

# PROFESSIONAL ATTITUDES TOWARD THE USE OF DENTURE ADHESIVES: A SURVEY AMONG NEPALESE PROSTHODONTISTS

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## ABSTRACT

The dental profession has been slow to accept denture adhesive (DA) as a means to enhance denture retention and function which has produced conflicting views both in clinical practice and dental education. Many practitioners view adhesive usage as a reflection of lack of prosthetic expertise and poor clinical skills. A survey was conducted among Nepalese Prosthodontists to explore their attitudes towards DAs. A pre-tested, self-administered anonymous questionnaire consisting of 12 close-ended questions was mailed to the participants. Among all the respondents, 91.7% used DA as a beneficial adjunct to stabilize trial bases in the early stages of denture fabrication. However, only 41.3% of prosthodontists prescribed DA for routine denture patients. Majority of respondents prescribed powder form of adhesives (96.7%). Respondents believed that denture adhesives were helpful in stabilizing trial bases in the early stages of denture fabrication (80%), enhanced the fit of the prosthesis (81.7%) and provided psychologic comfort to the patient (91.7%). They agreed that denture adhesives have the potential to mask pathological tissue changes under ill-fitting dentures (65%), to permit avoidance of good clinical practice (45%), and to contribute to patients not seeing a dentist for regular follow up visits (61.7%). It was concluded that DAs are a beneficial adjunct to the dentist in the fabrication of dentures. However, enough cautions are required for preventing potential misuses of DAs, by both dentists and patients. The efficient way to optimize the beneficial aspects of DA depends on its rational, selective, and supervised usage.

## KEYWORDS

Denture adhesives, Nepalese Prosthodontics, professional attitudes, complete denture

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## INTRODUCTION

Although denture adhesives have been accepted by patients worldwide, dental professionals and prosthodontic educators have been slow to accept their use as a means to enhance denture retention, stability and function.<sup>1,2</sup> The use of DAs and their role in prosthodontics has produced conflicting viewpoints both in clinical practice and dental education, which has been described as (i) the traditional historical position and (ii) the advocate position. The traditional historical position bears a negative attitude toward these products and regarded use of DAs as poor reflection of their clinical skills and a lack of prosthetic expertise.<sup>1,3-5</sup> In contrast, dentists who support the advocate position suggest that DAs can enhance prosthetic denture procedures, patient acceptance, and patient satisfaction. They suggest DAs can be used to stabilize trial bases for precise jaw relation records and improve the accuracy of the trial dentures during try-in procedure.<sup>4</sup> Besides, they suggest that DAs alleviate patients' fears with respect to the fit of the final processed denture.<sup>4</sup> Furthermore, advocates feel that additional benefits of DAs included increased stability and retention, reduction in denture mediolateral movement and dislodgment, and greater levels of incisal bite force during function.<sup>6-12</sup>

Despite the lack of attention to DAs in the dental curriculum, and the conflicting viewpoints held within the dental profession, these facts have not hindered many of denture wearers from buying and using the product.<sup>13</sup>

Although the first U.S. patent for a DA was issued in 1913, with other patents following in the 1920s and 1930s, it was not until 1935 that the American Dental Association Council on Dental Materials, Instruments, and Equipment characterized DAs as nonmedical products.<sup>14</sup>

DAs be categorized into soluble and insoluble groups. The soluble category includes creams, powders, and pastes, while the insoluble group consists of wafers and pads. Early adhesives composed of vegetable gums that adsorb water to form a mucilaginous layer between the denture-bearing foundation and the tissue surface of denture. The early DAs were unsatisfactory because they were highly soluble in water.<sup>4</sup> The active ingredients in current adhesives are a mix of polymer salts with varying degrees of water solubility.<sup>15</sup> In addition to the active ingredients, soluble DAs contain a number of nonactive components like petrolatum, mineral oil, peppermint oils,

menthol, sodium borate and methyl paraban.<sup>14-17</sup> Pads and synthetic wafers essentially include a laminated fabric with a water-activated component impregnated within the fabric's mesh, which becomes sticky upon adsorbing saliva.<sup>18-22</sup>

Use of DAs may contribute to patients not seeing a dentist for recall and/or to avoid fees associated with denture care, adjustment, or replacement. Rather than seeking professional help to evaluate oral changes affecting denture function, patients may misuse DAs to achieve the desired function and comfort. It is therefore mandatory that a recall system should become an integral part of prosthodontic rehabilitation and both dentist and patient be educated about the use and misuse of DAs.<sup>23-27</sup> A thorough review of the dental literature revealed paucity of data regarding clinicians or educators' opinions on the role of DAs in prosthodontics or their appropriate use in Nepal.

## MATERIALS AND METHODS

A questionnaire-based survey was conducted among Nepalese Prosthodontists practicing in Nepal from February, 2020 to July, 2020. Ethical approval for the beginning of the study was obtained via Institutional Review Committee (IRC), Nepal Medical College Teaching Hospital. A pre-tested questionnaire from a published study was used for the study.<sup>17</sup> A comprehensive, self-administered questionnaire consisting of 12 close-ended questions which was mailed to the participants. The researcher facilitated the respondents. All the participants remained anonymous throughout the survey. Data was entered in Statistical Package for Social Sciences (SPSS) version 17 for descriptive analysis using frequency distributions.

## RESULTS

Of the 75 questionnaires distributed among Nepalese Prosthodontists practicing in Nepal, 60 were returned ensuing in the total response rate of 80%. Among all the respondents, 91.7% used DAs as a beneficial adjunct to stabilize trial bases in the early stages of denture fabrication. However, only 41.3% of prosthodontists prescribed DAs for routine denture patients (Table 1).

In the query related to type of adhesive used, majority of respondents prescribed powder form (96.7%) (Table 2).

**Table 1: Use of denture adhesives in clinical denture practice**

Questions related to use of denture adhesives in clinical denture practice	Distribution of responses	
	Yes	No
Do you use DAs as a beneficial adjunct to stabilize trial bases in denture fabrication?	91.7%	8.3%
Do you prescribe DAs to your patients?	48.3%	51.7%

In response to their opinion regarding potential influence of DAs in various facets of complete denture rehabilitation, respondents believed that DAs enhanced the fit of the prosthesis (81.7%) and provided psychologic comfort to

the patient (91.7%). They also agreed that DAs have the potential to mask pathological tissue changes under ill-fitting dentures (65%), to permit avoidance of good clinical practice (45%), and to contribute to patients not seeing

**Table 2: Type of denture adhesives used in clinical denture practice**

Questions related to type of denture adhesives used in clinical denture practice	Powder	Cream	Both
Which type of DAs do you prefer to use for clinical sessions of denture fabrication?	90.0%	6.7%	3.3%
Which type of DAs do you prefer to prescribe?	96.7%	None	3.3%

**Table 3: Professional attitudes regarding potential positive or negative impacts of denture adhesives usage.**

Denture adhesives have the potential (either positive or negative) to influence the following:	Distribution of responses	
	Yes	No
Enhancing the fit of the prosthesis	81.7%	18.3%
Creating discomfort with its slimy and sticky texture	75.0%	25.0%
Providing a psychological comfort to the denture patient	91.7%	8.3%
Masking the patient's awareness of the pathological tissue changes under ill-fitting dentures	65.0%	35.0%
Contributing to patients not seeing a dentist for recall	61.7%	38.3%
Being related to poor clinical skills and a lack of prosthodontic practice	25%	75%

**Table 4: Role of denture adhesives in development of the different oral conditions**

Denture adhesives can contribute to the development of the following conditions:	Distribution of responses	
	Yes	No
Oral cancer	16.7%	83.3%
Denture stomatitis	30.0%	70.0%
Leukoplakia	11.7%	88.3%
Candidiasis	56.7%	43.3%
An imbalance in the oral flora due to microbial contamination	48.3%	51.7%
Resorption of the alveolar bone as a result of tissue irritation	30.0%	70.0%

**Table 5: Usefulness of denture adhesives for different clinical situations**

Denture adhesives can be useful for the following clinical situations:	Distribution of responses	
	Yes	No
To stabilize trial bases in the early stages of denture fabrication	80.0%	20.0%
To relieve the patient's fears about possibility of insufficient retention of final prosthesis at try-in visit	56.7%	43.3%
To provide retention, comfort, and function during the interim period after insertion of immediate dentures	46.7%	53.3%
To overcome patients' anxiety for a short period (2-3 weeks) after insertion of new complete dentures	36.7%	63.3%
To provide additional retention and stability for patients who have inadequate oral anatomy	71.5%	28.5%
To help patient acceptance of new dentures	26.7%	73.7%

a dentist for regular follow up visits associated with denture care, adjustment, or replacement (61.7%). Majority of respondents (75.0%) did not agree that use of DAs is related to poor clinical skills and a lack of prosthodontic practice. (Table 3)

In response to association of DAs toward the development of the different oral conditions, respondents concurred that DAs contributed to Candidiasis (56.7%), but not to the development of oral cancer (83.3%), leukoplakia (88.3%) and residual ridge resorption (70.0%) (Table 4).

On the usefulness for the DAs in the specific clinical situations, respondents agreed that DAs was helpful in stabilizing trial bases in the early stages of denture fabrication (80%), relieving the patient's fears about possibility of insufficient retention of denture (56.7%), and providing additional retention and stability for patients who have inadequate oral anatomy (71.5%), but was not useful in enhancing patient's acceptance of new dentures (73.3%) and overcoming patient's anxiety during the postinsertion period (63.3%) (Table 5).

## DISCUSSION

The use of DAs and its role in denture retention is a disputed topic in both clinic practice and dental education. This has raised many conflicting viewpoints among the dentists, which has been described as the traditional historical position and the advocate position. This survey was conducted to investigate the attitude of Nepalese prosthodontics towards the use of DAs, which would help in framing guidance for

DAs use in clinical practice and prescribing to patients requiring them.

Among all the respondents, 41.3% of prosthodontists prescribed DA for routine denture patients. Compared with other studies, this is within the range reported by Koksall *et al*<sup>19</sup> (41.8%), Polyzois *et al*<sup>28</sup> (60.3%), and Mantri *et al*<sup>30</sup> (84.3%). These differences are expected due to inconsistency of dental curriculum and diverse dental care trends in different countries. Respondents recommended DAs mostly in powder form (96.7%). In contrast with this finding, most of respondents in other studies recommended DAs in cream form, 93.8% reported by Polyzois *et al*<sup>28</sup> and 62% reported by Koksall *et al*.<sup>19</sup>

Although the result of the study showed inconsistencies in the views regarding certain aspects of DAs, Nepalese Prosthodontists hold consensus on widespread topics addressing the use of DA and its role in prosthodontics. Majority of the respondents supported rational, selective, and supervised use of DA in clinical practice. This finding coincides with the findings from previous study which emphasized that DAs should not be given to the patients with poor oral hygiene maintenance.<sup>29</sup> The respondents believed that DA is a beneficial adjunct to stabilize trial bases in the early stages of denture fabrication and it enhanced the fit of the prosthesis and provided psychologic comfort to the patient and allay patient fears at trial arrangement of teeth on the denture bases. This finding coincided with the findings from the study conducted among academic prosthodontists, the reason being stable record bases is a pre-requisite for recording accurate jaw relations.<sup>17,30</sup>

In the current survey, majority of the respondents were aware regarding potential for negative clinical outcomes of DA use. In striking contrast to this finding, a survey conducted among general dental practitioners revealed that they did not have sufficient knowledge regarding adverse impact of DA use.<sup>30</sup> This may be because of the lack of attention to DAs in the dental curriculum in many graduate prosthodontic programs around the world and therefore DA use is not considered good practice.<sup>28</sup>

The respondents in the current study showed serious concerns about DAs contributing to patients not seeing a dentist for regular follow up visits associated with denture care and about the masking of underlying pathological tissue changes under ill-fitting dentures. 48.3% of the respondents believed that DAs can contribute to an imbalance in the oral flora due to microbial contamination which is consistent with the findings from previous study.<sup>31</sup> Regarding benefits of DA during the post denture insertion period, majority of participants opined that DAs provided additional retention and stability for patients who have inadequate oral anatomy.

There is lack of consensus among the respondents, regarding DA being related to poor clinical skills and a lack of prosthodontic

practice. This finding coincided with the findings from previous study where 80% of respondents strongly disagreed that DA is given by the clinician who have inadequate skills.<sup>29</sup>

Owing to fact that the study was conducted only among the specialists in the field of prosthodontics, the extrapolation of the results to entire dental fraternity is restricted. This is the main limitation of the present study which can be overcome by including general dental practitioners and other specialties in future research. Within the limitations of this survey, it was concluded that DAs are a beneficial adjunct in patient management and can facilitate clinical denture procedures. However enough concerns and cautions are required for maximizing the beneficial aspects of denture adhesive use. Neither dentists nor patients should use DAs as an alternative to either good clinical practices or proper denture maintenance. The greatest advantage of the DAs depends on its rational, selective, and supervised usage. The efficient way to optimize the beneficial aspects of DA use, is through its extensive emphasis in dental curriculum and through a routine and rigorous continuing education programs for the practitioners. There is also a need to establish universal guidelines for the proper use of DAs based on present scientific knowledge and evidence.

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