ORIGINAL ARTICLE

Knowledge, awareness, and attitude of dentists toward use of denture adhesives in Tamil Nadu: A questionnaire survey

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ABSTRACT

Dentists, especially the clinicians, struggle to achieve comfort, stability, and retention in removable dentures, which eliminates need of denture adhesives, and often prescribe denture adherents as an adjunct aid in denture aftercare. The aim of this study was to assess the knowledge, awareness, and attitude of dentists in Tamil Nadu toward use of denture adhesives in clinical practice. This survey was conducted among 150 dentists in Tamil Nadu, of which 128 dentists responded. The survey had 22 close-ended questions circulated through online forms. The data were collected, tabulated, and interpreted. Respondents were 24.2% general practitioners, 14.8% undergraduate students, 25.8% postgraduate students - prosthodontics, 30.5% other than prosthodontics, and 4.7% were prosthodontists. Awareness of usage of denture adhesives, 99.2% of the population responded positively and 1.6% respondents had no awareness. Majority of clinicians were not familiar with the toxic effects and thus a difference in recommendation was seen. The results of this survey conclude that knowledge and attitude of dentists in state of Tamil Nadu pertaining to use of denture adhesives as a retentive adjunct in denture fabrication is good overall, but depth of knowledge about its indication in clinical practice, toxicity, and complications needs some improvement.

Key words: Awareness, complete denture therapy, denture fixative, survey

INTRODUCTION

Loss of retention in denture is a common occurrence encountered by denture wearers.[1-4] Denture adhesive or fixative or adherent is defined as a material used to adhere a denture to the oral mucosa, thereby aiding in retention.[5] Previously, in many research studies, considerable documentation is seen which advocates patients to use adhesives, but many clinicians, especially prosthodontists, view its prescription as a reflection of their poor clinical skills.[6]

Denture adhesives also aid in psychological confidence in patients as it boosts the retention of dentures, especially in their social life.[7] Enormous amounts of denture adherents should never be recommended and standardized protocols are needed for the proper instructions of use and care.[8,9] Few studies evaluated the retention of denture adhesives using an intraoral transducer.[10-12]

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Denture adhesives are an add-on in denture fabrication, with roles in both construction and aftercare today.[13,14] Our research and knowledge have resulted in high-quality publications from our team.[15-29] The effectiveness of different types of denture adhesives, e.g., pastes and creams, have been researched upon using questionnaires in many clinical trials.[30,31] The purpose of this study was to assess the knowledge, awareness, and attitude of dentists in Tamil Nadu toward use of denture adhesives in clinical practice in Tamil Nadu.

MATERIALS AND METHODS

This survey was conducted for 2 months in 2020 (January–February) through an online indigenous questionnaire. The sample selection was made based on simple random sampling of about 150 dental clinicians. A total of 128 practitioners responded**.** The eligibility criteria included general practitioner, undergraduates, postgraduates, and prosthodontist. Response to the questionnaire by the participants of the study was considered as their implicit consent. The ethical approval for the study was obtained from the Institutional Review Board IHEC/SDC/PROSTHO/21/127.

The questionnaire was curated indigenously with 22 close-ended questions and distributed via virtual portals, among the study population, "Google Forms" [Table 1]. The collected responses were scrutinized for consistency, accuracy, validity, clarity, and competence and changes were performed. The statistical analysis was done using statistical software IBM® SPSS® version 22.0. Descriptive statistics and Chi-square test were done.

RESULTS

The current survey received total of 128 responses with males to females 8:17 [Table 1]. Their age ranged from 20 to 60 years (mean 34.6). Overall, 24.2% were general practitioners, 14.8% undergraduate students, 25.8% postgraduate students in prosthodontics, 30.5% postgraduate students in other fields, and 4.7% prosthodontists [Figure 1]. 99.2% of respondents knew about denture adhesives with 51.2% having enough information, 40.2% having little knowledge, 11.8% having lot of knowledge, and 1.6% no understanding. 35.7% of participants knew denture adhesives from educational seminars/workshops, 27% through postgraduate studies, 16.7% from commercial dental representatives, and 17.5% from advertising. Denture adhesives were used by 79.2% of clinicians.

Patients were recommended to use denture adhesives occasionally by 56.7%, regularly by 33.9%, and no recommendations by 15%. Participants advised powder denture adhesives by 80.3%, cream adhesives 28.3%, and adhesive strips 5.5%. Denture adhesives were

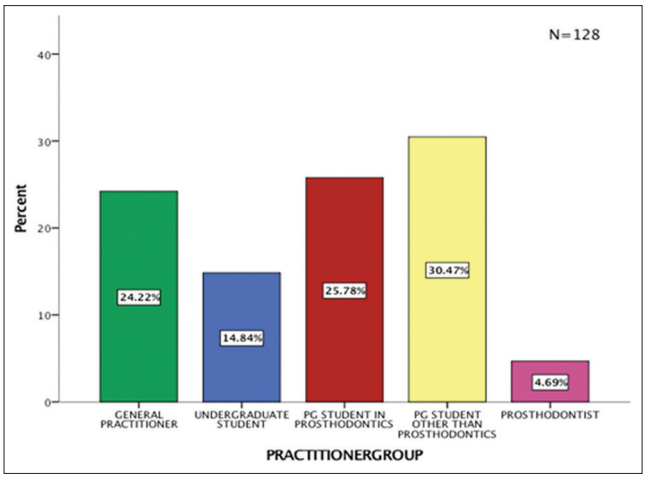

Figure 1: Practitioner groups involved in the survey

recommended by clinicians to old complete denture patients with compromised support 23.8%. It was recommended to dentures without any retention by 34.9% clinicians and 46 % recommended due to both reasons. 68.3% of clinicians recommended maximum of 1–3 months, 13.5% maximum of 6 months, and 20.6% continual use. 32% of clinicians suggested zinc-containing adhesives, 11.2% did not, and 60% had no opinion.

Removal of residues from the denture base, when replacing, was suggested by 79.2% and undecided by 16.8%. 81% of doctors gave a demonstration for applying and removing, 5.6% did not, and 18.3% did occasionally. Denture adhesives were recommended in new dentures to help patients acclimatize (41%), for better adjustment (51.6%), and for positive psychology (35.7%). Clinicians did not suggest the use of adhesives because they were unfamiliar in 48.2%, did not trust in effectiveness in 26.3%, and complications in 28.9%. Denture adhesives are not recommended in new dentures because 62.5% of doctors believe they mask manufacturing faults and 49.2% believe they negatively impair follow-up. 66.4% prefer re-lining, 36% prefer fabrication of new dentures, and 6.6% have additional reasons for not suggesting denture adhesives in unstable dentures. Denture adhesives were used by 27.8% of people in clinical stages of new denture, 22.2% during jaw connection, 23.8% during try-in, and 36.5% in both situations. Only 36.5% of those polled said they were aware of the dangers, while 65.1% had no idea.

Patients' concerns were 13.6% owing to cost, 20.3% efficacy, 59.3% taste, 26.3% adhesive strength, and 10.2% removal. Numbness was reported by 79.2% of respondents, followed by copper deficiency (13.9%), polyneuropathy (18.8%), and bone marrow failure (5.9%). According to physicians, 12.8% are not satisfied with the usage of denture adhesives, 81.6% are satisfied, and 6.4% are very satisfied. Patients were followed up on by 38% of physicians on a regular basis for proper adhesive use, whereas 36.5% not followed up at all,

Table 1: The description of responses of the questionnaire asked

Questions	Options	Respondents (%)
1. Which of the practitioner groups do you belong to?	Undergraduate student	15
	General practitioner	24.4
	PG student in prosthodontics	24.4
	PG student other than prosthodontics	31.5
	Prosthodontist	4.7
2. Are you aware of the use of denture adhesives?	Not at all	1.6
	Little	40.2
	Enough	51.2
	Much	11.8
3. Source of knowledge of denture adhesives?	Educational seminars/workshops	35.7
	PG studies	27
	Commercial dental representatives	16.7
	Advertising printed material	3.2
	Others	17.5
4. Do you use denture adhesives in your clinical practice?	Sometimes	79.2
	Often	21.6
	Always	1.6
5. Do you recommend the use of denture adhesive to your patients?	Yes	33.9
	No	15
	Occasionally	56.7
6. What type of denture adhesives do you recommend?	Cream/pastes	28.3
	Powder	80.3
	Adhesives strips	5.5
7. For whom do you recommend the use of denture adhesives? For patient's wearing	Old complete denture patient with problematic support	23.8
	Denture without any retention	34.9
	Both	46
8. For how long do you recommend the use of denture adhesives?	1-3 months maximum	68.3
	6 months maximum	13.5
	Continuously	20.6
9. Do you recommend not using denture adhesives containing zinc?	Yes	32
	No	11.2
	No opinion	60
10. When replacing denture adhesives do you recommend full removal of remnants from the denture base and mucous membrane?	Yes	79.2
	No	5.6
	No opinion	16.8
11. Do you give any demo and instructions for application and removal of denture adhesives to your patients?	Yes	81
	No	5.6
	Occasionally	18.3
12. Reasons for recommending use of denture adhesives in newly fabricated dentures?	Assist patient to adapt to new denture	46
	Better adjustment to new denture due to inadequate anatomy	51.6
	For positive psychology	35.7
13. Reasons for not recommending use of denture adhesives?	Not familiar	48.2
	Don't believe in their usefulness	26.3
	They create problems	28.9
14. Reasons for not recommending denture adhesives in newly fabricated dentures?	They mask processing errors	62.5
	Negatively affect follow-up	49.2
15. Reasons for not recommending denture adhesives in unstable dentures?	I prefer lining	66.4
	I prefer fabrication of new denture	36.1
	other	6.6

Contd...

Table 1: Contd...

Questions	Options	Respondents (%)
16. Do you use denture adhesives in clinical stages of new denture fabrication?	No	27.8
	Yes, only during JR	22.2
	Yes, only during try-in	23.8
	Both	36.5
17. What do you think are patient's complaints related to use of denture adhesives?	Cost	13.6
	Effectiveness	20.3
	Taste	59.3
	Degree of adhesive strength	26.3
	Removal	10.2
18. Which complications related to use of denture adhesives are you aware of?	Numbness	79.2
	Copper deficiency	13.9
	Polyneuropathy	18.8
	Bone marrow failure	5.9
20. How satisfied do you think your patients are with the use of denture adhesives?	Not at all	12.8
	Enough	81.6
	Very much	6.4
21. Do you have a follow-up regarding correct use of denture adhesive by patients at regular intervals?	Yes	38.1
	No	36.5
	Occasionally	29.4
22. Would you recommend use of denture adhesives in clinical practice to your colleagues?	Yes	44
	No	16.8
	Maybe	41.6

PG: Postgraduate, JR: Jaw Relation

and 29.4% followed up sometimes. Association of important questions on denture adhesives and their awareness among various practitioner groups was statistically depicted [Figures 2-6].

DISCUSSION

The present survey highlights the awareness of usage of denture adhesives, 99.2% of the population responded positively, 51.2% respondents had enough awareness, and only 1.6% respondents had no awareness. The highest source of the knowledge was found to be 35.7% from the educational seminars/workshops and 27% from postgraduate studies.

Denture adhesives come in a variety of forms, including paste, powder, and cream.[32] The participants advised that denture adhesives be powdered at a maximum of 80.3% and adhesive strips at a minimum of 5.5%. According to the results of a recent survey, practitioners feel that utilizing denture adhesives benefits patients by improving retentivity and stability and convenience, improving function, and delivering psychological support. Despite this fact, physicians in this poll concluded that denture inadequacies were hidden.

A review of the literature has shown that, except for the contraindication of its use in an ill-fitting prosthesis, there are no defensible positions against the use of denture adhesives.[33]

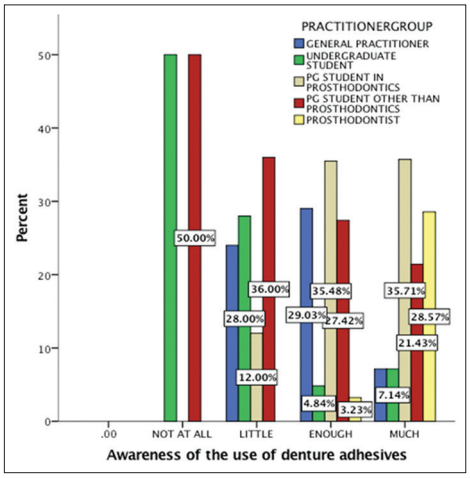

Figure 2: Frequency distribution of participants based on awareness on denture adhesives

The small sample size was one of the study's limitations. In addition, the current survey was done among a limited group of people, and the questionnaire was distributed to them. Thus, more studies involving a wider population should be done. The most realistic approach to this dilemma of usage of denture adhesive is for the clinician to analyze and identify the actual need and update on the current evidence. The clinician should be able to discuss openly with his patients the advantages and disadvantages, the utility, and the abuse of denture adhesives.

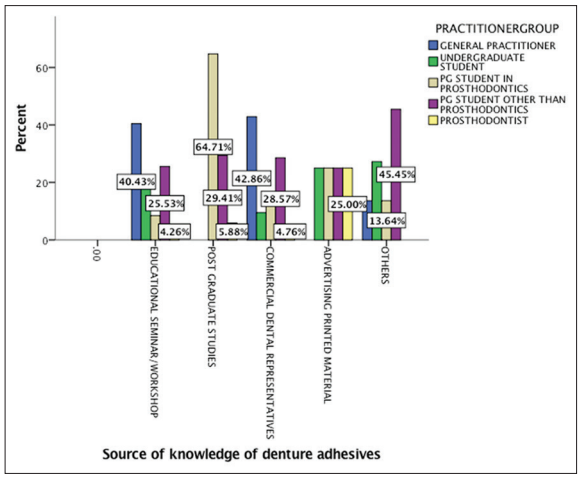

Figure 3: Awareness of use of denture adhesives among different practitioner groups

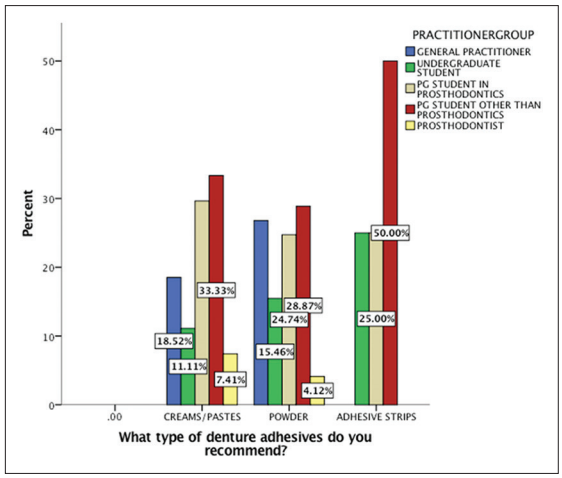

Figure 4: Association between recommendation of the use of denture adhesive to patients and the different practitioner groups

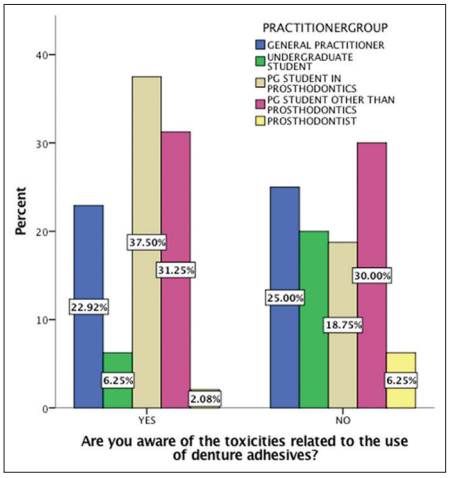

Figure 5: Association between awareness of toxicities related to denture adhesives and the different practitioner groups

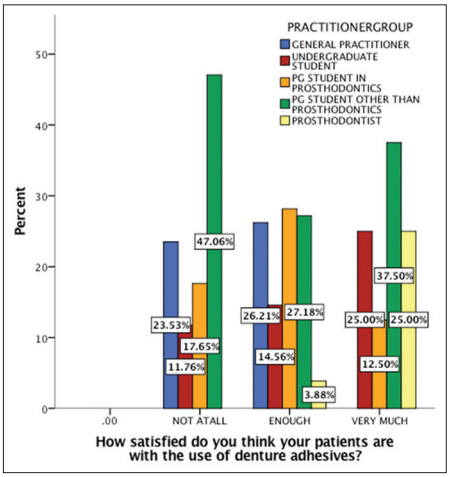

Figure 6: Bar graph depicts the association between satisfaction of patients with the use of denture adhesives according to different practitioner groups

CONCLUSION

The participants of this survey were generally optimistic about usage of denture adhesives in their clinical practice. Thus, within the limitations of the study, it was concluded that clinicians should not mask the denture deficiencies even though considering clinical advantages. Usage of denture adhesives should be on the advice of their dentists and should be instructed in its proper use and cautioned against misuse.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Şakar O. Current status on partial edentulism and removable partial dentures. InRemovable Partial Dentures. Springer, Cham; 2016. p. 3-8.
2. Ramakrishnan AN, Röhrle O, Ludtka C, Köhler J, Kiesow A, Schwan S. The role of denture adhesives on the oral health of partial denture wearers: A numerical study. Macromol Symp 2022;403:2100422.
3. Jablonski RY, Patel J, Morrow LA. Complete dentures: An update on clinical assessment and management: Part 2. Br Dent J 2018;225:933-9.
4. McCord JF, Grant AA. Identification of complete denture problems: A summary. Br Dent J 2000;189:128-34.
5. Ikemura N, Sato Y, Furuya J, Shimodaira O, Takeda K, Kakuta T,

et al. Changes in denture retention with denture adhesives and oral moisturizers for the oral cavity: an in vitro study. BMC Oral Health 2021;21:438.

6. Grasso JE. Denture adhesives: Changing attitudes. J Am Dent Assoc 1996;127:90-6.
7. Rajaraman V, Ariga P, Dhanraj M, Jain AR. Effect of edentulism on general health and quality of life. Drug Invent Today 2018;10:549-53.
8. Duqum I, Powers KA, Cooper L, Felton D. Denture adhesive use in complete dentures: Clinical recommendations and review of the literature. Gen Dent 2012;60:467-77.
9. Tarbet WJ, Boone M, Schmidt NF. Effect of a denture adhesive on complete denture dislodgement during mastication. J Prosthet Dent 1980;44:374-8.
10. Figueiral MH, Fonseca PA, Pereira-Leite C, Scully C. The effect of different adhesive materials on retention of maxillary complete dentures. Int J Prosthodont 2011;24:175-7.
11. Coates AJ. Usage of denture adhesives. J Dent 2000;28:137-40.
12. Kapur KK. A clinical evaluation of denture adhesives. J Prosthet Dent 1967;18:550-8.
13. Grasso JE. Denture adhesives. Dent Clin North Am 2004;48:721-33, vii.
14. Shigli K. Aftercare of the complete denture patient. J Prosthodont 2009;18:688-93.
15. Subramaniam N, Muthukrishnan A. Oral mucositis and microbial colonization in oral cancer patients undergoing radiotherapy and chemotherapy: A prospective analysis in a tertiary care dental hospital. J Investig Clin Dent 2019;10:e12454.
16. Kumar SP, GIRIJA AS, Priyadharsini JV. Targeting NM23-H1-mediated inhibition of tumour metastasis in viral hepatitis with bioactive compounds from *Ganoderma lucidum*: A computational study. Indian Journal of Pharmaceutical Sciences 2020;82:300-5.
17. Manickam A, Devarasan E, Manogaran G, Priyan MK, Varatharajan R, Hsu CH, *et al.* Score level based latent fingerprint enhancement and matching using SIFT feature. Multimed Tools Appl 2019;78:3065-85.
18. Ravindiran M, Praveenkumar C. Status review and the future prospects of CZTS based solar cell – A novel approach on the device structure and material modeling for CZTS based photovoltaic device. Renewable Sustainable Energy Rev 2018;94:317-29.
19. Vadivel JK, Govindarajan M, Somasundaram E, Muthukrishnan A. Mast cell expression in oral lichen planus: A systematic review. J Investig Clin Dent 2019;10:e12457.
20. Ma Y, Karunakaran T, Veeraraghavan VP, Mohan SK, Li S. Sesame inhibits cell proliferation and induces apoptosis through inhibition of STAT-3 translocation in thyroid cancer cell lines (FTC-133). Biotechnol Bioprocess Eng 2019;24:646-52.
21. Mathivadani V, Smiline AS, Priyadharsini JV. Targeting Epstein-Barr virus nuclear antigen 1 (EBNA-1) with Murraya koengii bio-compounds: An *in-silico* approach. Acta Virol 2020;64:93-9.
22. Happy A, Soumya M, Venkat Kumar S, Rajeshkumar S, Sheba RD, Lakshmi T, *et al.* Phyto-assisted synthesis of zinc oxide nanoparticles using *Cassia alata* and its antibacterial activity against *Escherichia coli*. Biochem Biophys Rep 2019;17:208-11.
23. Prathibha KM, Johnson P, Ganesh M, Subhashini AS. Evaluation of salivary profile among adult type 2 diabetes mellitus patients in South India. J Clin Diagn Res 2013;7:1592-5.
24. Paramasivam A, Vijayashree Priyadharsini J. Novel insights into m6A modification in circular RNA and implications for immunity. Cell Mol Immunol 2020;17:668-9.
25. Ponnanikajamideen M, Rajeshkumar S, Vanaja M, Annadurai G. *In vivo* type 2 diabetes and wound-healing effects of antioxidant gold nanoparticles synthesized using the insulin plant *Chamaecostus cuspidatus* in albino rats. Can J Diabetes 2019;43:82-9.e6.
26. Vijayashree Priyadharsini J, Smiline Girija AS, Paramasivam A. *In silico* analysis of virulence genes in an emerging dental pathogen *A. baumannii* and related species. Arch Oral Biol 2018;94:93-8.
27. Anita R, Paramasivam A, Priyadharsini JV, Chitra S. The m6A readers YTHDF1 and YTHDF3 aberrations associated with metastasis and predict poor prognosis in breast cancer patients. Am J Cancer Res 2020;10:2546-54.
28. Vigneshwaran S, Sundarakannan R, John KM, Joel Johnson RD, Prasath KA, Ajith S, *et al.* Recent advancement in the natural fiber polymer composites: A comprehensive review. J Clean Prod 2020;277:124109.
29. Nambi G, Kamal W, Es S, Joshi S, Trivedi P. Spinal manipulation plus laser therapy versus laser therapy alone in the treatment of chronic non-specific low back pain: A randomized controlled study. Eur J Phys Rehabil Med 2018;54:880-9.
30. Feller RP, Saunders MJ, Kohut BE. A clinical survey on the use of a new form of denture adhesive. Spec Care Dentist 1986;6:213-6.
31. Kulak Y, Ozcan M, Arikan A. Subjective assessment by patients of the efficiency of two denture adhesive pastes. J Prosthodont 2005;14:248-52.
32. Mendes J, Mendes JM, Barreiros P, Aroso C, Silva AS. Retention capacity of original denture adhesives and white brands for conventional complete dentures: An *in vitro* study. Polymers (Basel) 2022;14:1749.
33. 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.