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Research Article

Comparative Effectiveness of Commercially Available Denture Cleansers on Oral Flora in Complete Denture Wearers

Safa Nawaz[1], Rafia shah[2], Aamir Syed[3], Mehwish Shoro[4], Muzamal Maqsood Butt[5], Sheema Shakir[6*]
[1]Assistant Professor, Department of Prosthodontics, Dental Section, Ayub Medical College, Abbottabad, Pakistan.
[2]Lecturer, Department of Periodontology, Institute of Dentistry, LUMHS. Jamshoro, Pakistan.
[3]Assistant professor, Department of Prosthodontics, Dental Section, Abbottabad International Medical Institute, Abbottabad, Pakistan.
[4]Assistant Professor, Department of Prosthodontics, Institute of Dentistry, LUMHS. Jamshoro, Pakistan.
[5]HOD, Department of Prosthodontics, CIMS Dental College, Multan, Pakistan.
[6*]Assistant professor, Department of Prosthodontics, Khyber College of Dentistry, Peshawar.
Email: [1]safanawaz83@gmail.com, [2]Rafia.shah@lumhs.edu.pk, [3]aamirsyed5868@gmail.com, [4]wishumair@gmail.com, [5]Maqsoodmuzamalbutt@gmail.com, [6*]sheemashakir84@gmail.com
Corresponding Author: Sheema Shakir
Assistant professor, Department of Prosthodontics, Khyber College of Dentistry, Peshawar.
Email: sheemashakir84@gmail.com
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ABSTRACT
Objective: To determine and compare the effectiveness of different commercially available denture cleansers against oral flora in complete denture wearers.
Methodology: This randomized comparative clinical study was conducted at the Prosthodontics Department, Sardar Begum Dental College and Hospital, Peshawar, from April 2016 to October 2016. Microbiological analysis was performed at the Microbiology Laboratory of Khyber Medical College, Peshawar. Thirty complete denture wearers were randomly divided into five groups. Group A used tap water as control, Group B used sodium hypochlorite (0.02%), Group C used chlorhexidine gluconate (0.2%), Group D used white vinegar in 1:10 dilution with tap water, and Group E used Fitty Dent cleansing tablets. Saliva samples were collected at denture insertion and after two weeks of denture use. Colony forming units (CFUs) of microorganisms were assessed using microbiological culture techniques. Data were analyzed using SPSS version 17. Paired sample t-test and one-way ANOVA followed by Tukey's HSD test were applied. A p-value of <0.05 was considered statistically significant.
Results: All denture cleansers showed better effectiveness against oral flora compared to tap water. Sodium hypochlorite (0.02%) demonstrated the least bacterial and candidal growth among all groups. White vinegar and Fitty Dent tablets also showed effective reduction in microbial growth. Chlorhexidine gluconate demonstrated comparatively lesser effectiveness. The highest increase in Streptococcus and Staphylococcus colony counts was observed in the control group using tap water.
Conclusion: All tested denture cleansers were more effective than tap water in controlling oral microbial growth in complete denture wearers. Sodium hypochlorite (0.02%) was found to be the most effective denture cleanser, followed by white vinegar, Fitty Dent tablets, and chlorhexidine gluconate.

Keywords: Denture Cleansers, Oral Flora, Complete Denture Wearers, Sodium Hypochlorite, Candida Albicans, Chlorhexidine Gluconate.

INTRODUCTION

Wearing removable prostheses alters oral flora both quantitatively and qualitatively by increasing the total number of microorganisms and specific microbial species within the oral cavity. Increased numbers of streptococci, staphylococci, yeasts, lactobacilli, spirochetes, and anaerobic organisms have been reported among denture wearers. [1]

The oral cavity provides an ideal environment for microbial growth because of its moisture, neutral pH, and temperature range between 34°C and 36°C. The tissue surface of dentures acts as a protected habitat for microbial colonization and biofilm formation. [1-2] These microorganisms adhere to oral mucosa and denture surfaces, resulting in denture plaque accumulation that may lead to denture-related

stomatitis (DRS). Candida species, particularly *Candida albicans*, play a major role in the development of DRS.[4]

Poor denture hygiene may also allow colonization by non-oral pathogenic microorganisms including *Escherichia coli*, *Klebsiella* species, *Pseudomonas* species, and *Staphylococcus* species. These organisms may contribute to local and systemic infections, especially in elderly and immunocompromised individuals.[3]

Denture cleansing methods include mechanical brushing, chemical cleansing, or a combination of both. Chemical denture cleansers reduce disease-producing microorganisms through immersion in cleansing solutions. Commonly used denture cleansers include sodium hypochlorite, chlorhexidine gluconate, alkaline peroxide cleansers, enzymes, acids, and commercially available cleansing tablets.[5-9]

Sodium hypochlorite possesses both bactericidal and fungicidal properties but prolonged use may cause discoloration of acrylic dentures and corrosion of metal components. Chlorhexidine gluconate has broad-spectrum antimicrobial activity but may produce unpleasant taste and staining. White vinegar has antifungal properties because of its acidic nature and is inexpensive and easily available. Fitty Dent cleansing tablets contain sodium perborate that releases oxygen and assists in both chemical and mechanical cleansing.[5-6-7]

The present study was conducted to compare the effectiveness of different commercially available denture cleansers on oral flora in complete denture wearers.[2-17]

MATERIALS AND METHODS

This comparative clinical study was conducted at the Prosthodontics Department, Sardar Begum Dental College and Hospital, Peshawar, over a period of six months. Microbiological analysis was performed at the Microbiology Laboratory of Khyber Medical College, Peshawar.

A total of 30 patients wearing complete dentures were included in the study. Non-probability convenience sampling technique was used. Non-smokers and non-alcoholic patients wearing newly fabricated complete dentures in one or both arches were included. Patients with systemic diseases, recent antibiotic use, salivary gland pathology, or immunocompromised conditions were excluded.

Ethical approval was obtained from the institutional ethical committee, and written informed consent was obtained from all participants. Saliva samples were collected before denture insertion and after two weeks of functional denture use. Samples were cultured on Blood agar, Chocolate agar, MacConkey agar, and Sabouraud's dextrose agar for microbiological assessment. Gram staining and cytological examination were also performed.

Patients were randomly divided into five groups:

- Group A: Tap water (control)
- Group B: Sodium hypochlorite (0.02%)
- Group C: Chlorhexidine gluconate (0.2%)
- Group D: White vinegar (1:10 dilution)
- Group E: Fitty Dent cleansing tablets

All participants were instructed to clean dentures with a soft toothbrush and immerse them in their assigned cleansing solution daily for two weeks.

Colony forming units (CFUs) of microorganisms were recorded and analyzed. Data analysis was performed using SPSS version 17. Mean and standard deviation were calculated for continuous variables. Paired sample t-test and one-way ANOVA followed by Tukey's HSD test were used for statistical comparison. A p-value <0.05 was considered statistically significant.

RESULTS

In this study conducted on 30 patients, divided into five groups, each group having six patients, the age distribution was analyzed as follows. In group A (dentures with tap water) 01 patient was in age range 35-45 year, 02 patients were in age range 46-55 year, 02 patients were in age range 56-65 years and one patient was in age 66-75 year. Mean age was 55 years with standard deviation ± 8.049. In group B (0.02% sodium hypochlorite) 02 patients were in age range 46-55 year, 03 patients were in age range 56-65 years and one patient was in age 66-75 year. Mean age was 58 years with standard deviation ± 6.047. In group C (0.2% Chlorhexidine gluconate) 03 patients were in age range 46-55 year, 03 patients were in age range 56-65 years. Mean age was 55 years with standard deviation ± 6.493 In group D (white vinegar in 1:10 dilution with tap water) 02 patients were in age range 46-55 year, 03 patients were in age range 56-65 years and one patient was in age 66-75 year. Mean age was 56 years with standard deviation ± 7.607. In group E (Fitty Dent tablet) 02 patients were in age range 46-55 year, 02 patients were in age range 56-65 years and 02 patients were in age 66-75 year. Mean age was 58 years with standard deviation ± 7.874. (Figure. 01)

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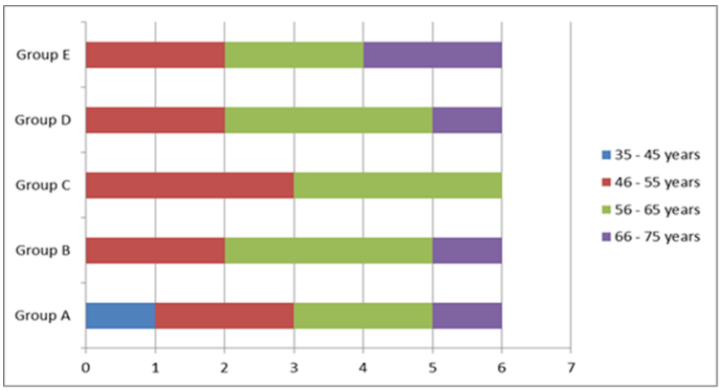

Figure 1: Age Distribution of Patients among Groups

Gender distribution among five groups was analyzed as in group A (dentures with tap water) 02 patients were male and 04 patients were female. In group B (0.02% Sodium hypochlorite) 05 patients were male and 01 patient was female. In group C (0.2%Chlorhixedine gluconate) 02 patients were male and 04 patients were female. In group D (white vinegar in 1:10 dilution with tap water) 05 patients were male and 01 patient was female while all the patients in group E (Fitty Dent tablet) were male. (Figure. 2)

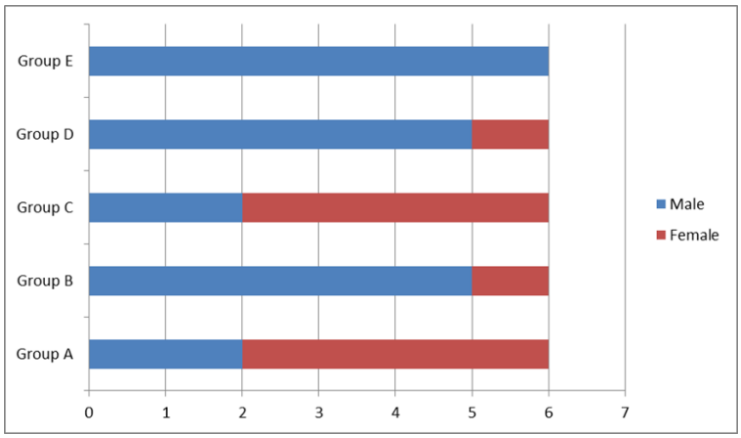

Figure 2: Gender Distribution among Groups

Difference of bacterial count (in no of colony forming units) among five groups was analyzed as in group A (dentures with tap water) Streptococcus had increased up to 35% (bacterial count was +26), Staphylococcus had increase up to 18% (bacterial count was +07), Veilonella had decrease up to 22% (bacterial count was -01), Neisseria had decrease up to 200% (bacterial count was -01), Candida albicans had increased up to 50% (candidal count was +02). No other bacteria were found in this group (Tables No 1 and 2; Figures no 3, 8- 12). In group B (0.02% sodium hypochlorite) Streptococcus had increased up to 05% (bacterial count was +03), Staphylococcus was decreased up to 05% (bacterial count was -02) while veilonella decreased up to 200% (bacterial count was -03). No other bacteria were found in this group (Tables no 1 and 2; Figures. 4, 8-12). In group C (0.2% Chlorhexidine gluconate) Streptococcus had increased up to 10% (bacterial count was +07), Staphylococcus was increased up to 8% (bacterial count was +03). No other bacteria were found in this group (Tables no 1 and 2; Figures. 5, 8-12). In group D (white vinegar in 1:10 dilution with tap water) Streptococcus had increased up to 11% (bacterial count was +07), Staphylococcus was decrease up to 02% (bacterial count was -01), Veilonella was decrease 200% (bacterial count was 0), Neisseria was decrease 200% (bacterial count was 0) and Candida albicans was decrease 200% (Candidal count was 0). No other bacteria were found in this group (Table no 1 and 2; Figures.6, 8-12). In group E (Fitty Dent tablet) Streptococcus had increased up to 6% (bacterial count was +04), Staphylococcus was decrease up to 2% (bacterial count was -01), Neisseria was decreased 200% (bacterial count was 0). No other bacteria were found in this group. (Table No 1 and 2; Figures. 7, 8-12).

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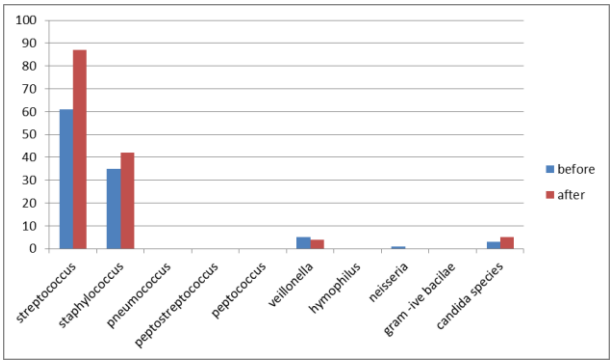

Figure 3: No of Cfus Before and After Using Denture Cleanser for Group A

TABLE NO 1. CFU'S OF MICRO ORGANISMS (Before and after using denture cleanser)

NO OF CFUs	Group A (n=6)		Group B (n=6)		Group C (n=6)		Group D (n=6)		Group E (n=6)	
	Before	After	Before	After	Before	after	Before	after	Before	After
Streptococcus	61	87	57	60	63	70	59	66	56	60
Staphylococcus	35	42	41	39	36	39	37	36	38	37
Pneumococcus	0	0	0	0	0	0	0	0	0	0
Pepto-streptococcus	0	0	0	0	0	0	0	0	0	0
Peptococcus	0	0	0	0	0	0	0	0	0	0
Veillonella	5	4	3	0	0	0	1	0	1	1
Hymophillus	0	0	0	0	0	0	0	0	0	0
Neisseria	1	0	0	0	0	0	1	0	1	0
Gram –ive Bacillae	0	0	0	0	0	0	0	0	0	0
Candida albicans	3	5	0	0	0	0	2	0	0	0

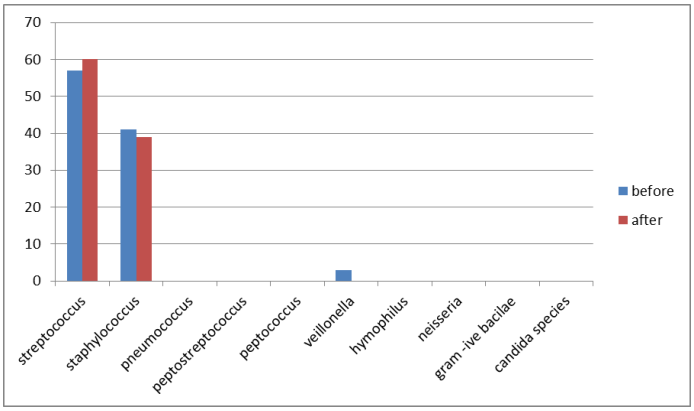

Figure 4: No of Cfus Before and After Using Denture Cleanser for Group B

Table No 2. Differences in No of Colony Forming Units

NO OF CFUs	Group A (n=6)		Group B (n=6)		Group C (n=6)		Group D (n=6)		Group E (n=6)	
	Difference	%	Difference	%	Difference	%	Difference	%	Difference	%
Streptococcus	+26	35%	+3	5%	+7	10 %	+7	11%	+4	6%
Staphylococcus	+7	18%	-2	5%	+3	8%	-1	2%	-1	2%

Pneumococcus	0	0	0	0	0	0	0	0	0	0
Pepto-streptococcus	0	0	0	0	0	0	0	0	0	0
Peptococcus	0	0	0	0	0	0	0	0	0	0
Veillonella	-1	22%	-3	200 %	0	0	-1	200 %	0	0
Hymophillus	0	0	0	0	0	0	0	0	0	0
Neisseria	-1	200 %	0	0	0	0	-1	200 %	-1	200 %
Gram –ive Bacillae	0	0	0	0	0	0	0	0	0	0
Candida albicans	+2	50%	0	0	0	0	-2	200 %	0	0

Highest percentage increase in no of CFUs of streptococcus species were found in group A (35 %), followed by group D (+11%), group C (+10%), group E (+6%) and group B showed the least percentage increase in no of CFUs of streptococcus species (5%), Table no 1 and 2.
Percentage increase or decrease in no of CFUs of staphylococcus species are given in Table no 2 and Figure 12. Group A show highest percentage increase in no of CFUs of staphylococcus species (+18%), followed by group C (+08%). Whereas, group B show highest percentage reduction in no of CFUs of staphylococcus species (-05%), followed by group D (-02%), and group E (-02%), respectively.
Pneumococcus, Pepto-streptococcus, Peptococcus, Hymophillus and Gram negative Bacilli were not found in any of the five groups. No of CFUs of Veilonella species decreased by 22 % in group A while 200 % in group B and group D. No CFUs were found for group C, and E (Table no 1 and 2).
CFUs of Neisseria species were decreased by 200 % in group A, D and E. No CFUs were found for group B and C (Table no 2). No of CFUs of Candida species increased by 50 % for group A, while it decreased by 200 % for group D. No CFUs were found for group B, C and E (Table no 2).

Our results show that all denture cleansers were more effective against oral flora as bacterial and candidal growth were the least in all four groups as compared to Tap water (control group). Sodium hypochlorite 0.02% was the most effective denture cleanser against streptococcus species, followed by Fitty dent tabs, 0.2% Chlorhexidine gluconate and white vinegar in 1:10 dilution. Against staphylococcus species, Sodium hypochlorite 0.02% was the most effective denture cleanser followed by white vinegar in 1:10 dilution, Fitty dent tabs and Chlorhexidine gluconate 0.2% was the least effective against staphylococcus species. So it was concluded that Sodium hypochlorite 0.02 % was the most effective denture cleansers, followed by white vinegar in 1:10 dilution, Fitty dent tabs and Chlorhexidine gluconate 0.2%.

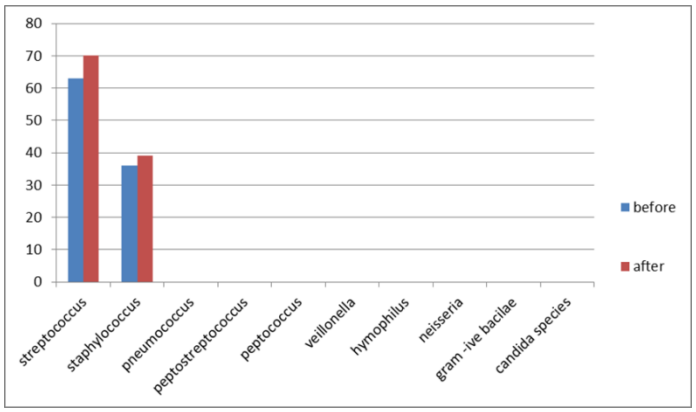

Figure 5: No of Cfus Before and After Using Denture Cleanser for Group C

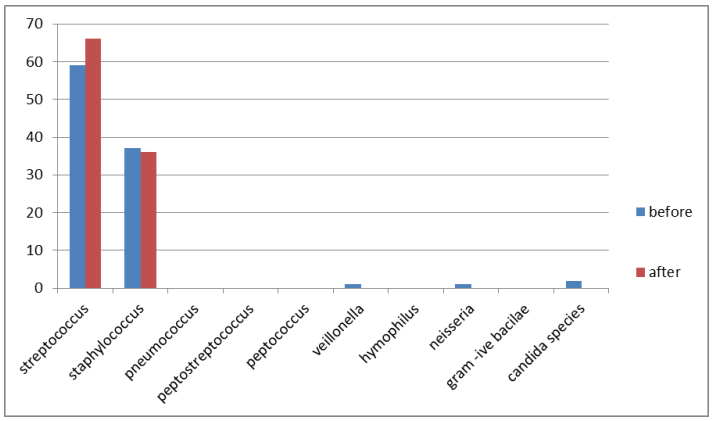

Figure 6: No of CFUS Before and After Using Denture Cleanser for Group D

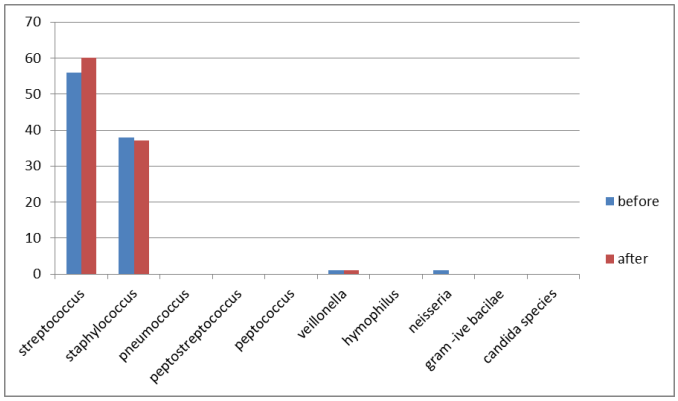

Figure 7: No of Cfus Before and After Using Denture Cleanser for Group E

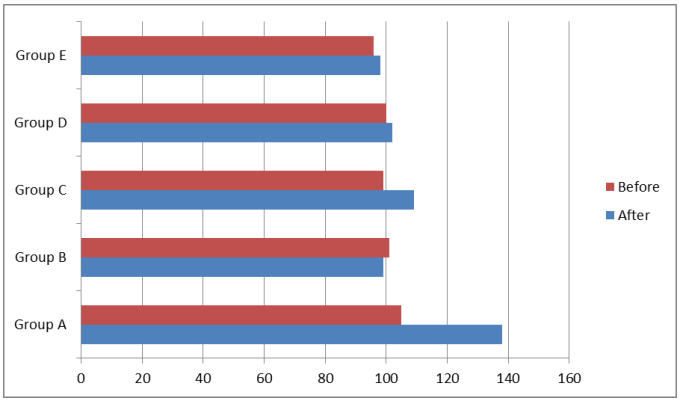

Figure 8: Total No of CFU's before and after for All Microorganisms among Groups

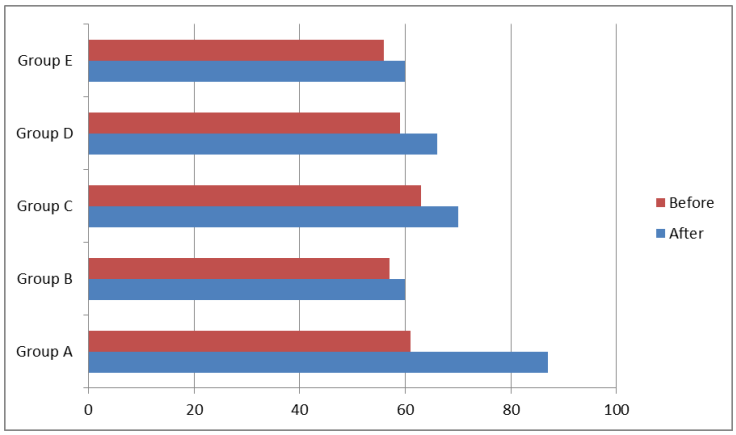

Figure 9: Cfus of Streptococcus before and After Among Groups

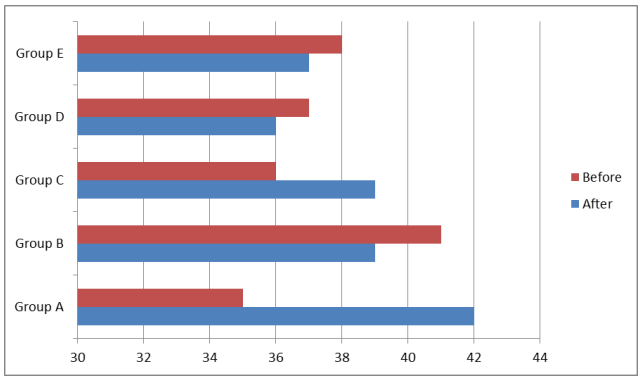

Figure 10: Cfus of Staphylococcus before and After Among Groups

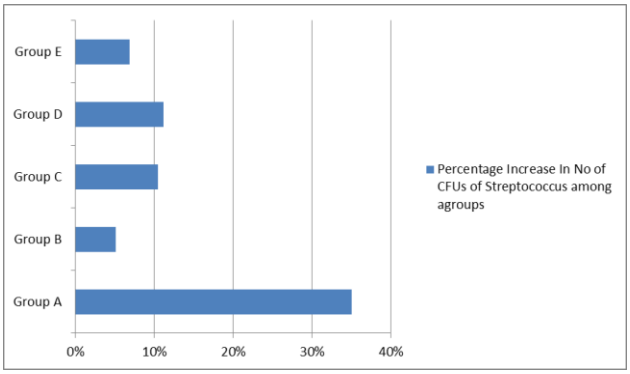

Figure 11: Percentage Increase in no of Cfus of Streptococcus Species among Groups

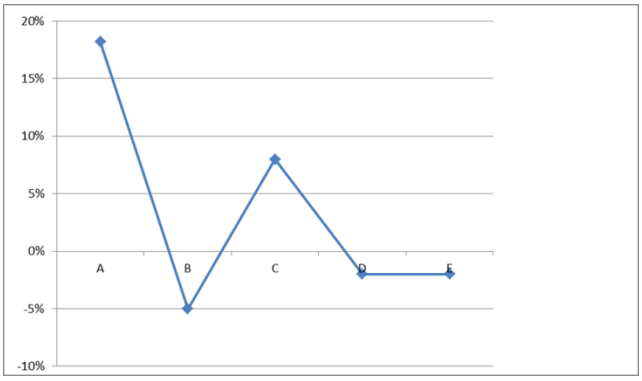

Figure 12: Percentage Increase or Decrease in no of Cfus of Staphylococcus Species among Groups

DISCUSSION

The present study evaluated the effectiveness of commercially available denture cleansers on oral flora in complete denture wearers. Results demonstrated that all denture cleansers were more effective than tap water in controlling microbial growth. Sodium hypochlorite (0.02%) showed the highest antimicrobial effectiveness among all tested cleansers.

These findings are consistent with previous studies that reported sodium hypochlorite as an effective denture disinfectant because of its strong bactericidal and fungicidal activity. Studies by Chethan et al. and Shah SN also reported superior antimicrobial activity of sodium hypochlorite compared to other denture cleansers.

White vinegar demonstrated good antimicrobial activity, particularly against Candida species. Its acidic nature may contribute to disruption of microbial cell walls and reduction in biofilm accumulation. Because vinegar is inexpensive and readily available, it may serve as a useful denture cleanser in low-resource settings.

Fitty Dent cleansing tablets also demonstrated satisfactory antimicrobial effectiveness. The oxygen-releasing action of sodium perborate contributes to both chemical and mechanical cleansing effects.

Chlorhexidine gluconate demonstrated antimicrobial activity but was less effective than sodium hypochlorite in the present study. Previous literature has also reported disadvantages of chlorhexidine including unpleasant taste and staining of dentures and oral tissues.

The study had certain limitations including small sample size, short observation period, and dependence on patient compliance. Furthermore, colony forming units were used for microbial assessment, which may have limitations in precise quantification of microorganisms.

CONCLUSION

All denture cleansers evaluated in this study were more effective than tap water in controlling oral microbial growth in complete denture wearers. Sodium hypochlorite (0.02%) demonstrated the greatest antimicrobial effectiveness and showed the least bacterial and candidal growth. White vinegar and Fitty Dent cleansing tablets also showed satisfactory results. Proper denture hygiene and use of effective denture cleansers may help reduce oral microbial colonization and denture-related complications in complete denture wearers.

REFERENCES

1. Al–Mobeireek A. Quantitative changes in oral flora before and after the insertion of removable prosthesis. Pak Oral Dent. J 2003; 23:51-6.
2. Tafti AF, Jafari AA and Lotfi MH. Comparison of the Effectiveness of Sodium Hypochlorite. and Dentamize Tablet for Denture Disinfection. World J Med Sci 2008; 3:10-4.
3. Vahedi G, Sharafi G, Vahedi A, Vahedi S,Mohajer T, Abbasi T. Role of denture-wearing on colonization and antifungal resistance of oral Candida albicans isolates in healthy people. J Mycology Research 2014; 1: 43-53.
4. Dandekeri S, Prasad D, Shetty M, Hegde C, Kumar SM, Kakunje MJ. Occurrence of Streptococcus and Candida Species and Salivary pH in Patients Wearing Complete Denture. Int J Health and Rehab Sci 2013; 2 :198-203. .
5. Chethan MD, Azhagarasan NS, Miglani S, Mohammed. HS, Prasad AH. Microbiological evaluation of the effectiveness of commercially available denture cleansing agents. Inl J Drug Dev& Research 2011; 3: 159-72.
6. Coulthwaite LA and Verran J. Potential pathogenic aspects of denture plaque: Review article. British J biomed sci.2007; 64:180-89.
7. Jafari AA, Tafti AF, Bafghi AF, Arzy B. The Comparison of Predominant Oral Micro-Flora in Subjects with and without Complete Denture Referred to Yazd Dentistry Department. J Community Health Research. 2014; 3:195-203.
8. Beyari MM. Tissue inflammatory response and salivary Streptococcus mutans count with three different denture cleansers. Afr J Microbiology Research 2011; 5: 965-74.
9. Zarb G, Hobkirk JA, Eckert SE and Jacob RF, editors. Prosthodontic treatment for edentulous patients.13th ed. St.Louis,Missouri: Elsevier Mosby 2013.
10. Pellizzaro D, Polyzois G, Machado AL, Giampaolo ET, Sanita PV andVrergani CE. Effectiveness of mechanical brushing with different denture cleansing agents in reducing in vitro Candida albicans biofilm viability. Braz Dent J 2012; 23: 547-54.
11. ZarbG, Hobkirk JA, Eckert SE and Jacob RF, editors. Prosthodontic treatment for edentulous patients.13th ed. St.Louis,Missouri: Elsevier Mosby 2013.
12. Jafari AA, Tafti AF, Kamran MHL and Zahraeii A. Vinegar as a removing agent of Candida albicans from acrylic resin plates. Jundishapur J Microbiol 2012; 5:388-92.
13. Davi LR, Felipucci DNB, de Souza RF, Bezzon OL, Silva CHL, Pagnano VO andParanhos HFO. Effect of denture cleaner on metal ions release and surface roughness of denture base materials. Braz Dent J 2012; 23:387-93.
14. Latteef SA, Kareem A. Changes in oral flora of newly edentulous patients, beforeand after complete dentures insertion. J Bagh College Dent 2012; 24; 65-9.
15. Coulter WA, Strawbridge JL and Clifford T. Denture Induced Changes in Palatal Plaque Microflora. Microbial ecology in health and disease 1990; 3: 77-85.
16. Abdul-Kareem SAL. Changes in oral flora of newly edentulous patients, before and after complete dentures insertion. J Bagh Coll Dentistry 2012; 24:65-69.
17. Jorgensen EB, Dr. Odont. Materials and methods for cleaning dentures. J Prosthet Dent 1979; 42: 619-623.
18. Gornitsky M. A clinical and microbiological evaluation of denture cleansers for geriatric patients in long – term care institutions. J Can Dent Asso 2002; 68: 39-45.
19. Sharp EW, Biol MI, Verran J. Denture cleansers and in vitro plaque. J Prosthet Dent 1985; 53: 584-585.

20. Gornitsky. A Clinical and Microbiological Evaluation of Denture Cleansers for Geriatric Patients in Long-Term Care Institutions. J Can Dent Assoc 2002;68(1):39-45
21. Bernabé W, Mendonça-Neto T, Pimenta FC, Pegoraro LF, Scolaro JM. Efficacy of sodium hypoclorite and coconut soap used as disinfecting agents in the reduction of denture stomatitis, Streptococcus mutans and Candida albicans. J Oral Rehabil 2004; 31(5):453-9.
22. Dillis SS. et al Comparison of the antimicrobial capability of an abrasive paste and chemical soak denture cleansers. J Prosthet Dent 1 988; 60: 467- 470.
23. Nikawa H. et al Cleaning efficacy of commercial denture cleanser: Ability to reduce Candida albicans biofilm activity. Int J Prosthodont. 1995; 8: 527-534.
24. Nikawa H. et al A review of in vitro and in vivo methods to evaluate the efficacy of denture cleansers. Int J Prosthodont. 1999; 12: 153-159.
25. Coelho CM, Sousa YT, Dare AM. Denture-related oral mucosal lesions in a Brazilian school of dentistry. J Oral Rehabil 2004; 31(2):135-9.
26. Kulak Y, Arikan A, Kazazoglu E. Existence of Candida albicans and microorganisms in denture stomatitis patients. J Oral Rehabil 1997; 24(10):788-90.
27. Mueller HJ, Greener EH. Characterization of some denture cleaners. J Prosthet Dent 1980; 43:491-6.
28. Anthony DH, Gibbons P. The nature and behavior of denture cleansers. J Prosthet Dent 1958; 8:796-810.
29. Yadav R, Yadav VS, Garg S, Mittal S, Garg R. Effectiveness of different denture cleansing methods on removal of biofilms formed in vivo. J Cranio Max Dis 2013; 2:22-7.
30. Gomes BP, Vianna ME, Matsumoto CU, Rossi Vde P, Zaia AA, Ferraz CC, et al. Disinfection of gutta-percha cones with chlorhexidine and sodium hypochlorite. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2005; 100:5127. .
31. McDonnell G, Russell AD. Antiseptics and disinfectants: Activity, action, and resistance. Clin Microbiol Rev1999; 12:147–79. [PMC free article] [PubMed].
32. Paranhos HF, Silva-Lovato CH, Souza RF, Cruz PC, Freitas KM, Peracini A. Effects of mechanical and chemical methods on denture biofilm accumulation. J Oral Rehabil 2007; 34:606-12.
33. Nikawa H, Hamada T, Yamamoto T. Denture plaque - past and recent concerns. J Dent 1998; 26:299-304.
34. Shay K. Denture hygiene: a review and update. J Contemp Dent Pract 2000;1:1-8.
35. Nikawa H, Hamada T, Yamashiro H, Kumagai H. A review of in vitro and in vivo methods to evaluate the efficacy of denture cleansers. Int J Prosthodont 1999; 12:153-9.
36. Souza RF, Freitas Oliveira Paranhos H, Lovato da Silva CH, Abu-Naba'a L, Fedorowicz Z, Gurgan CA. Interventions for cleaning dentures in adults. Cochrane Database Syst Rev 2009;7:CD007395.
37. Shah SN. ANTIFUNGAL ACTIVITY OF DENTURE CLEANSERS: A COMPARATIVE STUDY. Pak Oral Dental J 2015;35:540-45.
38. de Sousa Porta SR, de Lucena-Ferreira SC, da Silva WJ, Del Bel Cury AA. Evaluation of sodium hypochlorite as a denture cleanser: a clinical study. Gerodontology 2015 Dec; 32(4):260-6.
39. Kumar MN, Thippeswamy HM, Raghavendra Swamy KN, Gujjari AK. Efficacy of commercial and household denture cleansers against Candida albicans adherent to acrylic denture base resin: an in vitro study.Indian J Dent Res. 2012 Jan-Feb;23(1):39-42.
40. cleaners for their patients, prompting better oral wellbeing for individuals who wear false teeth.