

# A survey on assessing the denture hygiene awareness among elderly patients

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## ABSTRACT

**Aim:** The aim of this study is to assess the knowledge and awareness of denture hygiene and its importance among elderly patients. **Background:** Denture hygiene and proper maintenance are an important aspect for any removable denture. It is necessary to have proper knowledge and follow the steps to maintain clean dentures and a healthy oral cavity. This study is to spread awareness regarding the importance of clean dentures and the adverse conditions if not done right. **Materials and Methods:** A questionnaire-based survey is done with about 100 subjects of similar age group. Probing questions regarding their hygiene practices were asked. The results were tabulated and analyzed to get the result.

**KEY WORDS:** Chemical method, Complete denture, Hygiene, Methods, Plaque accumulation

## INTRODUCTION

With an increase in the elderly population, there has been a drastic increase in the requirement of dentures as well.<sup>[1]</sup> Denture hygiene is one of the most important aspects of maintenance, to maintain the health of the patient and also to keep up the esthetics.<sup>[2,3]</sup> Acrylic dentures contain microporous surfaces that stand as an environment for the growth of microorganisms.<sup>[4]</sup>

Complete dentures are a very common form of treatment for patients who require a full arch replacement. The rehabilitative treatment is only complete if the patient is aware and follows proper prosthetic use and hygiene, and it is one of the most essential components of the treatment.<sup>[5]</sup> This form of treatment is more common among elderly patients due to factors such as dental caries, loss of periodontal support, trauma, systemic diseases, and medications.<sup>[6]</sup> Care for the denture and the mucosal tissues of the patient is important for the overall health of the patient. It can prevent malodor that arises from unclean dentures. It can also reduce the chances of any mucosal diseases.<sup>[7]</sup>

Factors such as quality of the denture fitting surface, occlusal relation, denture age, and hygiene contribute to the development of oral lesions that are associated with denture usage.<sup>[8]</sup> They are mostly the result of dental plaque that forms on the dentures.<sup>[9]</sup> Every surface of the oral cavity, including the denture surfaces, gets covered by pellicle in about 30 min. Pellicle consists of salivary glycoproteins and immunoglobulins that help in the adhesion of microorganisms, debris, and desquamated cells to the denture surface.<sup>[10]</sup> Accumulation of debris and microorganisms can also occur due to the rough or irregular surfaces that are present on the dentures. Denture stomatitis, angular cheilitis, traumatic ulcers, denture hyperplasia, flabby tissues, and oral carcinomas are some of the common lesions that are seen among elderly denture wearing patients.<sup>[11,12]</sup>

The fungal organism that is most commonly found on denture surfaces is of the *Candida* species.<sup>[13]</sup> They are found in the saliva of majority of the denture wearing patients and are adhere to the methacrylate resin on the denture bases. The oral debris that gets accumulated on dentures has several undesirable effects such as unaesthetic appearance, unpleasant odor, taste, and tactile sensation alteration.<sup>[14]</sup> Removal of this debris can be done in three methods and they are mechanically, chemically, or a combination of both.<sup>[15]</sup>

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ISSN: 0975-7619

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Received on: 02-04-2019; Revised on: 21-06-2019; Accepted on: 18-07-2019

The mechanical approach to cleaning dentures would include brushing it with either hot or cold water.<sup>[16]</sup> The use of tabletop ultrasonic cleaner has also shown to be effective according to studies. Mechanical method is mostly accompanied with a chemical one to attain effective cleaning, maintenance, and infection control.<sup>[17]</sup> The chemical approach would be to soak the dentures in household solutions. The most commonly used chemical solution used is bleach (sodium hypochlorite). Studies have proven that vinegar, detergent, and mouthwashes can be effective in killing adherent microorganisms that can be found on dentures. The disadvantage of using chemical disinfectants is that it may cause a blackish discoloration to appear on the denture in time. Air drying a denture is also practiced as a form of disinfecting a denture by few people, but it is not widely recommended as it may allow microorganisms to adhere more thoroughly to the denture. It could also lead to denture shrinkage.

The objective of this study is to assess the knowledge and understanding of the type of denture hygiene practices that are followed by patients with removable dentures. Thorough knowledge regarding the various methods of cleaning, a denture is required by both dentists and patients. It is an important aspect of the treatment to make sure the patient is fully aware of the most feasible way to clean his denture and he or she must be told about all the various problems that could arise with unclean dentures.

## MATERIALS AND METHODS

A survey containing 60 patients who had removable dentures was done. Questionnaires were distributed when the patients came back for treatment review. The previous denture wearers were also counted in this survey. The questions asked assessed the method they used to clean the denture and how often they cleaned it.

1. How long have you been using your dentures?
2. When do you wear your denture?
3. How frequently and by which methods do you clean your denture?
4. Do you feel you can clean your denture properly?
5. Has a dentist ever shown you or told you how to clean dentures?
6. How often do you visit the dentist?

## RESULTS

About 32% of the patients who underwent the survey were using their dentures for a maximum of 5 years. About 25% used it for 6–10 years. Majority of the patients were used to wearing their dentures and were satisfied with the treatments outcome. They also did not have any complaints regarding the dentures, and

clinically, there were no issues with the adjacent soft tissues in their oral cavity on examination.

Cleaning the denture before wearing is a must. Most of the patients had a habit of cleaning their dentures once a day. It is important to clean the denture both before you wear it and after its removal. All these depend on the patients knowledge regarding the complications of lack of denture hygiene.

Various patients had different methods of cleaning their dentures. Most of them opted for a combination of both mechanical and chemical methods. All the patients were aware that they had to soak the denture in water when they are not wearing it.

Majority of the patients were satisfied with the way they were cleaning their dentures and they felt that they cleaned it well. Most of these patients did a good job with cleaning their dentures and maintained them well.

About 41% of the dentists had given proper information to the patient regarding the method to clean their dentures. Some were given demonstrations of the method. Most were just told how to go about cleaning them properly. It is common practice for a dentist to give post-operative instructions to all patients. Hence, it is important to inform the patients regarding care and proper hygiene.

According to the survey, most patients only visit the dentist when they have an issue. These patients are mostly unaware of the importance of regular dental visits. About 21% of the patients visited the dentist once a year and the remaining 4% visited the dentist every 6 months.

## DISCUSSION

According to the study, most patients preferred cleaning their dentures with a combination of mechanical and chemical methods [Figure 1]. The most preferred method was brushing with the use of toothpaste. Some patients even washed and stored their dentures in mouthwash. The high use of toothpaste and mouthwash is that it is more easily available, simple to use, and economic compared to others. However, if brushing is done with excessive force or done improperly, it could lead to damage to the denture surface and could lead to problems.<sup>[15]</sup> There have been studies that showed that some patients preferred to soak their dentures in cleansing tablets.<sup>[4]</sup> This is mostly followed in western countries. Due to the lack of availability and cost, it is not much in use. According to various studies, chemical method of cleaning dentures is simple, yet many patients will not be willing to spend on the particular chemicals that are available in the market specifically for cleaning dentures [Figure 2]. It has been seen that

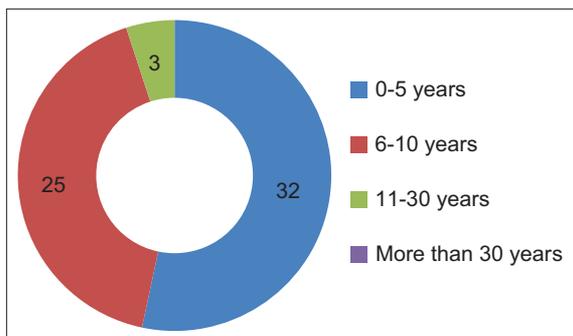


Figure 1: How long have you been using your denture?

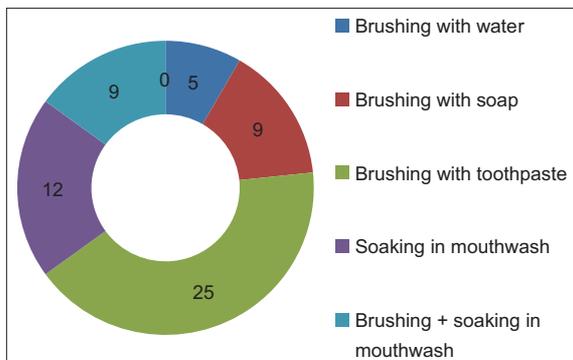


Figure 2: What method do you use to clean you denture?

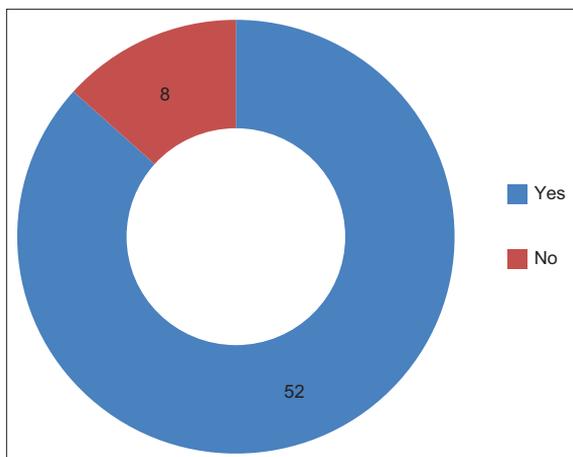


Figure 3: Do you feel like you can clean your denture properly?

the chemicals that are used for cleaning the dentures sometimes cause deterioration of the denture base materials as well.<sup>[18]</sup>

Wearing clean dentures are important in aspects such as hygiene and esthetics. Studies have shown that there are high percentages of denture wearing people who are not satisfied with the cleanliness of their dentures, yet they still wear them with no problem with the use of dirty dentures. Majority of the patients receive proper instructions regarding the ways in which they can clean their dentures, yet the patients sometimes fail to reciprocate the same way of cleaning or they do

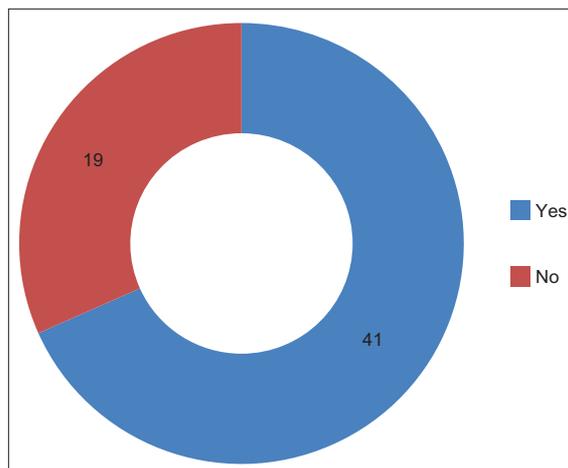


Figure 4: Has your dentist ever shown or told you how to clean your denture?

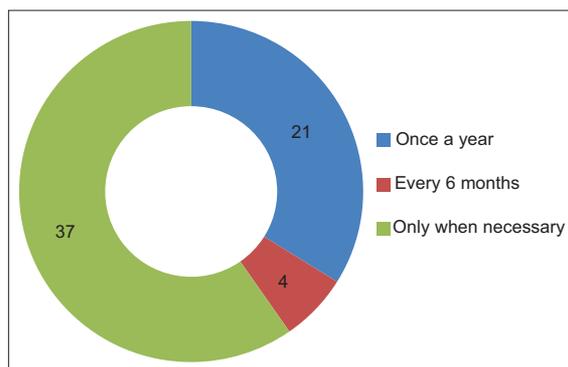


Figure 5: How often do you visit the dentist?

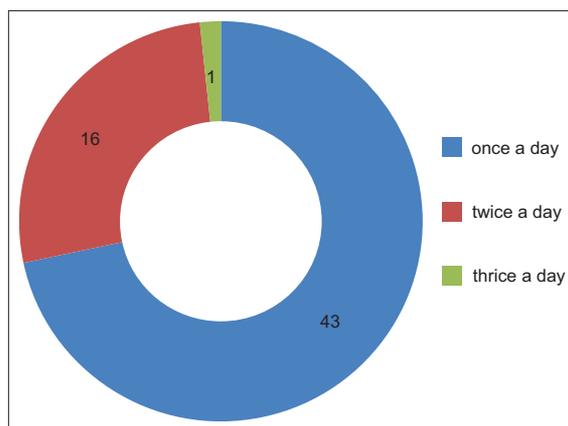


Figure 6: How frequently do you clean your denture?

not do it as efficiently and regularly [Figures 3 and 4]. For this reason, dentists should also provide them with thorough knowledge regarding the adverse effects of wearing unclean dentures. They could also provide an easier and cost-efficient method of taking care of their dentures [Figure 5]. It is also said that using your denture for more than 24 h can also be a cause for dentures getting dirty. Patients must be advised to remove their dentures during the night to avoid lesions that could occur.

Oral mucosal lesions such as traumatic ulcers, denture-induced stomatitis, denture hyperplasia, frictional keratosis, and candidiasis are some of the adverse effects of improperly fitting dentures.<sup>[19]</sup> Having unclean dentures can also act as a risk factor for these mucosal lesions. According to various studies, the occurrence of lesions in denture wearing patients is high when proper hygiene and maintenance protocols are not followed. Another major factor is improper dentures and sharp points on the denture base. From all the oral lesions, the most common is traumatic ulcers (19.5%). Denture stomatitis and candidiasis are seen in 18.1% of the cases.<sup>[12]</sup> In the study done, we only took into account the patients who did not have any adverse lesions present.

Cleaning the denture before and after wearing it is mandatory. They say that bacteria can accumulate even during the storage of the denture in a cleaning medium.<sup>[12]</sup> When placed in the oral cavity, the denture will be subjected to a wide range of bacteria. When used for functional purposes such as mastication, the denture will get a lot of debris deposited on it. The rough surfaces of the denture will accumulate a lot of bacteria due to its adhesive property. Due to all these reasons, it is mandatory for patients to clean the denture both before and after wearing it. According to the study, most of the patients cleaned their dentures once a day [Figure 6]. It is important for the dentists to inform those patients regarding the consequences of not cleaning the dentures twice a day. They should be told of the lesions and infections that could arise if not done properly.

Older prosthesis tends to be more dirty compared to new ones. There is an association with the occurrences of oral lesions such as oral candidiasis and denture stomatitis in long-standing dentures. This could be due to many microorganisms that could have collected on the denture surface over the years. From the survey done, it was seen that patients who had been wearing dentures for a longer period of time tend to have more discolored dentures. They may even have deposits present on the denture due to insufficient cleaning of the denture. Adherence of microorganisms and debris was another factor to consider. Long-standing dentures would have had more chances of getting bacterial accumulation on them. Another factor that could have affected the dentures cleanliness was the abraded surfaces of the denture. Denture abrasion could take place due to forceful brushing of the denture. This could also lead to bacterial accumulation in areas and would lead to dirty dentures.

Knowledge and post-operative instructions regarding the treatment always play a major role the survival of the treatment.<sup>[20]</sup> Providing the patient with information and instructions would make them more

cautious and more prone to follow. They play as a positive influence on denture care and hygiene. In the survey that was conducted, 41% of the patients were given instructions regarding maintenance of their dentures and majority of them had relatively clean dentures. The patients who were not given proper instructions had dirty dentures. Side by side, they had poor oral conditions as well. The dirty dentures could have deposits on them that would lead to malodor.

## CONCLUSION

From the study, it was concluded that majority of the patients were aware of the method to clean their dentures and they were provided with proper instructions from their dentist to maintain the dentures.

## REFERENCES

- Gautham P, Mallikarjun M, Chakravarthy K, Kumar KR, Budege V, Bodankar N. Assessment of denture hygiene maintenance among elderly patients in Nizamabad (Telangana) population: A survey. *J NTR Univ Health Sci* 2016;5:275.
- Isiekwe GI, Sofola OO, Onigbogi OO, Utomi IL, Sanu OO, daCosta OO, *et al.* Dental esthetics and oral health-related quality of life in young adults. *Am J Orthod Dentofacial Orthop* 2016;150:627-36.
- Suresan V, Mantri S, Deogade S, Sumathi K, Panday P, Galav A, *et al.* 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;16:30-5.
- Duyck J, Vandamme K, Krausch-Hofmann S, Boon L, De Keersmaecker K, Jalon E, *et al.* Impact of denture cleaning method and overnight storage condition on denture biofilm mass and composition: A cross-over randomized clinical trial. *PLoS One* 2016;11:e0145837.
- Namrata M, Ganapathy D. Awareness about denture hygiene: A survey among patients wearing complete dentures and removable partial dentures. *Int J Orofac Biol* 2017;1:59.
- Meenakshi A, Meena NS, Bharti V, Suganthapriya S. Special dentures. *SRM J Res Dent Sci* 2017;8:126.
- 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.
- Felton D, Cooper L, Duqum I, Minsley G, Guckes A, Haug S, *et al.* Evidence-based guidelines for the care and maintenance of complete dentures: A publication of the American college of prosthodontists. *J Am Dent Assoc* 2011;142:1S-20.
- Shimura Y, Wadachi J, Nakamura T, Mizutani H, Igarashi Y. Influence of removable partial dentures on the formation of dental plaque on abutment teeth. *J Prosthodont Res* 2010;54:29-35.
- Edgerton M, Levine MJ. Characterization of acquired denture pellicle from healthy and stomatitis patients. *J Prosthet Dent* 1992;68:683-91.
- Gaur A, Kumar VG, Siddiqui SR, Agarwal S, Monga HS, Gosavi SS. Study of prevalence of oral lesions in complete denture wearers. *J Int Health* 2015;7:97.
- Mubarak S, Hmud A, Chandrasekharan S, Ali AA. Prevalence of denture-related oral lesions among patients attending college of dentistry, university of Damman: A clinico-pathological study. *J Int Soc Prev Community Dent* 2015;5:506-12.
- Pereira-Cenci T, Del Bel Cury AA, Crielaard W, Ten Cate JM. Development of *Candida* associated denture stomatitis: New insights. *J Appl Oral Sci* 2008;16:86-94.
- Matsumura K, Sato Y, Kitagawa N, Shichita T, Kawata D, Ishikawa M, *et al.* Influence of denture surface roughness and

- host factors on dental calculi formation on dentures: A cross-sectional study. *BMC Oral Health* 2018;18:78.
15. Budtz-Jørgensen E. Materials and methods for cleaning dentures. *J Prosthet Dent* 1979;42:619-23.
  16. Lee HE, Li CY, Chang HW, Yang YH, Wu JH. Effects of different denture cleaning methods to remove *Candida albicans* from acrylic resin denture based material. *J Dent Sci* 2011;6:216-20.
  17. Cruz PC, Andrade IM, Peracini A, Souza-Gugelmin MC, Silva-Lovato CH, de Souza RF, *et al.* The effectiveness of chemical denture cleansers and ultrasonic device in biofilm removal from complete dentures. *J Appl Oral Sci* 2011;19:668-73.
  18. Kumar B, Sandhu PK, Kumar AN, Patil CP. A comparative study for plaque removing efficacy between commonly used denture cleansers in India. *J Indian Prosthodont Soc* 2017;17:295-300.
  19. Jainkittivong A, Aneksuk V, Langlais RP. Oral mucosal lesions in denture wearers. *Gerodontology* 2010;27:26-32.
  20. Allen PF, McMillan AS. A longitudinal study of quality of life outcomes in older adults requesting implant prostheses and complete removable dentures. *Clin Oral Implants Res* 2003;14:173-9.

Source of support: Nil; Conflict of interest: None Declared