



Knowledge, attitude and awareness about denture adhesives among dental under graduate students- a questionnaire study in Chengalpet district

R Pavithra¹, Shashanka Lalith², Krishnaveni², A T Nithyasree¹, V Priyadharshini¹

¹ Department of Prosthodontics, Karpaga Vinayaga Institute of Dental Sciences, Tamil Nadu, India

² Senior Lecturer, Department of Prosthodontics, Karpaga Vinayaga Institute of Dental Sciences, Tamil Nadu, India

Abstract

A demographic revolution is taking place all around the world as the percentage of elderly people is rising faster than that of any other age group. With an increase in the average lifespan of the patient, Complete dentures rank among the most significant treatment options in Prosthodontics. If a patient's newly created dentures lack stability or retention, it can lead to social anxiety and lack of confidence in them. Clinicians, frequently recommend denture adherents as a supplemental tool for denture aftercare because they find it difficult to establish comfort, stability and retention with removable dentures. It also support patients' psychological confidence by increasing denture retention, particularly in their social lives.

The aim of the study is to evaluate knowledge, attitude and awareness of Dental Under Graduate students about denture adhesives in clinical practice. The survey was conducted among 251 students in Karpaga Vinayaga institute of dental sciences. The survey had 15 questions which was circulated through online forms. The data were collected, tabulated and interpreted. The survey's findings indicate that while students have a generally good understanding of the use of denture adhesives as a retentive adjunct in denture fabrication, their depth of understanding regarding the adhesive's indication in clinical practice, toxicity, and complications still needs to be improved.

Keywords: Denture adhesives, awareness, knowledge, attitude, questionnaire

Introduction

Denture adhesives, commonly referred to as fixatives or adherents, are substances that are used to adhere and hold removable dentures in place within the area intended for denture bearing. Denture adhesives are used to achieve retention stability comfort of dental prosthesis. It demands special attention as denture Adhesives uses and its role in prosthodontics helps both patients and the dental profession [1]. They are available in variety of forms like powder, cream, adhesive glue, and adhesive seal.

Denture adhesives composed of three components namely components; One, basic adhesive substance such as methylcellulose, sodium carboxy methyl cellulose, hydroxyl methyl cellulose and/or synthetic polymers such as polyethylene oxide, acrylamides and polyvinyl-methylether maleic anhydride. Two, antimicrobial agents such as hexachlorophene, sodium borate, ethanol and sodium tetraborate. Three, preservatives, plasticizers, binding agents, humectants and flavoring agents such as oil of winter-green, oil of peppermint.

So the purpose of this study is to determine knowledge and awareness regarding usage and adverse effects of denture adhesives among Dental students through a questionnaire [3].

Materials and methods

Study population and ethical clearance

A Questionnaire study was conducted in Karpaga Vinayaga Institute of Dental Sciences students, Chengalpet District. Ethical committee has approved the proposal to start the study.

A group of 251 participants were enlisted to participate in this study. This study included 15 close-ended questions which took an average time of 5mins to complete all the questions.

Study sample

A Simple Random Sampling Method was used to collect the samples for the study. This study included only students of Third year, Final year and CRRI and excluded Second year and First year students. Participants were asked to respond all the questions in order to evaluate their Knowledge, Awareness and Attitude towards Denture Adhesives.

Questionnaires

The questionnaire was framed in google forms and circulated through online portals. The information gathered from the respondents through their filled-out questionnaires was kept confidential and anonymous.

The knowledge, attitude, and awareness of UG dental students studying in the Karpaga Vinayaga Institute of dental sciences using validated tools was the primary emphasis of our study. Demographic variables like age, gender, and level of education were assessed secondarily.

There were four sections to the survey: 1) questions about demographics and in-depth questions about the participants 2) knowledge about denture adhesives; 3) awareness towards denture adhesives; and 4) adverse effects of denture adhesives, complications and how to use them in dental practices.

The following questions were used for collecting information from the study subjects:

Section 1

Demographic data

Year of study- Third year/ Final year/ CRRI

Section 2: (Multiple choice questions): Awareness about denture adhesives

1. Do you know about the use of denture adhesives?	Yes	No
2. Have you used denture adhesives on patients?	Yes	No
3. Do u know the instructions for correct application and removal of adhesives on patients?	Yes	No
4. Was it difficult for the patients to clean the denture after denture adhesive had been applied?	Yes	No
5. Does properly fitted and maintained dentures not require the use of denture adhesives?	Yes	No

Section 3: Knowledge about denture adhesives

1. Denture adhesives are available in which forms?	Adhesive powder	Adhesive glue	Adhesive cream	Adhesive seal	All the above
2. How much duration does denture adhesives last?	12 hours	6 hours	8 hours	4 hours	
3. Main ingredients of denture adhesives	Gelatin	Sodium tetraborate	Hydroxylmethyl cellulose	All the above	
4. Which one of the following is true about denture adhesives?	Biocompatible, nontoxic and nonirritant.	Discourage microbial growth	Increase the comfort, retention and stability of the denture	All the above	
5. On which areas of maxillary denture, adhesives should be applied?	anterior alveolar ridge	The centre of the hard palate	Posterior palatal seal region	All the above	

Section 4: Adverse effects of denture adhesives

1. Adverse effects of Denture Adhesives	Neurological damage	Mouth ulcers	Inflammation	All the above	
2. Does patients using zinc containing denture adhesives cause permanent debilitating nerve damage?	Agree	Disagree	Strongly agree	Strongly disagree	Neutral
3. Stabilization of dentures in patients with hormonal changes and neuromuscular disorders such as myasthenia gravis, Parkinson’s and Alzheimer’s disease, etc., can be achieved with denture adhesives.	Agree	Disagree	Strongly agree	Strongly disagree	Neutral
4. Xerostomia in denture wearers either drug or radiotherapy induced can be alleviated with the use of denture adhesives.	Agree	Disagree	Strongly agree	Strongly disagree	Neutral
5. Prosthesis to rehabilitate gross maxillofacial defects requires denture adhesives for retention.	Agree	Disagree	Strongly agree	Strongly disagree	Neutral

Data collection

A questionnaire was curated indigenously with 15 close-ended questions and distributed via virtual portals, among the study population. “Google forms” was used to build the online questionnaire, and emails and various social media platforms were used to provide the link to the participants. Changes of the collected responses were made after carefully examining for validity, accuracy, consistency, clarity, and competence. Their answers were noted down. Three months were allotted to the data collection process.

Statistical analysis

After collection of data, they were transferred to Microsoft Excel. Results were statistically analysed using SPSS software (version 20) in terms of percentage.

Results

A questionnaire study done in Karpaga Vinayaga Institute of Dental sciences, Chengalpet regarding knowledge, attitude and awareness about Denture Adhesives among Dental UG students. In this study 252 students had participated in which 72 students were third year, 134 students were final year and 45 students were CRRI (Figure-1). The number of correct answers for each given questions were calculated and the percentage of correct answers for each questions were calculated for the entire study.

S.no	Questions	N (%)
1.	Year of study	
	Third year	112 (44.6)
	Final year	94 (37.5)
	CRRI	45 (17.9)

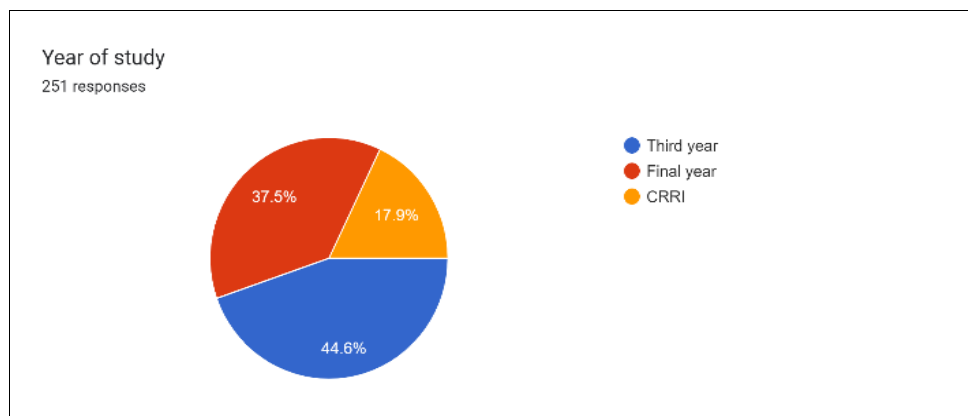


Fig 1: Showing Participant’s Year of study

In response to questions about Denture adhesives, 89.2% have known about the use of Denture Adhesives and 10.8% have not known about the usage of Denture Adhesives, 61.4% have used Denture adhesives and 38.6% have not used Denture Adhesives, 69.3% have known the instructions for correct application and removal of Denture Adhesives

on patients while 30.7% have not known. After application, removal of Denture Adhesives would be difficult was suggested by 64.5% and other 35.5% were not accepted. Properly fitted and maintained dentures does not require the use of Denture Adhesives was suggested by 71.3% and not suggested by 28.7% (Table-2).

Table 2

S.no	Questions	N (%)
1	Do you know about the use of Denture Adhesives?	
	a. Yes	224 (9.2)
	b. No	27 (10.8)
2	Have you ever used Denture Adhesives on patients?	
	a. Yes	154 (61.4)
	b. No	97 (38.6)
3	Do you know the instructions for correct application and removal of Adhesives on patients?	
	a. Yes	174 (69.3)
	b. No	77 (30.7)
4	Was it difficult for the patients to clean the denture after Denture Adhesive had been applied?	
	a. Yes	162 (64.5)
	b. No	89 (35.5)
5	Does properly fitted and maintained dentures not require the use of Denture Adhesives?	
	a. Yes	179 (71.3)
	b. No	72 (28.7)

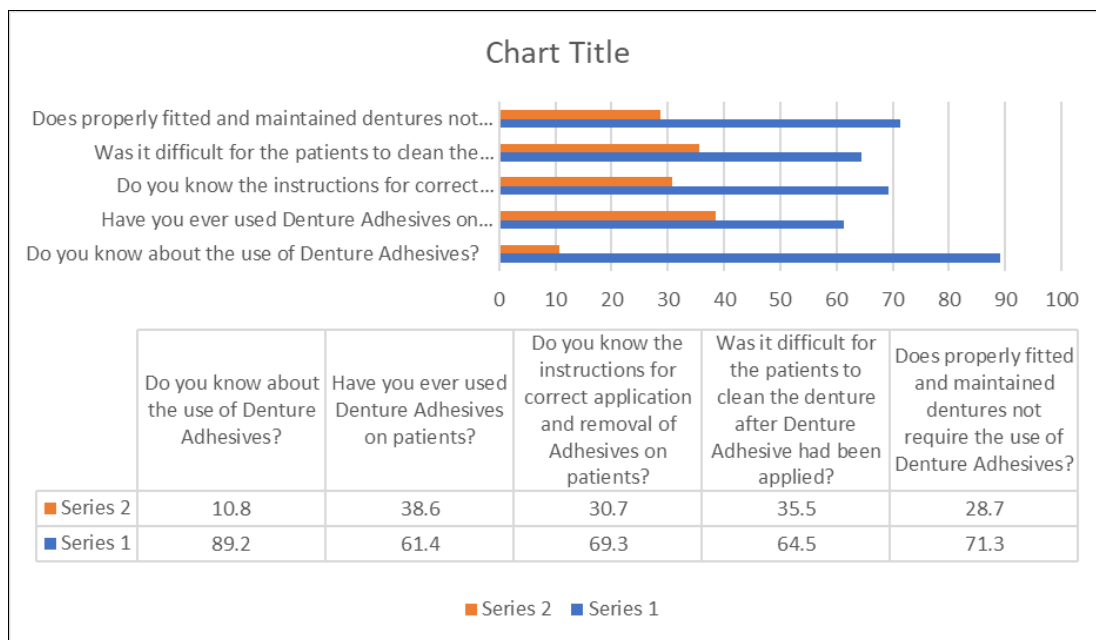


Fig 2: showing Participant’s Awareness about Denture Adhesives

The participants advised Denture adhesives are available as Adhesive cream by 0.8%, Adhesive glue by 4%, Adhesive powder by 17.9%, Adhesive seal by 1.6% and all the above at maximum of 75.7%. The duration of denture adhesives last for 12 hours suggested by 46.2%, 4 hours by 9.6%, 6 hours by 27.1% and 8 hours by 17.7%. Main ingredients of denture adhesives are gelatin by 6.8%, hydroxyl- methyl cellulose by 6% and sodium tetraborate by 3.6% and all the above at maximum of 83.7%. The properties of denture

Adhesives are biocompatible, non- toxic and non irritant by 9.2%, 4.4% said that it discourages microbial growth, it increases the comfort, stability and retention of denture suggested by 9.6% and 76.9% suggested all the above. Denture adhesives should be applied on maxillary dentures in the area of Anterior alveolar ridge suggested by 6%, posterior palatal seal by 4.8%, the centre of the hard palate by 13.1% and 76.1% suggested all the above (Figure-3).

S.no	Questions	N (%)
1	Denture adhesives are available in which form?	
	a. Adhesive cream	2 (0.8)
	b. Adhesive glue	10 (4.0)
	c. Adhesive powder	45 (17.9)
	d. Adhesive seal	41 (16.6)

	e. All the above	190 (75.7)
2	How much duration does denture adhesives last?	
	a. 12 hours	116 (46.2)
	b. 4 hours	24 (9.6)
	c. 6 hours	68 (27.1)
	d. 8 hours	43 (17.1)
3	Main ingredients of denture adhesives	
	a. Gelatin	17 (6.8)
	b. Hydroxyl-methyl cellulose	15 (6.0)
	c. Sodium tetraborate	9 (3.6)
	d. All the above	210 (83.7)
4	Which one of the following is true about denture adhesives?	
	a. Biocompatible, nontoxic and nonirritant.	23 (9.2)
	b. Discourage microbial growth	11 (4.4)
	c. Increase the comfort, retention and stability of the denture	24 (9.6)
	d. All the above	193 (76.9)
5	On which areas of maxillary denture, adhesives should be applied?	
	a. Anterior alveolar ridge	15 (6.0)
	b. Posterior palatal seal	12 (4.8)
	c. The centre of the hard palate	33 (13.1)
	d. All the above	191 (76.1)

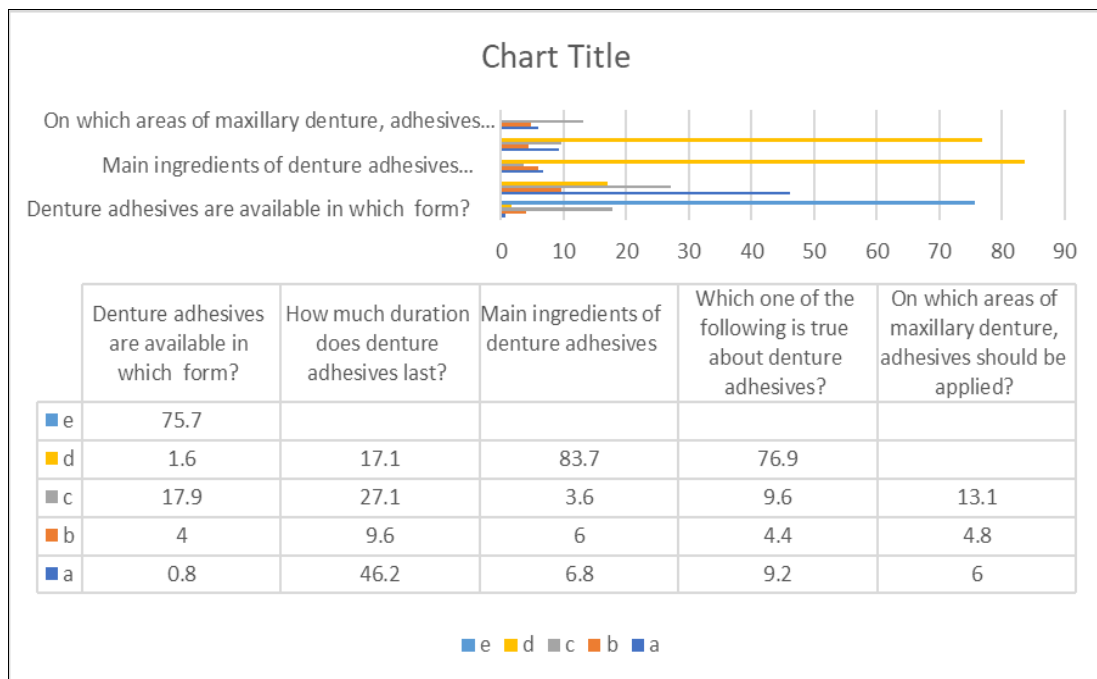


Fig 3: Showing Participant’s Knowledge about Denture Adhesives

Adverse effects of denture adhesives are inflammation said by 4% of the participants, mouth ulcer said by 19.1%, neurological damage said by 5.2%, and all the above by 71.7%. Patients using zinc containing adhesives may cause permanent debilitating nerve damage was agreed by maximum of 39% participants, strongly agreed by 10%, disagreed by 11.6%, strongly disagreed by 2% and 37.5% of participants were neutral. Stabilization of dentures in patients with hormonal changes and neuromuscular disorders such as myasthenia gravis, Parkinson’s and Alzheimer’s disease can be achieved with denture adhesives

agreed by 42.6% of participants, strongly agreed by 13.5%, disagreed by 10.4%, strongly disagreed by 2% and 31.5% of participants were neutral. Xerostomia in denture wearers either drug or radiotherapy induced can be alleviated with the use of denture adhesives agreed by 43.8%, strongly agreed by 13.5%, disagreed by 7.2%, strongly disagreed by 2% and 33.5% of participants were neutral. Participants to rehabilitate gross maxillofacial defects requires denture adhesives for retention agreed by 41%, disagreed by 9.6%, strongly agreed by 13.9%, strongly disagreed by 2.4% and 33.1% were neutral (Figure-4).

S.no	Questions	N (%)
1	Adverse effects of denture adhesives?	
	a. Inflammation	10 (4.0)
	b. Mouth ulcer	48 (19.1)
	c. Neurological damage	13 (5.2)
	d. All the above	180 (71.7)
2		

	Does patients using zinc containing denture adhesives cause permanent debilitating nerve damage?	
	a. Agree	98 (39.0)
	b. Disagree	29 (11.6)
	c. Neutral	94 (37.5)
	d. Strongly agree	25 (10.0)
	e. Strongly disagree	5 (2.0)
4	Stabilization of dentures in patients with hormonal changes and neuromuscular disorders such as myasthenia gravis, Parkinson’s and Alzheimer’s disease, etc., can be achieved with denture adhesives.	
	a. Agree	107 (42.6)
	b. Disagree	26 (10.4)
	c. Neutral	79 (31.5)
	d. Strongly agree	34 (13.5)
	e. Strongly disagree	5 (2.0)
5	Xerostomia in denture wearers either drug or radiotherapy induced can be alleviated with the use of denture adhesives	
	a. Agree	110 (43.8)
	b. Disagree	18 (7.2)
	c. Neutral	84 (33.5)
	d. Strongly agree	34 (13.5)
	e. Strongly disagree	5 (2.0)
6	Prosthesis to rehabilitate gross maxillofacial defects requires denture adhesives for retention.	
	a. Agree	103 (41.0)
	b. Disagree	24 (9.6)
	c. Neutral	83 (33.1)
	d. Strongly agree	35 (13.9)
	e. Strongly disagree	6 (2.4)

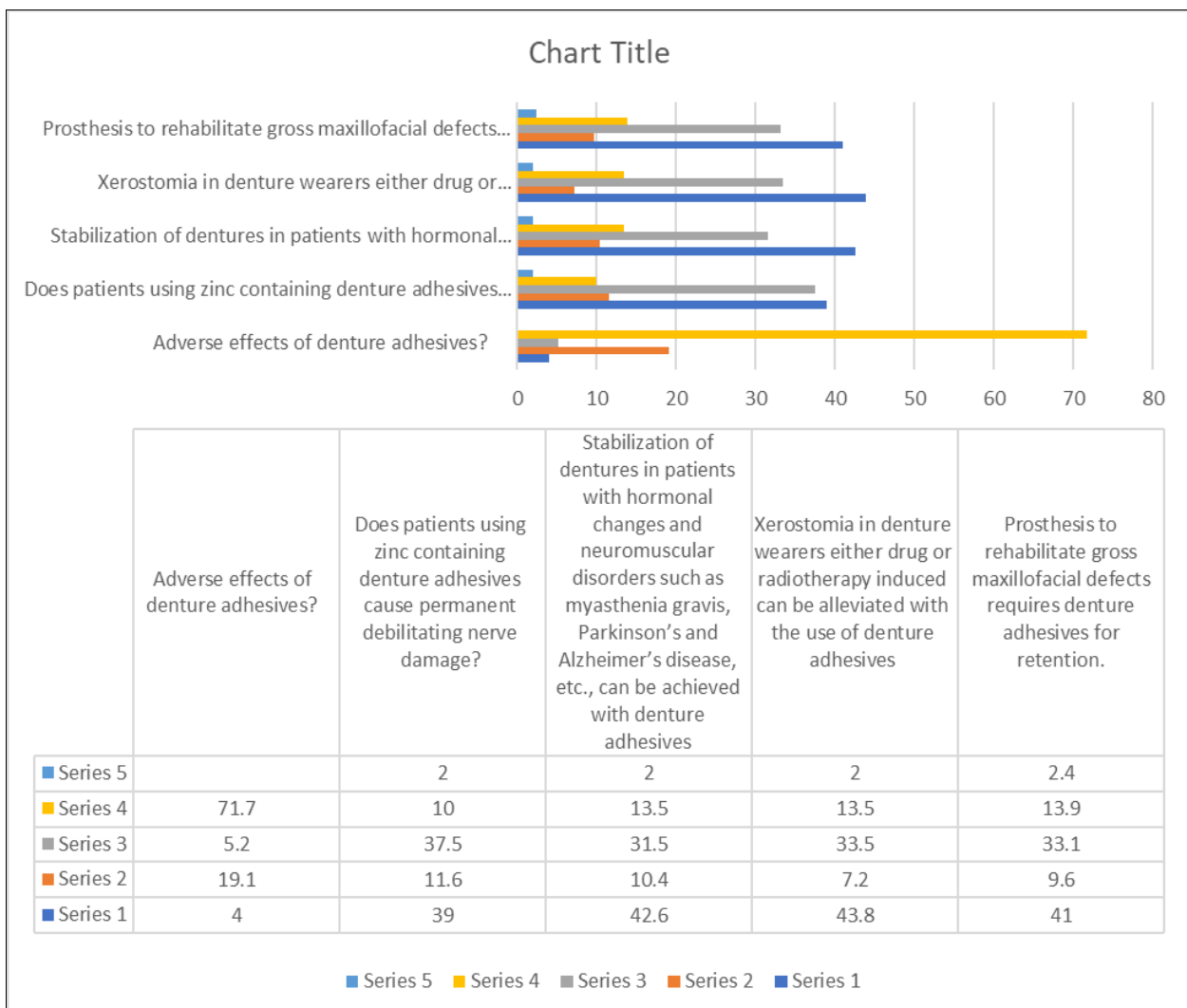


Fig 4: Showing Participant’s Awareness about Adverse effects of Denture Adhesives

Discussion

This survey aims to collect the student's knowledge about denture Adhesives which will help them tremendously when using it to provide counsel to patients who need it in their clinical practice. The primary goal of prescribing DA is to increase denture stability and retention, which will boost patients' self-esteem and comfort level when wearing dentures.²

Dentists still do not embrace denture adhesives on a global scale. This might be because dental professionals have relatively little knowledge of Denture Adhesives, only about 89.2% and remaining 10.8% lack knowledge irrespective of year of study because the subject is not given much weight in undergraduate or continuing dental education curricula. Dentists' understanding cannot be improved until these flaws are fixed. Since dentures are frequently used in the removable prosthetic care, only 69.3% have known the instructions for correct application and removal of denture adhesives and 30.7% have not known. So, dentists must be knowledgeable about Denture Adhesives in order to educate all denture wearers. Patients have to be assured that their dentist is knowledgeable and can provide them with reliable information^[4].

The dental community has recently become aware of concerning data regarding the long-term and excessive usage of zinc-containing dental amalgam that may result in neurotoxicity and when asked in survey it was agreed by 49% of participants and disagreed by 13.6%. Therefore, it is important to advise patients to consult a professional before taking these goods and to carefully follow any directions provided by the professional before using them.

The application of well-hydrated dental adhesive (DA) is beneficial for patients with xerostomia because it has a lubricating or cushioning effect, which lessens functional irritation to the supporting soft tissues and prevents denture stomatitis and ulcerations and it was only known and agreed by 57.3%.

Therefore, more research with a larger sample size has to be conducted. The clinician's analysis and identification of the true need and updating of the evidence is the most practical solution to this denture adhesive challenge. The dentist should be allowed to freely talk with his patients the benefits and drawbacks, the uses and misuses of denture adhesives. Overall, the current study succeeds in its goal of making a little dent in the previously unexplored area of the use, abuse, misunderstandings, and malpractice of Denture Adhesives among Dental UG students in Karpaga vinayaga Institute of dental sciences.

Conclusion

The majority of survey respondents expressed optimism over the use of denture adhesives in their clinical settings irrespective of year of study. The appropriate use of a DA can significantly affect a patient's comfort level and confidence in wearing the prostheses, even though it is not meant to be an improvement for an ill-fitting denture. However, it's crucial to assess the fit and functionality of the patient's denture before using adhesive, as this may limit the goals that the patient and/or practitioner can achieve. Therefore, given the study's limits it was determined that physicians shouldn't ignore denture imperfections while still taking clinical benefits into account. Dentists should advise patients on the appropriate use of denture adhesives and should provide them with instructions on how to avoid mishandling it.

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