



Comprehensive evaluation of outlook towards complete denture adhesives amongst general dental practitioners in northern Indian region; an original research study

Bavneet Kaur^{1*}, Kulbir Singh², Farha Naz³

¹⁻³ Post Graduate Student, Department of Prosthodontics, Shree Bankey Bihari Dental College and Research Centre, Ghaziabad, Uttar Pradesh, India

Abstract

Aim: The sole endeavor of this paper was to assess the approaches and outlooks of general dentists regarding denture adhesives.

Materials and Methods: A total of 50 general dental practitioners were evaluated in the city. The general dental practitioners were selected in the age range of 40-75 years. The intended methodologies were explained in detail to all general dental practitioners prior to the real implementation of the study. All interested general dental practitioners were included in the study. We have also attempted to explore the type and physical form of denture adhesive which is frequently used or advised by studied general dental practitioners. Preformed questionnaire were given to the willing dentists and asked for responses. It contained 7 items related to denture adhesive.

Statistical Analysis and Results: Fundamental statistical analysis was completed using SPSS statistical package for the Social Sciences version 21 for Windows. 89% dentists agree that they use powder type of denture adhesive for clinical sessions of denture fabrication. 86% dentists agree that they prescribe the denture adhesives to your patients when indicated. 52% dentists think that the use of dentures with incompletely removed old denture adhesives affect tissue health. 91% dentists think that prescribing denture adhesive indicates inadequate skills of the clinician to fabricate dentures. Also, powder form of denture adhesives is being used frequently by the studied dentists; unfortunately they did not have usage of Cream form for the same material.

Conclusion: It must be emphasized that denture adhesives can be considered as a beneficial adjunct to improve fit, comfort, and function of dentures, and psychological security of patients. Here in this study, the participating practitioners showed fair and positive outlook towards complete denture adhesives. However, the difference in the understanding and experience of the denture adhesives between general and specialized dental practitioners needs to be sought.

Keywords: survey, questionnaire, denture adhesives, private dentists

Introduction

Denture adhesives were introduced in dentistry in the late 18th century. The first patent related to adhesives was issued in 1913, followed in the 1920s and 1930s. Studies investigated that the retention of complete dentures has been improved by using denture adhesive. Although denture adhesives are found beneficial by a wide range of edentulous patients, dental professionals have been slow to accept them as a material to enhance denture retention, stability and function. Although clinical studies have not shown damaging effects of denture adhesives to tissues, many dentists think that denture adhesives could increase the resorption of alveolar ridge and cause soft tissue hyperplasia [1, 3]. Man, from time immemorial, has tried to increase the life span and enhance his health from various scientific innovations. With discoveries in medical sciences and improvements in his social conditions, the average life span now in most parts of the world continues to increase. Elderly consists of individuals with their ages nearing or surpassing the average life span of human beings [4]. Around the world approximately 600 million people are aged 60 years and over, and this number will double by 2025 and by the year 2050 it is projected to be 2 billion and 80 % of this population are living in developing countries. Oral disorders are chronic in nature and cumulative throughout life and hence unfavorable outcomes are likely to be greatest among the elderly. In the coming decades, dental practitioners will face the challenge

of providing dental care for a growing number of elderly who fail to retain their natural teeth. Current predictions suggests that over the next two decades there will be 4 % increase in the number of elderly and hence a corresponding increase in the number requiring prosthodontics rehabilitation [5, 8]. Improved oral health will allow elderly to improve their self-confidence and have active social contacts. Although some benefits of these materials are stated by many of patients, dentists assume it as the proof of their incompetency. Improvement of denture adaptation, talking, chewing, bite forces, maximum incisal force of maxillary denture, and self-confidence are some of the benefits of these materials. These materials are used in clinical steps of making dentures such as study base fixation, bite registration, and improve the accuracy of denture try in. Some disadvantages such as oral mucosal irritation, changes in occlusal relationships, increasing of vertical dimension, increasing of alveolar bone loss have been reported for denture adhesives, especially for insoluble ones although with no evidence [9, 10]. No longitudinal studies on tissue response to denture adhesives have been reported. Therefore, the sole endeavor of this paper was to genuinely assess the approaches and outlooks of general dentists regarding denture adhesives.

Materials and Methods

This study was completed on 50 general dental practitioners with age 40-75 years. Initially authors has screened and

selected total 100 general dental practitioners from the society association registry of Ghaziabad city. The contact details were obtained from there and general dental practitioners were contacted for the study execution. The general dental practitioners those willing to participate were filtered out. Finally, 50 dentists were selected to complete the study judiciously. A self-prepared questionnaire was prepared and given to the dentists for filling them. Out of 50 patients, 31 patients were male and 19 were female. All dentists were informed in detail about the study and written consent was obtained. The study contained 7 questioned related to denture adhesive. We have also attempted to explore the type and physical form of denture adhesive which is frequently used or advised by studied general dental practitioners (Figure 1 and 2). Author had finalized to conduct and complete our study on survey basis. Literature has well evidenced that survey based studies are extremely useful in obtaining detailed information regarding individual and group perceptions and attitudes. In addition, questionnaire based studies also offer a wider range of information with better intelligibility. Right before the execution of the study, author had explained the relative significance of this study to all participating dentists. The privacy and other interrelated rights of the dentists along with their freedom of expression were kept absolutely confidential. The recorded data was subjected to suitable statistical tests to obtain p values, mean and other statistical parameters. P values less than 0.05 was considered as significant.

Statistical Analysis and Results

All the recorded data were compiled in systematic manner and subjected to suitable statistical analysis using SPSS statistical package for the Social Sciences version 21 for Windows. Out of the total sample size of 50 dentists who participated in the study, 22 belonged to the age group of 40-50 years, 18 subjects were of 51-60 years of age, 7 were 61-70 years of age and 3 patients were of age 71-75 years. So we had divided the dentists into 4 different groups depending on their age range. P value was reported to be significant for it. Overall it had 31 male and 19 female subjects. (Refer Table 1-2 & Graph 1). 76% dentists agree that they use denture adhesives as a beneficial adjunct to stabilize trial bases in the early stages of denture fabrication when needed. Table 3 shows the questionnaire responses assessment with related statistical inferences. 89% dentists agree that they use powder type of denture adhesive for clinical sessions of denture fabrication. 86% dentists agree that they prescribe the denture adhesives to your patients when indicated. 52% dentists think

that the use of dentures with incompletely removed old denture adhesives affect tissue health. 91% dentists think that prescribing denture adhesive indicates inadequate skills of the clinician to fabricate dentures. 41% dentists think that the prolonged use of denture adhesives with ill-fitting dentures cause residual ridge resorption. The measured difference were significant 0.020 (p<0.05 significant). Table 4 illustrates the fundamental statistical description with level of significance evaluation using Pearson Chi-Square Test. Response evaluation and level of significance were noticed to be quite significant for question no 2, 3 and 5 (p<0.05 significant). Table 5 shows about the distribution of dentists in terms of their denture adhesive preferences. Here it is clear that powder form of denture adhesives are being used frequently by the studied dentists; unfortunately they did not have usage of Cream form for the same material.

Table 1: Dentists distribution according to gender: Statistical evaluation using student’s t-test

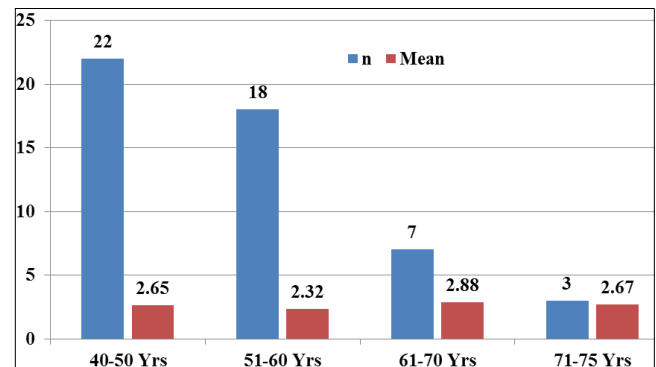
Student’s t-test				
Sex	Number [n]	Mean	SD	P value
Male	31	2.34	1.230	0.342
Female	19	2.76	1.342	

*p<0.05 significant

Table 2: Dentists distribution according to age groups: Evaluation of level of significance using anova test

Dentists distribution according to age groups					
Group	Age Range	n	Mean	SD	P value
I	40-50 Yrs	22	2.65	1.678	0.000* *Significant
II	51-60 Yrs	18	2.32	1.346	
III	61-70 Yrs	7	2.88	2.675	
IV	71-75 Yrs	3	2.67	2.454	

*p<0.05 significant



Graph 1: Age Range, ‘N’ and Mean Wise Distribution of Dentists

Table 3: Questionnaire responses assessment with related statistical inferences

Questionnaire	Variables	Responses of Practitioners [% Yes]	Responses of Practitioners [% No]	p Value
1	Do you use denture adhesives as a beneficial adjunct to stabilize trial bases in the early stages of denture fabrication when needed?	76%	24%	0.020*
2	Do you use powder type of denture adhesive for clinical sessions of denture fabrication?	89%	11%	
3	Do you prescribe the denture adhesives to your patients when indicated?	86%	14%	
4	Does the use of dentures with incompletely removed old denture adhesives affect tissue health?	52%	48%	
5	Can improper use of denture adhesives cause denture stomatitis?	31%	69%	
6	Does prolonged use of denture adhesives with ill-fitting dentures cause residual ridge resorption?	41%	59%	
7	Do you think that prescribing denture adhesive indicates inadequate skills of the clinician to fabricate dentures?	91%	9%	

*p<0.05 significant

Table 4: Fundamental statistical description with level of significance evaluation using “Pearson Chi-Square” Test

	Mean	Std. Deviation	Std. Error	95% CI	Pearson Chi-Square Value	df	Level of Significance (p value)
1	2.43	0.563	0.325	1.96	2.345	1.0	0.054
2	2.65	0.434	0.456	1.96	2.124	2.0	0.020*
3	2.76	1.346	0.877	1.96	2.786	1.0	0.010*
4	2.23	0.786	0.356	1.96	1.556	1.0	0.090
5	2.34	0.345	0.667	1.96	2.550	3.0	0.000*
6	1.66	0.577	0.345	1.96	2.463	1.0	0.465
7	1.38	0.664	0.896	1.96	1.231	1.0	0.321

*p<0.05 significant

Table 5: Distribution of dentists in terms of their denture adhesive preferences

No of Dentists [In %]	Powder [In %]	Cream [In %]	Makes no difference [In %]	Total
Dentists using Denture Adhesive in specialized practice	42%	8%	2%	100%
Dentist using Denture Adhesive in general practice	44%	3%	1%	



Fig 1: Two commonly used Denture Adhesive [Powder form]



Fig 2: Denture Adhesive Application [Cream form]

Discussion

Complete dentures constitute one of the most important treatment options in prosthodontics, more so with an increase in average life expectancy of the individual. Newly made dentures could be a disappointment to a patient if deficient in retention and/or stability and could contribute to a sense of social anxiety and lack of confidence in them [11, 12]. However, retention of complete dentures has always posed to be a problem for the dentist. The use of denture adhesives (DA) in complete dentures can be justified when it is not possible to obtain sufficient retention and stability and when implants or surgical ridge augmentation procedures are not an option because of the patient’s economic situation, systemic conditions, or age [13, 14]. Denture adhesives are found advantageous and satisfactory by a substantial proportion of edentulous patients in providing better retention of their

dentures; more comfortable when chewing and speaking with DA than without. In addition, many denture wearers utilize DA as an over-the-counter approach to improve retention and stability but the use of these products is not wholly endorsed by the dental profession. Due to increasing incidence of chronic residual ridge resorption and a consequent increase in unstable dentures because of prolongation of human life period, denture adhesives may be an effective adjunct to denture treatment and denture aftercare. Denture adhesives have a legitimate place in prosthetic dental treatment [15, 16]. Denture adhesives benefit denture patients with improved fit, comfort, chewing ability and confidence if used properly. However, dentists are reluctant to prescribe them for fear that it indicates their failure to provide an adequate denture. Actually the use of denture adhesives and their role in prosthodontics has been a conflicted topic, both in clinical practice and dental education [17, 18]. This conflicting viewpoint of dental professionals can be described as the traditional historical approach and the advocate approach. Recent studies responded to questions about satisfaction with denture adhesives and retention of complete dentures which demonstrated subjective improvement when using a denture adhesive [19, 21]. Denture adhesives are found advantageous by a substantial proportion of edentulous patients but dental professionals have been slow to accept them as a means to enhance denture retention, stability and function. Despite considerable documentation advocating patients’ use of adhesives, many dentists view adhesive usage as poor reflection of their clinical skills and prosthetic expertise or their failure to provide an adequate prosthesis [22]. Although clinical trials failed to show damaging effects of denture adhesives to maxillary tissues, many dentists also fear that denture adhesives are causing increased alveolar ridge resorption and soft tissue hyperplasia. Certainly, patients who continue to wear ill-fitting dentures may misuse denture adhesives. However, it is also valid for patients who continue to function with ill-fitting dentures without using adhesives [23]. There is more or less restraining attitude of the profession towards denture adhesives but it was shown that substantial proportions of denture wearers (7–33%) had tried denture adhesives or were currently regular users.

Conclusion

Here in this study, the participating practitioners showed fair and positive outlook towards complete denture adhesives. However, the difference in the understanding and experience of the denture adhesives between general and specialized dental dentists needs to be sought. Additionally, it must be

emphasized that denture adhesives can be considered as a beneficial adjunct to improve fit, comfort, and function of dentures, and psychological security of patients. We can also state that denture adhesives are being used frequently by the studied dentists; unfortunately they did not have sufficient knowledge regarding the material.

References

1. Fakhri H, Fayaz A, Faramarzi F, Javaheri HH. The knowledge and attitude of general dentists toward denture adhesives in Tehran. *Indian J Dent Res.* 2009; 20:164-8.
2. Mañes JF, Selva EJ, De-Barutell A, Bouazza K. Comparison of the retention strengths of three complete denture adhesives: An in vivo study. *Med Oral Patol Oral Cir Bucal.* 2011; 16:e132-6.
3. Chowdhry P, Phukela SS, Patil R, Yadav H. A study to evaluate the retentive ability of different denture adhesive materials: An in vitro study. *J Indian Prosthodont Soc.* 2010; 10:176-81.
4. Kurt H, Karayazgan B, Tuncer N. Patient satisfaction with denture adhesives used in complete dentures. *Turk J Geriatr.* 2011; 14:440-8.
5. Coates AJ. Usage of denture adhesives. *J Dent.* 2000; 28:137-40.
6. Carolina A, Gustava A, Santana L, Perin A, Alonso A, Antonio M. Subjective assessment of adhesives usage by complete denture wearers in a Brazilian population. *Rev Odontol UNESP.* 2012; 41:38-42.
7. Fujimori T, Hirano S, Hayakawa I. Effects of a denture adhesive on masticatory functions for complete denture wearers – Consideration for the condition of denture-bearing tissues. *J Med Dent Sci.* 2002; 49:151-6.
8. Koronis S, Pizatos E, Polyzois G, Lagouvardos P. Clinical evaluation of three denture cushion adhesives by complete denture wearers. *Gerodontology.* 2012; 29:e161-9.
9. Olshan AM, Ross NM, Mankodi S, Melita S. A modified Kapur scale for evaluating denture retention and stability: Methodology study. *Am J Dent.* 1992; 5:88-90.
10. Psillakis JJ, Wright RF, Grbic JT, Lamster IB. In practice evaluation of a denture adhesive using a gnathometer. *J Prosthodont.* 2004; 13:244-50.
11. Munoz CA, Gendreau L, Shanga G, Magnuszewski T, Fernandez P, Durocher J. *et al.* A clinical study to evaluate denture adhesive use in well-fitting dentures. *J Prosthodont.* 2012; 21:123-9.
12. Winkler S. *Essentials of Complete Denture Prosthodontic.* 3rd ed. India: AITBS Publishers, 2013.
13. Tarib NA, Baker MT, Murat MD, Ahmad M, Kamarudin KH. Masticatory efficacy and bite force in complete dentures: A study of denture adhesive. *Hong Kong Dent J.* 2010; 7:67-73.
14. Hasegawa S, Sekita T, Hayakawa I. Effect of denture adhesive on stability of complete dentures and the masticatory function. *J Med Dent Sci.* 2003; 50:239-47.
15. Rendell JK, Gay T, Grasso JE, Baker RA, Winston JL. The effect of denture adhesive on mandibular movement during chewing. *J Am Dent Assoc.* 2000; 131:981-6.
16. Nicolas E, Veyrone JL, Lassauzay C. A six-month assessment of oral health-related quality of life of complete denture wearers using denture adhesive: A pilot study. *J Prosthodont.* 2010; 19:443-8.
17. Papadiochou S, Emmanouil I, Papadiochos I. Denture adhesives: A systematic review. *J Prosthet Dent.* 2015; 113:391-7.
18. New guidelines published for denture adhesives. *Br Dent J.* 2017; 5:7-9.
19. Shekar S, Mittal S, Kalra N. Denture Adhesives - A Literature Review. *Dentistry.* 2016; 6:364-9.
20. Bajania D, Lagdive S, Shah R. A comparative analysis of the effect of three types of denture adhesives on the retention of maxillary denture bases: an in vivo study. *Int J Recent Scientific Res.* 2019; 10:92-6.
21. Ibraheem EMA, Elsisy AME. Comparing the effect of three denture adhesives on the retention of mandibular complete dentures for diabetic patients (randomized clinical trial). *Bull Natl Res Cent.* 2019; 43:24-31.
22. Mascolo A. Clinical and Patient Satisfaction Evaluation of an Organic Olive Oil-Based Denture Adhesive Cream, OlivaFix Gold, in Denture Wearers from 3 European Countries with Different Socio-Economical Characteristics. *EC Dental Science.* 2019; 18(9):2196-2205.
23. Shamsolketabi S, Nili M. The effect of denture adhesive on the efficiency of complete denture in patients with different alveolar ridges. *Dent Res J.* 2018; 15:271-5.