Original Article

Impact of Denture Cleansing Habits and its Association with Denture Stomatitis among Removable Denture Wearers in Different Clinics of Karachi City

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ABSTRACT

Objective: The aim of the study is to assess the denture hygiene habits among removable denture wearer and its impact on denture stomatitis with respect to gender.

Study Design: Cross-sectional study

Place and Duration of Study: This multicenter study was conducted in different private clinics of Karachi, city during January, 2019 to January, 2021.

Materials and Methods: A total of 102 denture wearing subjects were included in this study. After obtaining informed consent, the patients were asked to fill the designed performa for collection of relevant data. Clinical examination of oral cavity along with the denture in use was carried out and the questions related denture hygiene habits were investigated. The p-value <0.05 was considered statistically significant.

Results: Our study findings showed that out of 102 subjects 79(77.5%) subjects cleaned their dentures while 23(22.5%) didn't maintain denture hygiene. Water was the most preferred method in males 30(55.5%), and 24(44.3%)in females followed by tooth paste and mouth wash as denture cleansing method. In present study denture stomatitis was observed in both genders.

Conclusion: The knowledge regarding the denture cleansing methods plays a vital role in maintaining overall oral hygiene. Therefore, it is stressed upon that the dentist should be aware about the importance of providing effective denture cleansing instructions to the patients.

Key Words: Denture, Acrylic Complete denture, Care, Hygiene, Habits, Assessment.

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INTRODUCTION

The term denture stomatitis is common form of oral candidiasis and also known as denture sore mouth characterized by inflammation of oral mucosa particularly palatal and gingival mucosa which is covered by denture surface.[1]

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In this condition, inflammation is a common and recurrent problem in those patients who wear dentures, which may result in erythema, pain, burning and inflammation of oral mucous membrane.[2]The etiology of denture stomatitis are multifactorial in origin including, poor oral and denture hygiene, trauma resulted from inappropriate denture, nutritional deficiency, diabetes mellitus, allergy to denture base materials, continuous night time wearing of denture, and immune deficiency.[3]Presence of dental plaque beneath the surface of denture may harbor microorganisms causing inflammation of mucosa.[4]

The epidemiological studies have shown the prevalence of denture stomatitis may range from 15%-70% among denture wearers. The incidence of denture stomatitis in some literature has shown the female dominance.[2] Various epidemiological surveys have shown the higher prevalence of condition in those patients who do not clean their dentures daily and used dirty dentures. This might shows the negligence of the clinicians who did not inform their patients about thorough cleaning at the time of insertion of removable prosthesis.[5,6]

There are different factors that play an important role in maintaining the oral hygiene habits such as gender, education, age and social status. Nishi and colleagues investigated the relationships between the quantity of microorganisms adhering to complete dentures and the frequency of use of a denture cleanser.[7] A study conducted in Brazil on complete denture patients about denture hygiene and nocturnal habits revealed that 55.5% patients removed their denture during night time, and 46.87%patients used brushing with toothpaste as a cleaning method.[8]

Shay and its associates highlighted the two approaches for denture cleansing.[9] The removable prosthesis can be cleaned by mechanical and chemical methods. The most familiar mechanical methods used for denture cleansing is use of bush in the presence of cold or hot water. The second is chemical method which includes household bleach (sodium hypochlorite in 1:10 dilution with tap water. Andrucioli and colleagues states that this approach (chemical) was not familiar among patients either due to lack of information, knowledge or non-availability of such products. [10,11,12,8]

Denture cleanliness is essential to prevent malodor, poor esthetics, and the accumulation of plaque/calculus and biofilms. Several denture cleaning methods are clinically used to reduce plaque and biofilms and are generally divided into mechanical and chemical techniques. Mechanical methods include the use of toothbrushes, nail-brushes, magnetic stirrers, agitators, sonic vibrators, and ultrasonic cleansers.[13] The present study aimed to investigate the frequency of denture and denture cleansing habits and its association with denture stomatitis among removable denture wearers.

MATERIALS AND METHODS

This cross-sectional study was conducted among dental patients who visited for their dental treatment in different clinics of Karachi city between the period of January, 2019 to January, 2021. The ethical consent was taken from the private dental practitioners. The patients were also informed about the project and their consent was obtained prior to oral examination. A total of 102 patients wearing removable prosthesis were included in this study. The participants were also asked for filling of a questionnaire containing information like age, sex, occupation, type of denture, denture cleansing habits and techniques. The patients who refuse to give consent were excluded from the study. The data was recoded on Statistical Package for Social Sciences (SPSS) version 23. Different variables were also cross tabulated and p-value was set at 0.05.

RESULTS

Out of sample size of total 102patients, 59(57.8%) were males and 43(42.2%) females participated in the study.The mean age 58.77 and standard deviation SD±11.70. The minimum and maximum age recorded was 29 and 86 years and the male to female ratio was 1.37:1. Distribution of subjects according to the type of denture used is presented in Table 1. Data concerning the denture cleansing habits showed 79(77.5%) patients clean their dentures daily while 23(22.5%) did not clean their dentures on daily basis as shown in Table 2.Young elderly denture wearer maintained better frequency of cleaning as compared to older age group patients.

Table No.1: Distribution of subjects according to type of removable dentures

Types of Denture	n	%
Acrylic partial denture	39	38.2
Acrylic complete denture	46	45.1
Cast partial denture	15	14.7
Flexible denture	2	2.0
Total	102	100%

Table No. 2: Daily denture cleansing habit

Denture cleansing	n (%)
Yes	79(77.5%)
No	23(22.5%)

When data was collected about the method of denture cleansing, majority of patients claimed to maintain with water and this was the most familiar method reported in males 30(55.5%) and females 24(44.3%) for denture cleaning followed by tooth pasteand mouth wash. The use of denture cleansing tablets was the least common type used by both genders. An insignificant finding was observed when gender was cross-tabulated with type of denture cleansing method with a p-value .916 as shown in Table 3.

Another interesting fact that was investigated from patients was that, did their dentist explain the denture cleansing methods and its care at the time of denture insertion. 77(75.4%) of patients agreed that the dentist instructed about denture cleansing methods while 25(24.5%) said no (see figure1). In present study, denture stomatitis was also reported in both genders with a p-value of 0.612 as shown in Table 4.

Table No.3: The methods of denture cleansing

Gender	Types of denture cleansing methods						
	water	Tooth paste	Denture cleansing tablets	Soak in mouthwash	others	Don not clean	p-value
Male	30(55.5%)	6(54.5%)	2(66.6%)	4(80%)	4(66.6%)	13(56.5%)	.916
Females	24(44.4%)	5(45.4%)	1(33.3%)	1(20%)	2(33.3%)	10(43.4%)	
Total	54	11	3	5	6	23	

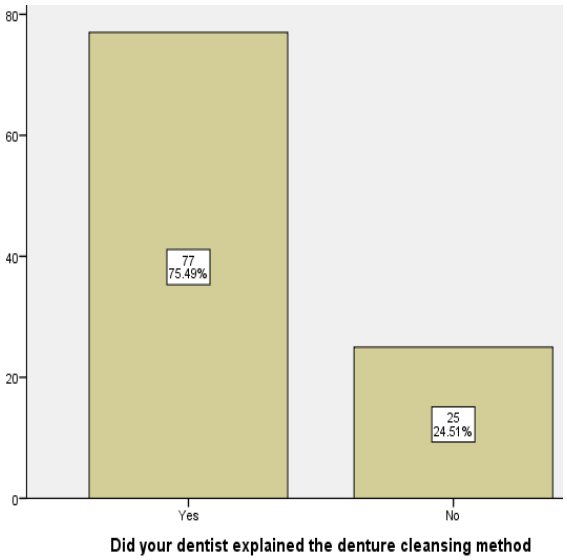

Figure No.1: Dentist explains the patient about denture cleansing methods.

Table No.4: Distribution of denture stomatitis according to gender.

Denture Stomatitis	Gender		Total	P-value
	Male	Female		.612
Present	7	5	12	
Absent	52	38	90	

DISCUSSION

Our study assessed the efficacy of numerous denture cleansing methods and showed water was the most preferred method for denture cleansing followed by tooth paste and mouthwash. Ashishtaru Saha conducted study in India showed most of the patients used water and brush for denture cleaning**.**[14] Another study by Patel and colleagues on complete denture wearer patient revealed that their patients used brushing as a mechanical method and greater number of patients used only water while brushing their dentures.[15] The chemical methods is also used for denture hygiene maintenance include soaking in a household solution (e.g., diluted sodium hypochlorite) or commercial solutions, and exposure to ozonated water or microwave radiation. Recent scientific developments indicated that micro-waving, ultraviolet C (UVC) light, and ozonated water can be effective in controlling infection. Arita et al suggested that ozonated water may be useful in reducing the number of Candida albicans on denture plates.[13]Cakan and coauthors in their study reported that brushing with toothpaste was the most adopted method of cleaning, followed by soaking and combination of both methods. This results finding was similar to Kulak-Ozkan colleagues study.[16]

Our study findings revealed that water was the principal method employed for cleansing dentures by an overwhelming majority. Application of toothpaste was the second most common method followed by soaking the denture in mouthwash. According to the data of the present study, denture cleansing tablets were the least preferred method of used by patients. This may be due to lack of knowledge and may be the instruction was not given to patients at the time of delivery of dentures. The results of the present study are similar to the findings of another local study conducted on edentulous patient at Rawalpindi that observed that most of the patients maintained denture hygiene with water only (50%). Whereas others used soap with tooth brush with water (22%) tooth paste, water and denture cleansing tablets (8%)**.**[17] A study conducted at Lahore in 2019 reported that most common method used was plain tap water by 100% subjects.[18] Other study by Peracini and colleagues observed in their sample size (58.49%) showed the most frequent method for denture cleaning was immersion in water**.**[19] Similar type of study by Cakan et al. conducted on denture hygiene among wearers of removable partial denture concluded brushing as the most regular method for cleaning followed by soaking in the solution**.**[6]Similarly, Barbosa et al. observed 71.3% subjects also used toothbrush along with water. Previous studies have shown that some of the denture wearer experience difficulties in cleaning their prosthesis on the other hand large scale of patients were wearing dirty dentures.[16,20]A survey was conducted in Nizamabad, India reported the older dentures were more dirtier than the newer ones and associated with a higher incidence of denture stomatitis.[20]Some cases of denture stomatitis were also found in present study. Our study findings are in accordance with Indian study.[20]

When asked from patients regarding instruction given by the clinicians. In present study, 77(75.49%) of subjects were given verbal instructions about cleaning of dentures, while 25(24.51%) said no instructions were provided by the dentist. A local study by Mushtaq et al. reported that 57.3% denture wearing patients were provided instructions and 42.7% did not receive any type of instruction from the dentist,[18] This finding are in accordance with our present study. Another study on Brazilian dental patients, 77.5 % declared that they had not given any type of instructions regarding the denture cleaning and the rest of 22.9% instructed about cleaning of dentures.[21] The study by Hoad-red dick and colleagues states that they found significant majority (86.3%) of patients were provided verbal instructions about denture cleansing method.[22]

CONCLUSION

The current study concluded that majority of removable denture wearer did not clean their dentures and remaining natural teeth satisfactorily due to lack knowledge about denture cleansing methods. It is further recommended the clinician should instruct about the use of denture cleansing tablets/solution for denture hygiene maintenance in their routine clinical practice.

Author's Contribution:

Concept & Design of Study:	Sameer Quraeshi
Drafting:	Daud Mirza, Parveen Memon
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Final Approval of version:	Sameer Quraeshi

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Moosazadeh M, Akbari M, Tabrizi R, et al. Denture Stomatitis and Candida Albicans in Iranian Population: A Systematic Review and Meta-Analysis. J Dent (Shiraz) 2016;17(3 Suppl):283-292.
2. Gendreau L, Loewy ZG. Epidemiology and etiology of denture stomatitis. J Prosthodont 2011; 20: 251–260.
3. Scully C, Porter S. ABC of oral health. Swellings and red, white, and pigmented lesions. BMJ 2000;321:225–228.
4. Naik AV, Pai RC. Study of emotional effects of tooth loss in an aging north Indian community. ISRN Dent 2011;2011:395498.
5. Dogan BG, Gökalp S. Tooth loss and edentulism in the Turkish elderly. Arch Gerontol Geriatr 2012;54:e162-6.
6. Cakan U, Yuzbasioglu E, Kurt H, Kara HB, Turunç R, Akbulut A, Aydin KC. Assessment of hygiene habits and attitudes among removable partial denture wearers in a university hospital. Niger J Clin Pract 2015;18:511-5.
7. Nishi Y, Seto K, Kamashita Y, Take C, Kurono A, Nagaoka E. Examination of denture-cleaning methods based on the quantity of microorganisms adhering to a denture. Gerodontol 2012;29: e259-66.
8. Takamiya AS, Monteiro DR, Barão VA, Pero AC, Compagnoni MA, Barbosa DB. Complete denture hygiene and nocturnal wearing habits among patients attending the Prosthodontic Department in a Dental University in Brazil. Gerodontol 2011;28:91.
9. Shay K. Denture hygiene: a review and update. J Contemp Dent Pract 2000;15:28–41.
10. Andrucioli MCD, Macedo LD, Panzeri H. Comparison of two cleansing pastes for the removal of biofilm from dentures and palatal lesions inpatients with atrophic chronic candidiasis. Braz Dent J 2004;15: 220–224.
11. Paranhos HF, Silva-Lovato CH, Souza RF. Effects of mechanical and chemical methods ondenture biofilm accumulation. J Oral Rehabil 2007;34: 606–612.18.
12. Tarbet WJ, Axelrod S, Minkoff S. Denturecleansing: a comparison of two methods. J Prosthet Dent 1984;51:322–325.
13. Arita M, Nagayoshi M, Fukuizumi T, Okinaga T, Masumi S, Morikawa M, et al. Microbicidal efficacy of ozonated water against Candida albicans adhering to acrylic denture plates. Oral Microbiol Immunol 2005;20(4):206-10.
14. Saha A, Dutta S, Varghese RK, Kharsan V, Agrawal A. A survey assessing modes of maintaining denture hygiene among elderly patients. J Int Soc Prev Community Dent 2014;4(3):145-148.
15. 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.
16. Kulak-Ozkan Y, Kazazoglu E, Arikan A. Oral hygiene habits, denture cleanliness, presence of yeasts and stomatitis in elderly people. J Oral Rehabil 2002;29:300-4.
17. Azad AA, Butt MM, Ahmed A, Malik SA. Denture hygiene habits among edentulous patients seen at Armed Forces Institute of Dentistry, Rawalpindi. Pak Oral Dent J 2015;35(4):735-737.
18. Mushtaq MA, Altaf J, Sheikh MA, Khan MWU, Shah AA. Assessment of knowledge and practices about denture hygiene among complete denture wearers in Lahore City. J Pak Dent Assoc 2019;28(4):187-191.
19. 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.
20. 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;5:275-80
21. Marchini L, Tamashiro E, Nascimento DF, Cunha VP. Self-reported denture hygiene of a sample of edentulous attendees at a University dental clinic and the relationship to the condition of the oral tissues. Gerodontol 2004;21:226-8.
22. Hoad-Reddick G, Grant AA, Griffiths CS. Investigation into the cleanliness of dentures in an elderly population. J Prosthet Dent 1990 ;64:48-52.