

# Dental Professionals' Attitude towards Provision of Removable Partial Denture in Pakistan

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## ABSTRACT

**Background:** With the advancement in technology and availability of better treatment modalities for rehabilitation of partially dentate patients, the use of cast partial denture in clinical practice as well as in teaching curriculum has been declined.

**Objective:** To know the perspective of dental professionals towards provision of cast partial dentures in Pakistan

**Study Design:** Cross-sectional survey

**Place and Duration of Study:** Margalla Institute of Health Sciences, Rawalpindi from 1<sup>st</sup> January 2023 to 30<sup>th</sup> June 2023.

**Methodology:** Two hundred and five responders were enrolled through survey included eight closed ended questions regarding use of cast partial dentures and shared via emails to dental professionals practicing in Pakistan.

**Results:** Majority of the dental professionals (38.5%) preferred fixed partial dentures as choice of rehabilitation for partially dentate arches, whereas consultants preferred implants. Among the various types of removable partial dentures, the most preferred choice was cast partial dentures (52.2%), and the least preferred choice was flexible RPD (10.7%). Majority of the dental practitioners (42.4%) reported a cost issue followed by difficulty in adjustment (31.7%) while suggesting cast partial dentures. Although high numbers of dentists (58%) are in favor of implant supported prosthesis or better treatment options compared to cast partial dentures, still (62.0%) of dentists supported that more importance should be given to cast partial dentures in undergraduate curriculum.

**Conclusions:** Majority of the dentists in Pakistan prefers fixed partial denture for rehabilitation of partially edentulous arches, consultants were in favour of implants. If given choices in removable partial dentures, most of dentists like cast partial dentures but avoid in clinical practice due to availability of better treatment options, high cost, and complicated procedures.

**Keywords:** Attitude, Dental professionals, Cast partial denture, Curriculum.

## INTRODUCTION

The choice between fixed and removable prostheses for rehabilitation of partially dentate arches is a critical decision, impacting patient outcomes and satisfaction. Fixed prostheses, such as dental implants and bridges, are often favoured for their stability, function, and aesthetic appeal.<sup>1</sup> Fixed dental prosthesis integrates with the existing dentition, which both the practitioners and patients find suitable due to reduced maintenance and enhanced comfort.<sup>2</sup>

Conversely, removable prostheses, including partial dentures and complete dentures, remain a viable option due to their adaptability and lower cost.<sup>3</sup> These prostheses are often preferred in cases where fixed options are not suitable due to anatomical limitation, financial or technical constraints.<sup>4</sup> Removable prostheses offer the advantage of being less invasive and can be adjusted or repaired more easily compared to fixed prosthetics.<sup>5</sup>

Although cast partial denture (CPD) is a viable option to replace missing teeth with benefit of aesthetic and function but it has some limitations that results in poor patient's acceptance and compliance.<sup>6</sup> It has revealed that an increase incidence of caries and periodontal problems in removable partial denture (RPD) wearers.<sup>7,8</sup> Almost 60% of the individuals wearing RPD have reported of technical problems like loss of retention and stability, loss of integrity and periodontal diseases.<sup>9</sup> Other studies showed that 30–50% of RPDs wearers never or occasionally wore their dentures.<sup>10,11</sup> Importance of CPD in clinical practice and from academic point of view both are declined due to poor acceptance of CPD by patients.<sup>12</sup> The teaching of CPD in the undergraduate curriculum is declining. Only one RPD is required to graduate in most of the British dental schools.<sup>13</sup> According to Rashidi & Petropoulos<sup>14</sup> and Petropoulos & Rashedi<sup>15</sup> reported that 14% of the US dental institutes, RPDs were not considered a separate course in preclinical curriculum.

The decrease in the use of conventional CPD may be attributed to the presence of more advanced options to rehabilitate the partially dentate individual like implant supported prosthesis, fixed partial denture.<sup>16</sup> Considering the decline in CPD

recommendation in clinical practice and teaching in dental school in various global parts, it is essential to explore the factors and attitude of dental professionals in Pakistan. Finding of the study will help to identify trends and provide insights into improving clinical practice and also if there is need to have some better suggestions in current undergraduate prosthodontic curriculum, the purpose of this study is to explore the current attitudes of dental professionals towards CPDs as a modality for rehabilitation of partially dentate arches, focusing on their preference, patient preference, the reasons behind the choice of cast partial denture and the problems faced by the dentists in giving this prosthesis to patients.

## MATERIALS AND METHODS

This cross-sectional study was conducted at Department of Prosthodontics, Margalla Institute of Health Sciences, Rawalpindi from 1<sup>st</sup> January 2023 to 30<sup>th</sup> June 2023. The participants included in the survey were registered general dental practitioners (GDPs) and practicing consultants. An English language questionnaire in the form of Google forms was shared to 350 dentists practicing across Pakistan, to obtain a response of 205 which is a predetermined sample size. The sample size was calculated using WHO sample size calculator based on a 7% margin of error and 95% confidence level. The collected data was collected and statistical analysis was done using SPSS-26.

## RESULTS

The study participants were asked for their preference for rehabilitation of partially edentulous patients in clinical practice, where majority 79(38.5%) reported fixed-partial denture to be their first preference, while 64 (31.2%) preferred removable partial dentures, and 62 (30.2%) preferred implants. Upon comparing the rehabilitation preference, it was found that consultants were more likely to prefer implants (45.8%) whereas general practitioners more commonly preferred FPDs and RPDs (Fig. 1).

There were 72 (35.1%) consultants and 133 (64.9%) general dental practitioners. The participants were asked if they have to choose removable partial dentures, which type of removable partial denture would they prefer, in response to this question, 107 (52.2%) reported cast partial dentures, while 76 (37.1%) preferred acrylic partial dentures and 22 (10.7%) preferred flexible

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partial dentures. Similarly, consultants were more likely to prefer CPD type of RPDs as compared to general practitioners who preferred acrylic treatment partial denture more ( $p < 0.001$ ). The next question asked, in case of your preference for cast partial denture, how often the patient does agrees. Responses to this

question revealed that 28 (13.7%) dentists reported that patients very rarely agree to cast partial dentures, 92 (44.9%) dentists reported rarely, 74 (36.1%) reported quite often and only 11 (5.4%) dentists reported that patients agree to cast partial denture very regularly.

Table 1: Summary of questionnaire responses by study participants (n=205)

Question	Overall (n=205)	Consultants (n=72)	General Practitioners (133)	P value
<b>Preference for rehabilitation of partially edentulous patients</b>				
RPDs	64 (31.2%)	18 (25.0%)	46 (34.6%)	0.002
FPDs	79 (38.5%)	21 (29.2%)	58 (43.6%)	
Implants	62 (30.2%)	33 (45.8%)	29 (21.8%)	
<b>If you have to choose RPDs, the type of RPDs you prefer?</b>				
CPDs	107 (52.2%)	59 (81.9%)	48 (36.1%)	<0.001
Acrylic treatment partial denture	76 (37.1%)	8 (11.1%)	68 (51.1%)	
Flexible partial dentures	22 (10.7%)	5 (6.9%)	17 (12.8%)	
<b>If CPDs is the choice, how often does the patient agrees?</b>				
Very rarely	28 (13.7%)	5 (6.9%)	23 (17.3%)	<0.001
Rarely	92 (44.9%)	15 (20.8%)	77 (57.9%)	
Quite often	74 (36.1%)	44 (61.1%)	30 (22.6%)	
Very regularly	11 (5.4%)	8 (11.1%)	3 (2.3%)	
<b>Number of CPDs delivered per year in your clinic practice?</b>				
0	47 (22.9%)	10 (13.9%)	37 (27.8%)	0.065
1-5	87 (42.4%)	31 (43.1%)	56 (42.1%)	
6-10	46 (22.4%)	22 (30.6%)	24 (18.0%)	
>10	25 (12.2%)	9 (12.5%)	16 (12.0%)	
<b>Major problems faced while suggesting CPDs to the patients?</b>				
Fabrication	43 (21%)	12 (16.7%)	31 (23.3%)	0.157
Cost	87 (42.4%)	27 (37.55%)	60 (45.1%)	
Fracture	10 (4.9%)	3 (4.2%)	7 (5.3%)	
Adjustments	65 (31.7%)	30 (41.7%)	35 (26.3%)	
<b>Do you feel is it justifiable to give acrylic or flexible RPDs as an alternative to CPDs?</b>				
Yes	128 (62.41%)	47 (65.3%)	81 (60.9%)	0.537
No	77 (37.6%)	25 (34.7%)	52 (39.1%)	
<b>If no, then what is the reason for not recommending CPDs?</b>				
Too complicated procedure	41 (20.0%)	12 (17.69%)	29 (23.6%)	0.002
Availability of better treatment options	119 (58.0%)	52 (77.6%)	67 (54.5%)	
Acrylic or flexible RPDs are better options to CPDs	30 (14.6%)	3 (4.5%)	27 (22.0%)	
<b>Should more importance be given to CPDs in graduation curriculum compared to implant supported treatment modalities?</b>				
Yes	127 (62.0%)	46 (63.9%)	81 (60.9%)	0.674
No	78 (38.0%)	26 (36.1%)	52 (39.1%)	

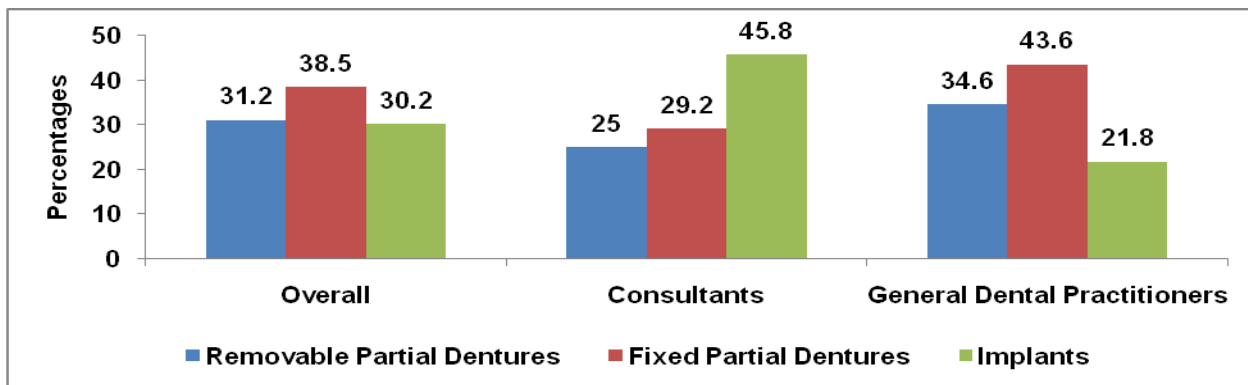


Fig. 1: Comparison of preference for rehabilitation of partially edentulous patients among study participants

Majority of the consultants, 59 (81.9%) reported that their patients quite often agree to the choice of CPDs procedure, whereas majority of general practitioners 77 (57.9%) reported that their patients rarely agree to opt for CPDs. It was reported that 47 (22.9%) dentists deliver no cast partial denture per year in their clinic practice, 87 (42.4%) reported to deliver 1-5 cast partial dentures per year in their clinic practice, while 46 (22.4%) and 25 (12.2%) reported to deliver 5-10 and >10 cast partial dentures per year in their clinic practice, respectively. The study participants were asked about major problems faced while suggesting cast partial dentures to the patients, where majority 87 (42.4%) reported problem of high cost followed by 43 (21.0%) highlighting fabrication

problems, 65 (31.7%) mentioned adjustment problems and 10 (4.9%) reported fracture problems. There were 128 (62.4%) dentists who felt that its justifiable to give acrylic or flexible removable partial dentures as an alternative to cast partial dentures, while 77 (37.6%) did not felt justifiable to do so. The reasons for not recommending cast partial denture included availability of better treatment options like implant supported restorations reported by 119 (58.0%) dentists, too complicated procedure to be carried out reported by 41 (20.0%) dentists, while acrylic or flexible partial dentures are better treatment options was reported by 30 (14.6%) dentists. When the results were compared with respect to participant's designation, 17.7% consultants stated

that the procedure is too complicated as compared to 23.6% general practitioners, 77.6% consultants stated that there are better treatment options available as compared to 54.5% general practitioners and only 4.5% consultants stated that acrylic or flexible RPDs are better options to CPDs as compared to 22.0% general practitioners ( $p=0.002$ ). There were 127 (62.0%) dentists who recommended giving more importance for teaching cast partial dentures in graduation curriculum when compared to implant supported treatment modalities, with no significant differences in responses by the consultants and general practitioners (Table 1).

## DISCUSSION

Cast partial dentures (CPDs) have long been a staple in prosthodontics, offering a durable and adaptable solution for replacing missing teeth. Despite their longstanding use, recent advancements in dental materials and technologies have introduced new treatment options that may influence dental professionals' attitudes towards CPDs. Understanding these attitudes is crucial as they directly affect clinical decision-making, patient outcomes, and overall satisfaction.<sup>3</sup>

In the present study, majority of the participants (38.5%) preferred fixed partial denture (FPD) as their first choice followed by removable partial denture (31.2%) and (30.2%) preferred implant in restoring partially dentate arches. In comparison to general dental practitioners (GDP), consultants (45.8%) preferred implant supported prosthesis, maybe they are more trained and experience in this particular field. Similar findings have been noted in a survey conducted by Sapkota et al<sup>12</sup> in Nepal, where (52.6%) of GDPs and (60%) consultants prosthodontists preferred FPD. In another study carried out in India by Sonnahalli et al<sup>16</sup>, (43.03%) dental professionals preferred FPD and (49%) implant supported restorations. The decision regarding provision of RPD is a multifactorial process including cost, previous experience with RPD and time<sup>6</sup>. Low satisfaction level with RPD treatment was also associated with aesthetic requirements, age and patient's compliance with RPD.

Another finding of the study is that majority of the professionals preferred CPD (52.2%) as compared to acrylic resin RPD (37.1%) and flexible partial denture (10.7%). Sonnahalli<sup>16</sup> found overall (45.53%) dentists and (62.84%) consultants preferred CPD. Preference of CPD over acrylic resin removable partial denture (RPD) indicates that majority of the dentists have theoretical knowledge that CPD is better than acrylic RPD. Among participants, majority of the consultants (82%) choose CPD while (51.1%) GDP preferred acrylic partial prosthesis. Preference of acrylic RPD by GDPs may be attributed to lack of clinical and practical skills in designing CPD. Similarly, only (6.5%) specialists preferred flexible partial denture which support the finding of survey carried out by Hill et al<sup>17</sup> where consultants do not encourage prescription of flexible partial denture which can be attributed to lack of sufficient clinical evidence for recommendation of flexible partial denture. Pun et al<sup>18</sup> in Eastern Wisconsin also reported that only (5.2%) flexible dentures were prescribed as compared to (66.8%) cast partial dentures.

For the success of any prosthodontic treatment, patient's acceptance for that particular treatment is very crucial. In the present study, majority of the consultants (81.9%) mentioned that their patients quite often agree for acceptance of CPD in comparison to GDP that reported that their patients rarely agree. This indicate that more experienced, skilled and clinically trained professionals have better convincing power that meet the patient's expectation of better treatment outcome. Sonnahalli and colleagues<sup>16</sup> also reported that (57.84%) patients rarely agreed for CPD found by GDPs as compared to prosthodontists who found that (66.66%) patients regularly agreed for CPD.

In the present survey although (52.2%) dentist preferred CPD if they have to provide removable partial denture but conversely in their clinical practice (23%) dentists never prescribed

a single CPD in one year time and only 1-5 CPDs were delivered per year by (42.4%) of the dentists. When asked the reason for not recommending CPD, majority of the participants (58%) reported due to availability of advanced and better treatment options like implant supported prosthesis and FPDs. Another problem highlighted by (42.4%) participants is an increased cost. Similar results have been found by Allen et al in their survey in England.<sup>6</sup> This decline in provision of CPD may be due to several factors like patient's preferences and expectations, clinicians training and experience, cost issues, associated problems with CPDs like caries and periodontal diseases.

Both consultants and GDPs (62.0%) supported the importance of teaching cast partial denture in the undergraduate curriculum when compared to implant dentistry. In Pakistan different universities have various quota systems for the undergraduate programs in prosthetic dentistry but in most of the dental schools the students are exposed to RPD teachings from 3<sup>rd</sup> year of their training. The students are prepared and assessed academically more as compared to their exposure in clinical and technical aspect of RPD. Second students are required to fulfil their requirements by making acrylic resin RPD only, instead of CPDs with Cobalt-Chromium frameworks. We know that the British Society for the study of Prosthetic Dentistry guidelines, do not lay down standards for acrylic resin based RPD, therefore all removable partial dentures are assumed to be made of metal framework.<sup>19,20</sup> The RPD entirely made of acrylic resins are tissue supported, have well documented disadvantages.<sup>21</sup>

The reduction in RPD recommendation in clinical practice may also be attributed to minimum or no exposure of the dentists to the clinical and technical aspects of RPD during their training period and hence lack the skills in adequately designing CPDs and further to communicate that planned design to dental technician. Barsby and Swartz reported in their survey, that new graduates are not fully trained in designing cast partial dentures frameworks due to inadequate undergraduate training.<sup>22</sup>

In Spain, the undergraduates' students need to complete one CPD and three to four acrylic RPDs to fulfil their requirements.<sup>23</sup> On average, three CO-Cr RPDs and two acrylic resin RPDs are required to made by students in Ireland and United Kingdom.<sup>24</sup> In Turkey, requirement for graduation in 91.1% schools is eight RPD.<sup>25</sup>

Therefore, to meet the future requirements, it is suggested that at least one or two CO-Cr framework RPD be included in the undergraduates quota along with important aspects of implant dentistry. The theoretical aspect of teaching must be supported by a high standard clinical skills and practical side of Cast partial denture.

## CONCLUSION

Majority of the dentists prefers FPD for rehabilitation of partially edentulous arches, consultants were in favour of implants and if given choices in RPDs, most of dentists like CPDs but avoid recommendation due to availability of better treatment options, high cost, and complicated procedures. Therefore, to meet the future requirements, it is suggested that at least one or two CO-Cr framework removable partial denture be included in the undergraduates Quota along with important aspects of implant dentistry and to fill the gap between theory and practice, theoretical aspect of teaching must be supported by a high standard clinical skill.

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