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## Alginate vs Putty impression materials: Survey among prosthodontics postgraduates and general dentists

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### Abstract

There are various dental impression materials in the market, the most common which is used by a dentist is alginate and also silicone impression materials. Usage of these materials depends upon individual skills or financial criteria. In this study, a survey was done among prosthodontics post-graduates and general dentists regarding their preference for materials to be used in a clinic, was the majority of study participants 57% responded putty was their preference for taking an impression.

**Keywords:** Alginate, PVV putty, prosthodontics

### Introduction

There are various materials for impression taking post tooth preparation for a fixed partial denture or for placing a crown post successful root canal treatment. Opting materials for usage depends upon multiple factors like the feasibility of a clinician, financial factors depending upon patients, and overall treatment cost.

Various impression materials and techniques came into use since times earlier till today for fixed partial dentures, and all of them have some advantages and disadvantages and are suitable for specific conditions <sup>[1]</sup>.

### Clinically, impression materials can be divided into two large groups <sup>[2]</sup>

1. Synthetic elastomeric impression materials that include Polysulfide, Condensation Silicone, Addition Silicone, and Polyether. Silicone impression materials are the most acceptable in this group.
2. Hydrocolloid impression materials, this group includes Agar Agar and Alginate impression materials.

The Elastomeric impression material was developed as an alternative to natural rubber during World War II <sup>[2]</sup>.

Conventional fixed partial dentures remain a major tool in prosthodontists as they are relatively economical, have substantial durability, yield satisfactory retention, and have no requirements for surgery <sup>[3-10]</sup>.

Usage among alginate impression as well as putty depends from clinician to clinician and post-graduates as it depends upon fees paid by patients as fees may vary at a private practice as well as in a dental college where the majority of treatment is carried out by undergraduate students and postgraduate students.

**AIM:** To check the usage of materials for FPD impression based on the convenience and financial stability of a dentist.

### Materials and Methods

A digital survey was done among general dentist and prosthodontics postgraduates from various colleges, individual messages were sent to the clinician as well as prosthodontics postgraduates as well a questionnaire was posted in various groups consisting of only dental doctors.

**Study Question:** Which material will you opt for FPD impression between alginate and putty [Silicone].

Respondents were given one E-Mail ID where they have been asked to respond in detail, for one-word responses, study participants were advised to respond by normal messages.

Based on convenience sampling technique along with inclusion and exclusion criteria sample size of 300 study participants were taken and data collected within 4 weeks were taken into consideration.

**Inclusion criteria**

1. Prosthodontics postgraduates and those dentists having clinical practice in India.
2. Those dentists who have responded within the given timeline

**Exclusion Criteria**

1. Dentists having clinical practice outside India and prosthodontics practicing outside India were not included in this study.
2. Data was not taken into account for that Dentist responded beyond the given timeline.

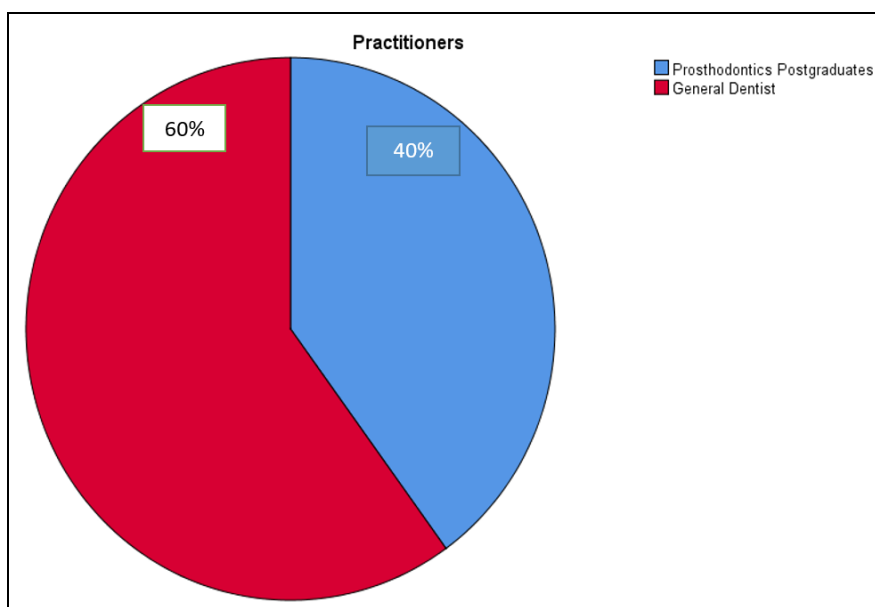
All the collected data were entered in an Excel sheet and data entry was done based on coding for various responses.

**Results**

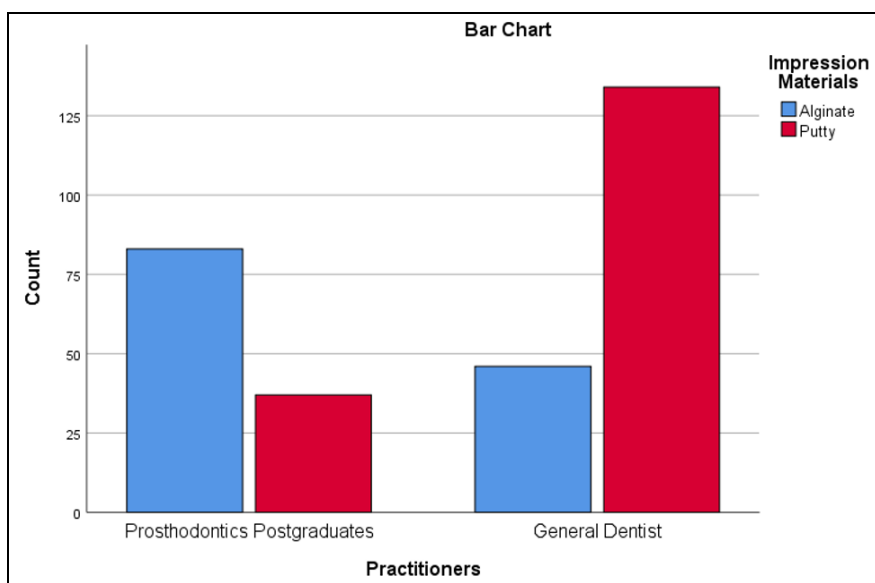
Across India, a total of 300 practitioners participated in the study. Out of the 300 dentists who responded to the questionnaire, 40% were prosthodontics postgraduates and 60% were general practitioners (Table 1).

Table 2 revealed the overall use of Impression Material by practitioners. Out of the 300 participants, 57% were in favours of using Putty Impression material while 43% used Alginate Impression Material.

Table 3 showed that amongst the prosthodontics postgraduates, 69.2% use the Alginate impression material, 30.8% use the putty impression material for taking impressions in contrast to the general practitioners, who use Putty impression material (74.4%) as the first choice, and 25.6% use Alginate impression material for taking impressions. There was a significant statistical association between postgraduates and general practitioners regarding the use of Alginate and Putty impression material (p=0.001).



**Fig 1:** Pie chart showing the percentage of practitioners who participated in the study.



**Fig 2:** Bar graph showing the impression material being used by the practitioners.

**Table 1:** Demographic structure of the sample

Variables	Number	Percentages (%)
<b>Practitioners</b>		
Prosthodontics Postgraduates	120	40
General Dentists	180	60
Total	300	100

**Table 2:** A response rate of the participants' use of Impression Materials

Variables	Alginate Impression Material		Putty Impression Material	
	Number (N)	Percentage (%)	Number (N)	Percentage (%)
Practitioners	129	43	171	57

**Table 3:** A response rate of the participants evaluated

Practitioners	Impression Materials N (%)				P-Value
	Alginate		Putty		
	Number (N)	Percentage (%)	Number (N)	Percentage (%)	
Prosthodontics Postgraduates	83	69.2	37	30.8	0.001*
General Dentists	46	25.6	134	74.4	

Test used: \*Chi-square test (P-Value significant at  $\leq 0.05$ )

## Discussion

Apart from the convenience of a dentist regarding usage of materials certain criteria like dentist fees from a patient's or patient's ability to pay fees, and the location of the dental clinic decides the above-mentioned criteria, for the same reason dentist are bound to use certain materials which can be relatable with the socio-economic status paying capacity of patients.

In the present study, there were a total of 300 participants out of which the majority N = 180 (60%) were general dental practitioners and N = 120 (40%) were prosthodontics postgraduates, this distribution of study participation was more among general dentists can be due to fact that there are more general dental practitioners in India as compared to prosthodontics.

In the present study majority of study participants (57%) opted for putty as impression materials in their practice, this can be related to the study done by Shakila Fatima *et al.* (2013) <sup>[2]</sup> where it was concluded that silicone impression material is better than alginate due to fact that Silicone is a better option for the taking an accurate impression, as because it has good surface reproduction capacity and dimensional accuracy.

Whereas (43%) of study participants opted for alginate as an impression material, this can be due to the fact that their location of dental practice is based in such areas where the patients cannot afford to pay more fees and thereby general dental practitioners opt alginate as impression materials.

In the present study, results for both prosthodontics postgraduates, as well as general dentists regarding the usage of materials, were found to be statistically significant where putty impression materials is given more priority and the same impression materials were considered superior among the study done by Johnson G H *et al.* (1998) <sup>[11]</sup>, Chen SY *et al.* (2004) <sup>[12]</sup> and Singh H (2010) <sup>[13]</sup> where all this study showed putty impression material is better for impression as compared to alginate due to its low molecular weights which contain silane groups <sup>[2]</sup>.

## Conclusion

This study concludes that the majority of the study participants prefer to use putty as impression material, though certain dental practitioners prefer alginate and this can be due to financial factors as per patient's criteria as patients may not be willing to pay minimal fees.

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