



Awareness About Denture Cleaning Aids Among Dental Students of Private Dental Institution

Karthikeson. P.S¹

Revathi Duraisamy^{2*}

Journal for Educators, Teachers and Trainers, Vol. 13 (6)

<https://jett.labosfor.com/>

Date of reception: 10 Oct 2022

Date of revision: 12 Nov 2022

Date of acceptance: 07 Dec 2022

Karthikeson. P.S, Revathi Duraisamy(2022). Awareness About Denture Cleaning Aids Among Dental Students of Private Dental Institution *Journal for Educators, Teachers and Trainers*, Vol. 13(6). 94-102.

¹Saveetha Dental College and Hospitals, Saveetha Institute Of Medical and Technical Sciences, Saveetha University, Chennai.

²Senior Lecturer, Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai.



Awareness About Denture Cleaning Aids Among Dental Students of Private Dental Institution

Karthikeson. P.S¹, Revathi Duraisamy^{2*}

¹Saveetha Dental College and Hospitals, Saveetha Institute Of Medical and Technical Sciences, Saveetha University, Chennai.

²Senior Lecturer, Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai.

*Corresponding Author

Email: revathid.sdc@saveetha.com²

ABSTRACT

The oral health of the denture wearing patients plays a significant role related to quality of life, nutrition, social interactions and general systemic health. The dentists must be aware about the cleaning of dentures since they design the denture for patients comfort and function. The aim of the study was to assess the awareness of denture cleaning aids among dental students in a private dental institution. A survey was conducted in December 2019 among dental students (Third years, Final years and Interns) of saveetha Dental college. It was an online questionnaire based study, conducted to assess the awareness of denture cleaning aids. 150 dental students participated in this study. The survey consisted of 8 questions related to denture cleaning aids, conditions associated, method of cleaning etc. The survey was distributed to the students through google forms and the data collection was done. Chi square statistical analysis was done using Statistical Package for the Social Sciences software (version 20). It was found that awareness of denture cleaning aids is seen maximum in 30.67% of interns compared to III years and IV year students. Within the limitations of the study it was found that interns were more aware about denture cleaning aids compared to third years and final year students.

Keywords: Awareness; Dental students; Denture cleaning aids; Oral health.

INTRODUCTION

Modern day removable dentures constitute one of the most important treatment options in prosthodontics. These dentures could be a disappointment to a patient if he is deficient in maintaining proper oral hygiene¹.

Denture cleaning is essential to prevent bad odour, poor aesthetics and the accumulation of plaque/calculus with its deleterious effects on the mucosa². The micro-porous surfaces of an acrylic denture provide a wide range of environments to support microorganisms that can threaten the health of physically vulnerable denture patients. There are various solutions, pastes and powders available for cleaning dentures with a variety of claims about their relative efficacies³.

Ideally, denture care products should be easy to handle, effective for removal of inorganic/organic deposits and stains, bactericidal and fungicidal, nontoxic to the patient, non deleterious to the denture materials and inexpensive. Given that brushing is the most common cleansing method for dentures, it is very important to clean the denture for good outcomes⁴.

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 routine. However, denture wearers in comparison to the dentate, pay less attention toward the importance of plaque control. It is the obligation of the dentist to motivate and instruct the denture wearers and provide the means and methods for plaque control. Dental professionals must have a current knowledge of denture cleaning to maximize the services offered to their denture patients⁵. The oral health of the denture wearing patients plays a significant role related to quality of life, nutrition, social interactions and general systemic health. The dentists must be aware about the cleaning of dentures since they design the denture for patients comfort and function.

Mechanical and chemical methods are the recently advised cleaning aids for patients to remove plaque and debris from their dentures. The most frequently used manual method for cleaning dentures is soap water and a toothbrush⁶. However, toothbrushes are ineffective against microbial activity on denture biofilms and can only remove large debris. An inappropriate cleaning method can affect the texture of the denture material and also

result in the formation of plaque or the inhibition of plaque removal ⁷. By contrast, soaking in disinfectant solutions with chemical agents was shown to be an effective procedure to decrease the number of contaminating organisms, although some chemical agents used for denture cleaning are known to damage acrylic resin. Recent scientific developments indicated that microwaving, ultraviolet C (UVC) light, and ozonated water can be effective in controlling infection ⁸. The use of microwave energy to disinfect dentures was suggested to overcome problems associated with chemical disinfection. Although several techniques were shown to disinfect dentures, no comparative study has been performed to determine the most effective denture cleaning method. Our team has conducted various comparative studies /review studies ⁹⁻¹⁵, awareness studies/ in vitro studies ¹⁶⁻²⁰ and clinical studies ²¹⁻²³ for the past five years. The main aim of the current study was to assess the awareness of denture cleaning aids among dental students in a private dental institution.

MATERIALS AND METHODS

A survey was conducted in December 2019 among dental students (Third years, Final years, Interns) of saveetha Dental college. It was an online questionnaire based study, conducted to assess the awareness of denture cleaning aids. 150 dental students (Third years, Final years and Interns) participated in this study since clinical practice started earlier for third years in the institution for their improvement of working skills. All students do their clinical practice and perform denture making and other treatments. The questionnaire consisted of 8 questions related to denture cleaning aids, conditions associated, method of cleaning etc. The questionnaire was equally distributed among Third years, Final years, and Interns through google forms. Ethical approval was obtained from the Institutional Ethical Committee. The data was collected and tabulated in excel sheet and subjected to statistical analysis using Statistical Package for the Social Sciences software(version 20). Chi square test was done. The independent variable was year of study while the dependent variable was awareness of denture cleaning aids. The level of significance was set at $p < 0.05$.

Questionnaire given is as follows:

Year of study- Third year/Final year /Intern

1. Are you aware about denture cleaning?
2. Do you feel denture cleaning can help maintain oral hygiene of the patient?
3. Which aid do you recommend for the patient for effective denture cleaning?
4. Do you recommend soaking the denture in hypochlorite solution?
5. Does placing the denture in hypochlorite solution for a longer time damage the denture?
6. Do you instruct patients to clean the denture daily?
7. Does plaque and biofilm affect the denture overtime due to improper cleaning?
8. Are you aware about the conditions associated with improper cleaning of the denture?

RESULTS AND DISCUSSION

Total sample size was 150 students. Equal distribution of students studying III BDS(33.33%), IV BDS(33.33%) and Interns(33.33%) [Figure 1]

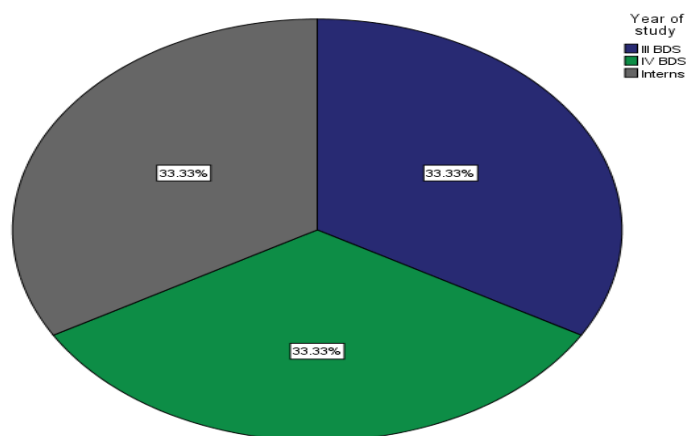


Figure 1: Pie chart represents distribution of students studying III BDS, IV BDS and Interns. Equal distribution of III BDS(33.33%)(blue), IV BDS(33.33%)(green) and Interns(33.33%) (grey) seen.

33.33% of interns ,28.67% of IV BDS students and 29.33% of III BDS students responded yes to the question related to awareness about denture cleaning. [Figure 2].

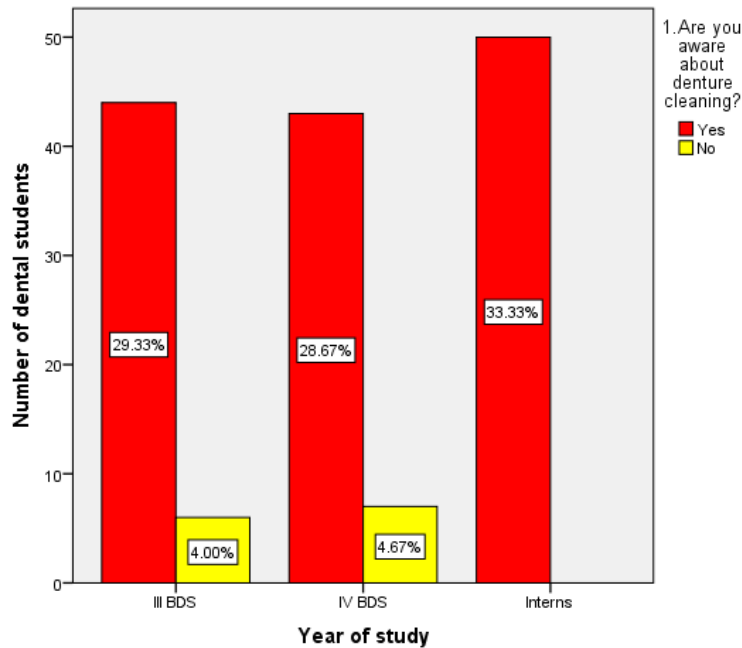


Figure 2: Bar graph represents association between year of study and number of students responded. X axis represents year of study and Y axis represents number of dental students with their responses. Chi square test was done and p value was found to 0.027 indicating statistically significant association between the number of dental students with their responses to the question and year of study. Hence proving the answers for the awareness about denture cleaning, 33.33% of interns ,28.67% of IV BDS students and 29.33% of III BDS students responded yes(red).

33.33% of interns ,26.67% of IV BDS students and 21.33% of III BDS students responded yes to the question related to denture cleaning and its effect on oral hygiene[Figure 3].

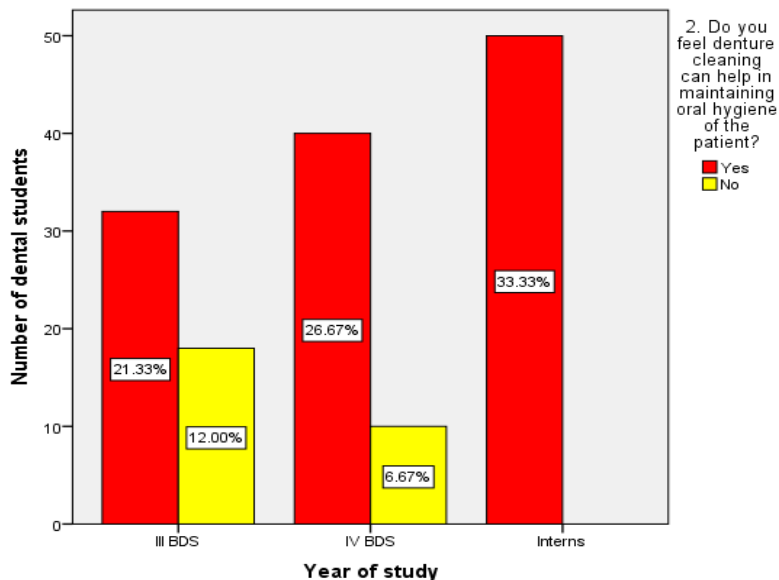


Figure 3: Bar graph represents association between year of study and number of students responded. X axis represents year of study and Y axis represents number of dental students with their responses. For the question related to denture cleaning and its effect on oral hygiene, 33.33% of interns ,26.67% of IV BDS students and 21.33% of III BDS students responded yes(red).Chi square test between number of dental students responded to the question and year of study was done and p value was found to 0.020 indicating statistically significant.

26.67% of interns ,20.67% of IV BDS students and 26.67% of III BDS students recommend brushing the denture with soap water [Figure 4].

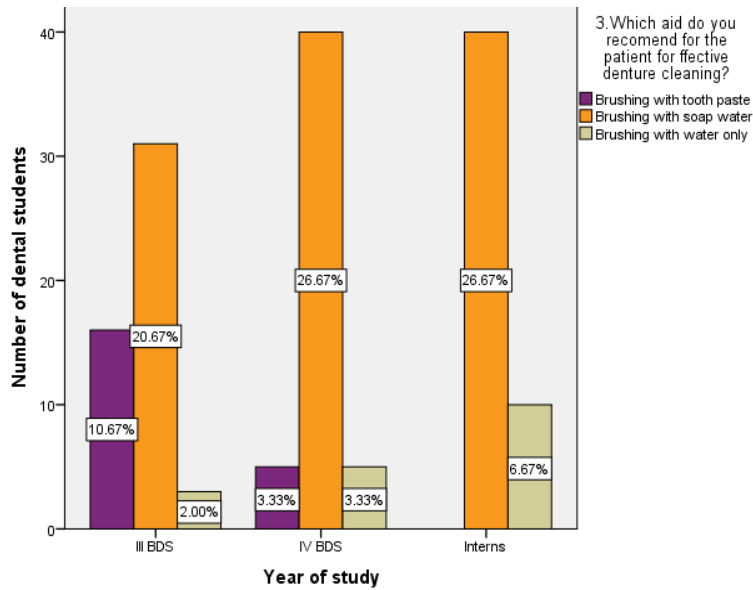


Figure 4: Bar graph represents association between year of study and number of students responded. X axis represents year of study and Y axis represents number of dental students with their responses. 26.67% of interns ,20.67% of IV BDS students and 26.67% of III BDS students recommend brushing the denture with soap water (orange).10.67% of III BDS students recommend brushing the denture with tooth paste (purple).Chi square test between number of dental students responded to the question and year of study was done and p value was found to 0.013 indicating statistically significant.

28.67% of interns ,18.67% of IV BDS students and 31.33% of III BDS students do not recommend soaking the denture in hypochlorite solution [Figure 5].

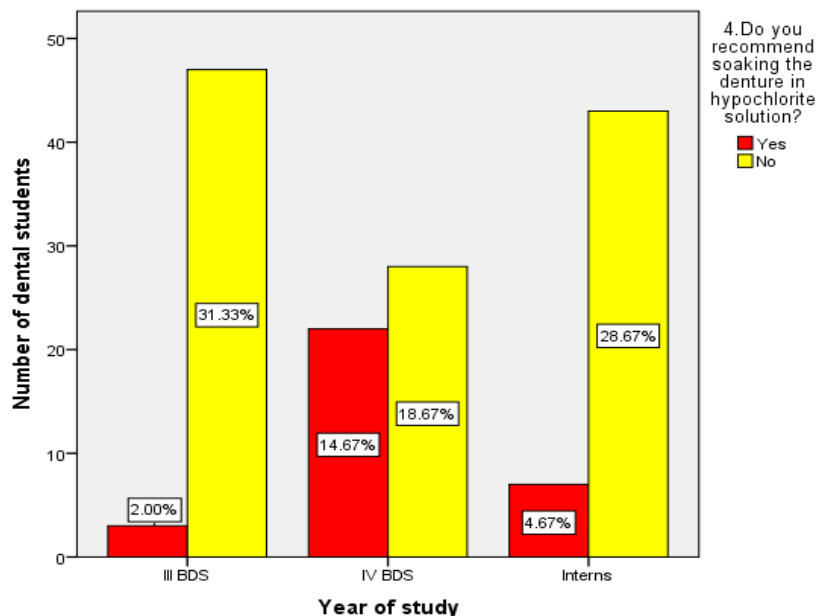


Figure 5: Bar graph represents association between year of study and number of students responded.X axis represents year of study and Y axis represents number of dental students with their responses. For the question related to soaking the denture in hypochlorite solution,28.67% of interns ,18.67% of IV BDS students and 31.33% of III BDS students responded no(yellow).Chi square test between number of dental students responded to the question and year of study was done and p value was found to 0.035 indicating statistically significant.

27.33% of interns ,24 % of IV BDS students and 20 % of III BDS students responded yes to the question related to damaging of denture if soaked in hypochlorite solution for a longer time[Figure 6].

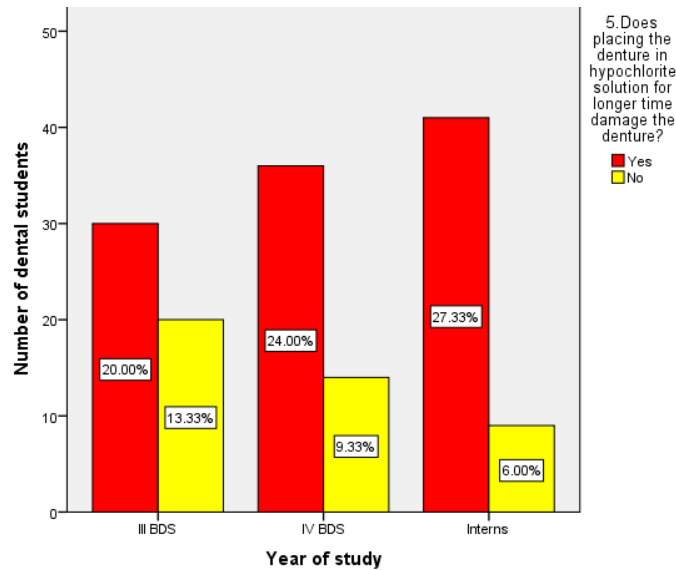


Figure 6: Bar graph represents association between year of study and number of students responded.X axis represents year of study and Y axis represents number of dental students with their responses. For the question related to damaging of denture if soaked in hypochlorite solution for a longer time ,27.33% of interns ,24 % of IV BDS students and 20 % of III BDS students responded yes (red).Chi square test between number of dental students responded to the question and year of study was done and p value was found to 0.005 indicating statistically significant.

33.33% of interns ,29.33% of IV BDS students and 26.67% of III BDS students responded that they instruct patients to clean the denture daily [Figure 7].

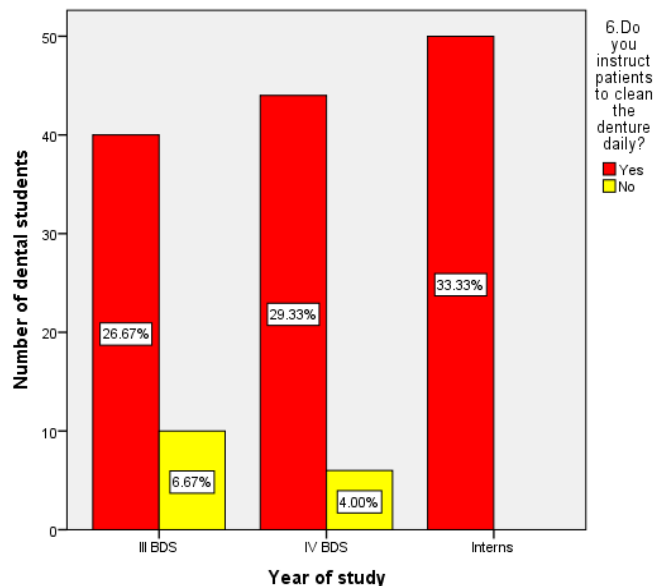


Figure 7: Bar graph represents association between year of study and number of students responded.X axis represents year of study and Y axis represents number of dental students with their responses. For the question related to regular cleaning of the denture,33.33% of interns ,29.33% of IV BDS students and 26.67% of III BDS students responded yes(red). Chi square test between number of dental students responded to the question and year of study was done and p value was found to 0.237 indicating statistically not significant.

30% of interns ,29.33% of IV BDS students and 28.67% of III BDS students agree that plaque and biofilm will affect the denture if not properly cleaned.[Figure 8].

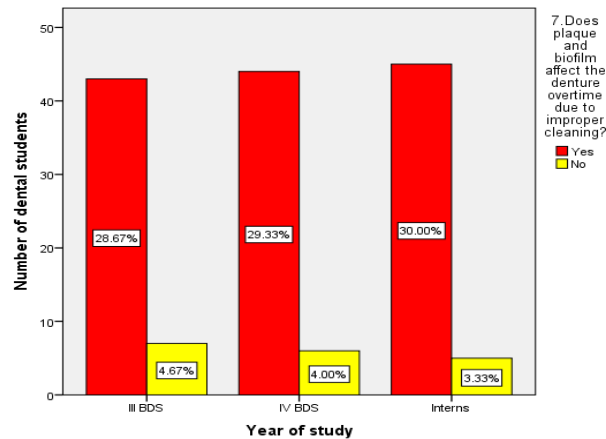


Figure 8: Bar graph represents association between year of study and number of students responded.X axis represents year of study and Y axis represents number of dental students with their responses. For the question related to the effect of plaque and biofilm on the denture due to improper cleaning, 30% of interns ,29.33% of IV BDS students and 28.67% of III BDS students responded yes(red). Chi square test between number of dental students responded to the question and year of study was done and p value was found to 0.412 indicating statistically not significant.

2.67% of interns ,10.67% of IV BDS students and 26.67% of III BDS students are not aware about the conditions associated with improper cleaning of the denture [Figure 9].

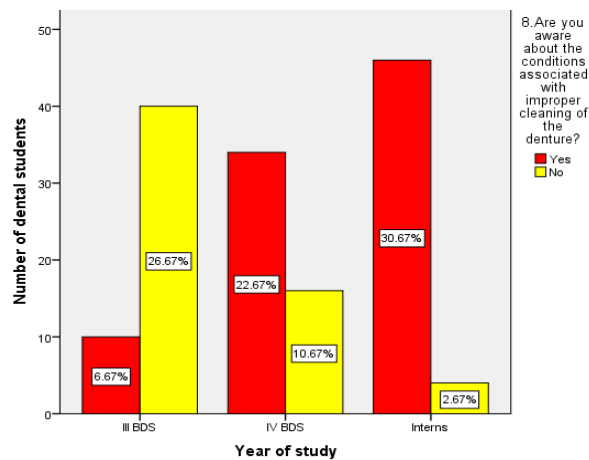


Figure 9: Bar graph represents association between year of study and number of students responded.X axis represents year of study and Y axis represents number of dental students with their responses. For the question related to awareness about conditions associated with improper cleaning of the denture, 2.67% of interns ,10.67% of IV BDS students and 26.67% of III BDS students responded no (yellow).Chi square test between number of dental students responded to the question and year of study was done and p value was found to 0.066 indicating statistically significant.

In Pasricha survey study ²⁴, the question related to the method of cleaning the denture was asked. 27% of the students recommended brushing the denture with tooth paste,55% of the students recommend brushing the denture with soap water. This is similar to the present study where 60% of the dental students recommend brushing the denture with soap water and 10% of students recommend brushing the denture with tooth paste. In Suresan`s survey study ²⁵, for the question related to cleaning the denture , 25% of the students recommended brushing the denture with tooth paste, 37% of the students recommend brushing the denture with soap water. This is similar to the study where 60% of the dental students recommend brushing the denture with soap water and 10% of students recommend brushing the denture with tooth paste. For the question related to conditions

associated with improper cleaning of denture, 33% of the students are not aware. This is similar to the present study where 40% of the students are unaware about the condition associated with improper cleaning of the denture.

Another question related to instructing the patients for denture cleaning was asked. 68% of the dental students instruct patients to clean the denture regularly. This is similar to the present study where 88% of the dental students instruct patients to clean the denture regularly. In Peracini's survey study²⁶, he stated that 51% of the dentists do not recommend the patients cleaning the denture on a regular basis. This contradicts the present study where 88% of students recommend the patients to clean the denture regularly.

In Paranhos's survey study²⁷, he stated that 80% of the dentists do not recommend the patients cleaning the denture on a regular basis. This contradicts the present study where 88% of students recommend the patients to clean the denture regularly.

Brushing with toothpaste is not ideally recommended as it contains abrasives that can damage the denture overtime. Denture stomatitis and xerostomia are the common conditions associated with improper cleaning of the denture. Denture stomatitis is the inflammation of the gum tissue that is covered by dentures and is caused by the bacteria and *Candida albicans*. Xerostomia is the condition also referred to dry mouth resulting from reduced or absent saliva flow.

It is important for the students as well as dental professionals to know about denture cleaning as it can impact the oral hygiene of the patient. These findings of the present study show that students are aware about the denture cleaning aids but not fully aware about the conditions which arise if the denture is not properly cleaned. Limitation of the study was found to be the smaller sample size. Thus the future scope of the study can include larger sample size and distributing the survey to different dental students from different geographic locations to understand and assess their knowledge about denture cleaning and its significance.

CONCLUSION

Within the limitations of the current study, it was found that interns were more aware and knowledgeable about denture cleaning aids compared to third years and final year students but the third year students and some final years and interns are not fully aware about the conditions associated with improper denture cleaning. This survey serves as a guideline to know about denture cleaning and its importance in oral hygiene and helps in bringing out more studies related to denture cleaning in near future.

ACKNOWLEDGEMENT

We, the authors of the manuscript, would like to thank and acknowledge Saveetha Dental College for providing us access to use the data for our study.

Author Contributions

P.S. Karthikeson contributed in concept, acquisition of data analysis, interpretation of data and also drafting the article and revisiting it critically for important intellectual content and manuscript preparation. Revathi.D, contributed in study design, correction, preparation of manuscript, supervision of alignment and final approval of the submitted version of the manuscript.

CONFLICT OF INTEREST

This research project is self funded and it is not sponsored or aided by any third party. There is no conflict of interest.

REFERENCES

1. Jagger DC, Harrison A. Denture cleansing--the best approach. *British Dental Journal* 1995; 178: 413-417.
2. Shay K. Denture Hygiene: A Review and Update. *The Journal of Contemporary Dental Practice* 2000; 1: 36-43.
3. Tarbet WJ, Axelrod S, Minkoff S, et al. Denture cleansing: A comparison of two methods. *The Journal of Prosthetic Dentistry* 1984; 51: 322-325.
4. Budtz-Jørgensen E. Materials and methods for cleaning dentures. *The Journal of Prosthetic Dentistry* 1979; 42: 619-623.
5. Doughty J. Clean dentures. *British Dental Journal* 1990; 168: 277-277.
6. Polyzois GL, de Baat C. Attitudes and usage of denture adhesives by complete denture wearers: a survey in Greece and the Netherlands. *Gerodontology* 2012; 29: e807-e814.
7. Harrison Z, Johnson A, Douglas CWI. An in vitro study into the effect of a limited range of denture cleaners on surface roughness and removal of *Candida albicans* from conventional heat-cured acrylic resin denture base material. *Journal of Oral Rehabilitation* 2004; 31: 460-467.

8. Ghalichebaf M, Graser GN, Zander HA. The efficacy of denture-cleansing agents. *The Journal of Prosthetic Dentistry* 1982; 48: 515-520.
9. Ariga P, Nallaswamy D, Jain AR, et al. Determination of Correlation of Width of Maxillary Anterior Teeth using Extraoral and Intraoral Factors in Indian Population: A Systematic Review. *World Journal of Dentistry* 2018; 9: 68-75.
10. Jyothi S, Robin PK, Ganapathy D, et al. Periodontal Health Status of Three Different Groups Wearing Temporary Partial Denture. *Research Journal of Pharmacy and Technology* 2017; 10: 4339.
11. Duraisamy R, Krishnan CS, Ramasubramanian H, et al. Compatibility of Nonoriginal Abutments With Implants: Evaluation of Microgap at the Implant-Abutment Interface, With Original and Nonoriginal Abutments. *Implant Dent* 2019; 28: 289-295.
12. Selvan SR, Ganapathy D. Efficacy of fifth generation cephalosporins against methicillin-resistant *Staphylococcus aureus*-A review. *Research Journal of Pharmacy and Technology* 2016; 9: 1815.
13. Subasree S, Murthykumar K, Dhanraj. Effect of Aloe Vera in Oral Health-A Review. *Research Journal of Pharmacy and Technology* 2016; 9: 609.
14. Ganapathy DM, Kannan A, Venugopalan S. Effect of Coated Surfaces influencing Screw Loosening in Implants: A Systematic Review and Meta-analysis. *World Journal of Dentistry* 2017; 8: 496-502.
15. Kannan A, Venugopalan S. A systematic review on the effect of use of impregnated retraction cords on gingiva. *Research Journal of Pharmacy and Technology* 2018; 11: 2121.
16. Ganapathy D, Sathyamoorthy A, Ranganathan H, et al. Effect of Resin Bonded Luting Agents Influencing Marginal Discrepancy in All Ceramic Complete Veneer Crowns. *J Clin Diagn Res* 2016; 10: ZC67-ZC70.
17. Ashok V, Suvitha S. Awareness of all ceramic restoration in rural population. *Research Journal of Pharmacy and Technology* 2016; 9: 1691.
18. Aljarrah, K., Khataybeh, A. Representing teaching staff in Jordanian Universities for the 21st Century skills(2021) *Pegem Egitim ve Ogretim Dergisi*, 11 (3), pp. 17-25. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85111340475&partnerID=40&md5=af9989c39cbf42222ac74bacdaebbf6>
19. Vijayalakshmi B, Ganapathy D. Medical management of cellulitis. *Research Journal of Pharmacy and Technology* 2016; 9: 2067.
20. Ajay R, Suma K, Ali S, et al. Effect of surface modifications on the retention of cement-retained implant crowns under fatigue loads: An In vitro study. *Journal of Pharmacy And Bioallied Sciences* 2017; 9: 154.
21. Ranganathan H, Ganapathy DM, Jain AR. Cervical and Incisal Marginal Discrepancy in Ceramic Laminate Veneering Materials: A SEM Analysis. *Contemp Clin Dent* 2017; 8: 272-278.
22. Ashok V, Nallaswamy D, Benazir Begum S, et al. Lip Bumper Prosthesis for an Acromegaly Patient: A Clinical Report. *The Journal of Indian Prosthodontic Society* 2014; 14: 279-282.
23. Venugopalan S, Ariga P, Aggarwal P, et al. Magnetically retained silicone facial prosthesis. *Niger J Clin Pract* 2014; 17: 260-264.
24. Basha FYS, Ganapathy D, Venugopalan S. Oral Hygiene Status among Pregnant Women. *Research Journal of Pharmacy and Technology* 2018; 11: 3099.
25. Pasricha N, Sidana V. Evaluation of awareness and knowledge about denture cleansers among dental professionals. *J Indian Prosthodont Soc* 2014; 14: 400-407.
26. Suresan V, Mantri S, Deogade S, et al. Denture hygiene knowledge, attitudes, and practices toward patient education in denture care among dental practitioners of Jabalpur city, Madhya Pradesh, India. *The Journal of Indian Prosthodontic Society* 2016; 16: 30.
27. Peracini A, de Andrade IM, de Freitas Oliveira Paranhos H, et al. Behaviors and hygiene habits of complete denture wearers. *Brazilian Dental Journal* 2010; 21: 247-252.
28. Paranhos H de FO, da Silva CHL, Venezian GC, et al. Distribution of biofilm on internal and external surfaces of upper complete dentures: the effect of hygiene instruction. *Gerodontology* 2007; 24: 162-168.