, Cumming C. Oral hygiene habits, denture plaque, presence of yeast and stomatitis in institutionalised elderly in Lothian Scotland. *Community Dent Oral Epidemiol* 1987;15:85-89.
24. Mylonas P, Afzal Z, Attrill D. A clinical audit of denture cleanliness in general dental practice undertaken in the West Midlands. *Br Dent J* 2014; 217: 231-234.
25. Coulthwaite L, Verran J. Potential pathogenic aspects of denture plaque. *Br J Biomed Sci* 2007; 64: 180-189.
26. Emami E, Taraf H, de Grandmont P *et al.* The association of denture stomatitis and partial removable dental prostheses: a systematic review. *Int J Prosthodont* 2012; 25: 113-119.
27. Preshaw P M, Walls A W, Jakubovics N S, Moynihan P J, Jepson N J, Loewy Z. Association of removable partial denture use with oral and systemic health. *J Dent* 2011; 39: 711-719
28. Budtz-Jørgensen E. Oral mucosal lesions associated with the wearing of removable dentures. *J Oral Pathol* 1981; 10: 65-80
29. Lombardi T, Budtz-Jorgensen E. Treatment of denture-induced stomatitis: a review. *Eur J Prosthodont Restor Dent* 1993; 2: 17.
30. Budtz-Jorgensen E, Bertram U. Denture stomatitis. I. The etiology in relation to trauma and infection. *Acta Odontol Scand* 1970; 28: 71-92.
31. Vigild M. Oral mucosa lesions among institutionalized elderly in Denmark. *Community Dent Oral Epidemiol* 1987; 15: 309
32. Tarbet WJ, Axelrod S, Minkoff S, Fratarcangelo PA. Denture cleansing: A comparison of two methods. *J Prosthet Dent* 1984;51:322-5

33. Pietrokovski J, Azuelos J, Tau S, Mostavoy R. Oral findings in elderly nursing home residents in selected countries: oral hygiene conditions and plaque accumulation on denture surfaces. *J Prosthet Dent* 1995; 73: 136–141.
34. Fiske J, Davis D M, Horrocks P. A self-help group for complete denture wearers. *Br Dent J* 1995; 178: 18–22.
35. Dikbas I, Koksal T, Calikkocaoglu S. Investigation of the cleanliness of dentures in a university hospital. *Int J Prosthodont* 2006; 19: 294–298.
36. Budtz-Jorgensen E. Clinical aspects of Candida infection in denture wearers. *J Am Dent Assoc* 1978;96:474–479.
37. Budtz-Jorgensen E, Loe H. Chlorhexidine as a denture disinfectant in the treatment of denture stomatitis. *Scand J Dent Res* 1972;80:457–464.
38. Arendorf TM, Walker DM. Denture stomatitis: A review. *J Oral Rehabil* 1987;14:217–227.
39. Bartholomew GA, Rodu B, Bell DS. Oral candidiasis in patients with diabetes mellitus. A through analysis. *Diabetes Care* 1987;10: 607–612.
40. Ribeiro D, Pavarina A, Giampaolo E, Machado A, Jorge J, Garcia P. Effect of oral hygiene education and motivation on removable partial denture wearers: longitudinal study. *Gerodontology* 2009; 26: 150–156.
41. Koyama S, Hanabuchi S, Fuji T et al. The difference between baseline and 5-year examinations at recall in PCR, PD, tooth mobility, and BRL of abutment teeth in subjects who had received periodic maintenance care more than four times per year. *Annals Japan Prosthodont Soc* 2012; 4: 59–67.

How to cite this article:

Falak Naz et al., 2019, Assessment of Denture Cleanliness and Hygiene Habits Among Complete Denture Wearing Patients in Kashmiri Population-an Original Research. *Int J Recent Sci Res.* 10(06), pp. 33214-33218.
DOI: <http://dx.doi.org/10.24327/ijrsr.2019.1006.3630>
