

Attitude of Dental Professionals Toward Cast Partial Denture: A Questionnaire Survey in Gujarat

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ABSTRACT

Aims: The use of cast partial dentures has almost diminished in recent years, and their importance in the teaching curriculum has reduced. This descriptive survey assesses the attitudes of dental professionals in Gujarat regarding use of CPDs in private practice.

Materials and methods: This survey includes ten close-ended questions concerning the use of CPD by dental practitioners practicing mostly in Gujarat. The URLs of the questionnaires were shared via every source of media (e-mail, WhatsApp, Instagram, messages) to dentists practicing in Gujarat, to obtain a response of 376 which is a predetermined size

Statistical Analysis Used: Statistical analysis was performed using counts and percentages, and the results were further evaluated with the repeated measures ANOVA.

Results: Nearly 33.9% general practitioners, 22.7% prosthodontists and 43.5% other specialist dentists responded to the questionnaire. General practitioners mostly preferred Fixed partial dentures (FPDs) (40.2%) and implants (44.1%) equally, whereas prosthodontists preferred mostly implant (61.1%). General practitioners mostly preferred cast partial dentures (40.2%) and acrylic dentures (34.6%) almost equally, whereas prosthodontists preferred CPDs (76.4%). Almost 44.1% of the general practitioners raised difficulty in chewing with CPDs and 58.8% of the prosthodontists raised a cost issue. Nearly 58.1% of the dentists said that implant-supported restorations are better options compared to CPDs; still, majority of the dentists (56.3%) were in favor that more importance for CPDs in graduation curriculum should be given.

Conclusions: This survey shows that in Gujarat a significant proportion of general practitioners preferred FPDs (40.2%) and implants (44.1%) because of sufficient awareness with the patients these days and when they choose removable partial dentures, they had gone for acrylic partial denture (34.6%) and cast partial denture (40.2%) equally and find adjustment as a major problem within that. Prosthodontists mostly preferred implants because they are more confident and better trained in their use. It is recommended that greater emphasis be placed on teaching implants alongside CPDs in the graduation curriculum. This will enable practitioners to better educate their patients about the advantages of implants, the disadvantages of flexible dentures, and the appropriate utilization of implants in cases where patients are not willing to opt for CPDs.

Keywords: Attitude, Gujarat, Cast partial denture, Flexible, Dental implants, specialists.

INTRODUCTION

Functional and aesthetic rehabilitation of a completely or partially edentulous patient involves a range of treatment options that differ in invasiveness, reversibility, and associated risks and benefits. Historically, patients had modest expectations regarding the aesthetic and functional outcomes of conventional removable dental prostheses. However, contemporary patients now have higher expectations, with an increasing emphasis on the aesthetic quality of their prostheses.

The success of RPD therapy is largely determined by the patient's compliance and the appropriate fit and design of the RPD to the patient. Poor fit can result in the patient not using the RPD, leading to exacerbated occlusal or positional problems for the patient. The advancement in digital technologies has allowed virtual design, planning, and fabrication of the RPD framework with great efficiency and comparable fit to traditional methods of stone models and casting.⁷

As the reduction in use of RPD has further declined the importance of CPD from academic point of view, a study showed a national average of only ten RPDs fabricated during 3 years of graduate prosthodontic course in US dental schools while only one in most of the British dental schools.^{1,2}

For patients with partial edentulism, the metal clasps of removable partial denture prostheses (RPDPs) in the aesthetic zone are often undesirable and uneesthetic. This is due to both aesthetic and psychological reasons, leading to an increasing number of patients avoiding and disliking their use.^{3,4} Research indicates that 35%–50% of patients either never received removable partial dentures (RPDs) or only wore them occasionally.^{5,6}

MATERIALS & METHODS

Sample Size Estimation:

$$SS = 4PQ/L^2$$

P = Prevalence,

Q = (1-P); L = 0.05 (Margin of error)

$$P = 62.42\% = 62.42/100 = 0.6242$$

$$Q = 1 - 0.6242 = 0.3758$$

$$\text{Substituting in the formula} = 4 * 0.6242 * 0.3758 / (0.05)^2 = 0.9382 / 0.0025 = 375.28$$

$$\text{Final sample size} = 375$$

Criteria for Selection of Sample:

Dental professionals were enrolled consecutively using the following **inclusion criteria**:

- Dental Professional who are in regular practice
- Minimum clinical experience of 1 year in clinics.

The **exclusion criteria** were:

- Students studying in colleges.
- Professionals whoever not in practice.

This was a descriptive cross-sectional study done by convenience sampling method. The survey included dental practitioners regardless of whether they were general dental practitioners (GDPs) or specialists. The URLs for the questionnaire were created and shared via email with 800 dentists practicing throughout Gujarat and few dentists within india. The sample size was 375 around calculated by using the formula for a finite population.

The study included all dental practitioners who consented to participate. Questionnaires were sent to all registered dental practitioners in Gujarat, including general dental practitioners (GDPs), prosthodontists, and other dental specialists, using online methods. These questionnaires were adapted from previous studies and modified after consulting experts in the field.

The self-administered questionnaire consisted of two parts. The first part gathered sociodemographic details of the participants. The second part included ten questions related to perceptions towards the use of cast partial dentures (CPDs). The first four questions (Q01–Q04) addressed the preference for RPDs, the types of RPDs, and how frequently patients preferred them. The next two questions (Q05, Q06 and Q07) focused on the number of CPDs provided to

patients, within how much appointments the denture is delivered and the types of problems encountered. The following three questions (Q06–Q08) explored the justification for other RPDs as alternatives to CPDs, reasons for not recommending CPDs, and criteria for selecting RPDs or fixed bridges. The final question (Q09)

asked whether CPDs should be recommended over implants for dental graduates. Data collection and statistical analysis were performed using SPSS version 26.

Ethical Committee Approval No: IEC GDCH/PROS.4/2023

Tables:

Table 1: Questionnaire concerning the use of cast partial denture by dentists from Gujarat.

Question numbers(Q)	Question	Choice of responses
Q1	Preference for rehabilitation of partially edentulous patients in your clinical practice	1.Fixed partial dentures 2.Implants 3.Removable partial dentures 4.none
Q2	If u have to choose removable partial dentures, the type of removable partial dentures your prefer?	1.Acrylic treatment partial dentures 2.cast partial dentures 3.Flexible partial dentures
Q3	If flexible denture is the choice, how long do you think they last?	Year 2. 2 – 5 years 3. 5 – 10 years 4. Last a lifetime
Q4	If cast partial denture is the choice, how often does the patient agrees?	1.Quite often 2.Rarely 3.Very rarely 4.Very regularly
Q5	Major problems faced while suggesting cast partial dentures to the patients?	1.Adjustment 2.Cost 3.Fabrication 4.Fracture
Q6	In how many appointments, you will deliver the cast partial denture?	1.2appointments 2.3appointments 3.4appointments 4.more than that
Q7	Number of cast partial dentures delivered per year in your clinical practice?	1. 0 2.1-5 3. 5-10 4.>10
Q8	Do you feel is it justifiable to give acrylic or flexible removable partial dentures as an alternative to cast partial dentures?	1.Yes 2.No
Q9	If cast partial denture are of the option to question 8, then what is the reason for not recommending cast partial dentures?	1.Acrylic or flexible removable partial dentures are better options to cast partial dentures. 2.availability of better treatment options such as implant-supported restorations. 3.Too complicated procedure to be carried out
Q10	Do you recommend giving more importance for teaching cast partial dentures in graduation curriculum when compared to implant - supported treatment modalities?	1.Yes 2.No

Table 2: Responses By the Dental Professionals Participated in The Survey.

Q. no	Questionnaire	All n (%)	BDS graduate N (%)	Prosthodontists	Other specialists	P (<0.05)
1	Preference for rehabilitation of partially edentulous patients in your clinical practice. a) Fixed partial dentures b) Implants c) Removable partial dentures d) None	375 138(36.8) 208(55.4) 28(7.5) 1(0.26)	127 51(40.2) 56(44.1) 20(15.7) 0	85 25(29.4) 52(61.1) 8(9.41) 0	163 62(38) 100(61.3) 0 1(0.6)	0.001
2	If u have to choose removable partial dentures, the type of removable partial dentures you prefer? a) Acrylic treatment partial dentures b) cast partial dentures c) Flexible partial dentures	108(28.8) 175(46.6) 92(24.5)	44(34.6) 51(40.2) 32(25.2)	16(18.8) 65(76.4) 4(4.7)	48(29.4) 59(36.1) 56(34.3)	0.001
3	If flexible denture is the choice, how long do you think they last? a) 1 year b) 2 – 5 years c) 5 – 10 years d) Last a lifetime	69(18.4) 214(57.1) 91(24.3) 1(0.26)	26(20.5) 70(55.1) 31(24.4) 0	15(17.6) 56(65.8) 14(16.4) 0	28(17.1) 88(53.9) 46(28.2) 1(0.6)	0.375
4	If cast partial denture is the choice, how often does the patient agrees? a) Quite often b) Rarely c) Very rarely d) Very regularly	140(37.3) 206(54.9) 22(5.9) 7(1.9)	39(30.7) 78(61.4) 5(3.9) 5(3.9)	44(51.7) 38(44.7) 2(2.3) 1(1.1)	57(34.9) 90(55.2) 15(9.2) 1(0.6)	0.004
5	Major problems faced while suggesting cast partial dentures to the patients? a) Adjustment b) Cost c) Fabrication d) Fracture	106(28.3) 147(39.2) 103(27.5) 19(5.1)	56(44.1) 37(29.1) 21(16.5) 13(10.2)	28(32.9) 50(58.8) 6(7.05) 1(1.1)	22(13.4) 60(36.8) 76(46.6) 5(3.0)	0.001
6	In how many appointments, you will deliver the cast partial denture? a) 2 appointments b) 3 appointments c) 4 appointments d) more than that	10(2.6) 124(33.1) 144(38.4) 97(25.9)	5(3.9) 34(26.8) 67(52.8) 21(16.5)	0 21(24.7) 28(32.9) 36(42.3)	5(3.0) 69(42.3) 49(30) 40(24.5)	0.001
7	Number of cast partial dentures delivered per year in your clinical practice? a) 0 b) 1-5 c) 5-10 d) >10	11(2.9) 196(52.3) 128(34.1) 40(10.7)	73(57.5) 43(33.8) 8(6.2) 3(2.36)	14(16.4) 38(44.7) 28(32.9) 5(2.35)	109(66.8) 47(28.8) 4(2.45) 3(1.84)	0.001
8	Do you feel is it justifiable to give acrylic or flexible removable partial dentures as an alternative to cast partial dentures? a) Yes b) No	171(45.6) 204(54.4)	80(62.9) 47(37)	16(18.8) 69(81.1)	75(46.0) 88(53.9)	0.001
9	If cast partial denture are of the					

	option to question 8, then what is the reason for not recommending cast partial dentures?					
	a) Acrylic or flexible removable partial dentures are better options to cast partial dentures.	42(11.2)	22(17.3)	7(8.23)	13(7.97)	0.027
	b) Availability of better treatment options such as implant-supported restorations.	218(58.1)	73(17.3)	46(54.1)	99(60.7)	
	c) Too complicated procedure to be carried out	115(30.7)	32(25.1)	32(37.6)	51(31.2)	
10	Do you recommend giving more importance for teaching cast partial dentures in graduation curriculum when compared to implant - supported treatment modalities?					0.003
	a) Yes	211(56.3)	87(68.5)	42(49.4)	82(50.3)	
	b) No	164(43.7)	40(31.4)	43(50.5)	81(49.6)	

RESULT

A total of 375 dentists responded. Of these, (127/375) were general practitioners, (85/375) were prosthodontists, and (163/375) were other specialists in private practice and postgraduate students in colleges. The respondents had clinical experience ranging from 2 to 30 years. The responses to the questionnaire are presented in Table 2.

Out of the 375 dentists, 7.5% of dentists (28/375) preferred RPDs, 36.8% of dentists (138/375) preferred fixed partial dentures (FPDs) and 55.4% of dentists (208/375) preferred implants to rehabilitate partially edentulous patients. General practitioners mostly preferred FPDs (40.2% [51/127]) and Implants 44.1% (56/127) and prosthodontists mostly preferred implants (61.1% [52/85]). The difference was statistically significant for the choice of (P=0.001)

When the question of if you have to choose RPDs, what type of RPDs you would prefer? was asked, 40.2% (51/127) of the practitioners choose CPDs, 34.6% (44/127) opted for acrylic treatment partial dentures, and 25.2% (32/127) of practitioners opted for a flexible denture. Prosthodontists generally preferred CPDs (76.4% [65/85]) and acrylic treatment partial

dentures(18.8% [16/85]), whereas flexible denture were mostly preferred by general practitioners (25.2% [32/127]), The difference was statistically significant for the choice of CPDs ,flexible dentures and acrylic treatment partial dentures (P = 0.001) among the GDPs, prosthodontists, and other specialists.

When dentists were asked for that if flexible denture is the choice, how long do you think they last? 375 dentists responded to this question, and it was found that 55.1% (70/127) of practitioners thought 2-5 years, and (65.8% [56/85]) of prosthodontists thought of 2-5 years and (53.9% [88/163] of specialists thought for 2-5 years. From the data, it is statistically insignificant for the choice of flexible dentures(P=0.375).

When dentists were asked that if CPDs are the option, how often does the patient agree for it? 375 dentists responded to this question, and it was found that 54.9% (206/375) of patients agreed rarely for CPDs, 37.3% (140/375) agreed quite often, 5.9% (22/375) agreed very rarely and only 1.9%(7/375) agreed very regularly. General practitioners mostly found that patients rarely agreed for CPDs (61.4% [78/127]), and this difference was statistically significant. Prosthodontists found that patients agreed quite often for CPDs (51.7%

[44/85]) and the difference is statistically significant. (P=0.004)

When asked about the major problems faced while suggesting cast partial denture to the patients? 375 dentists responded to this question, and it was found that 39.2% (147/375) of patients found cost as a major factor, 28.3% (106/375) found adjustment after delivery as a major factor, 27.5% (103/375) found fabrication of CPD as a major factor, and only 5.1% (19/375) fracture of the minor connectors and acrylic CPDs. General practitioners found adjusting the CPD after delivery as a problem (44.1% [56/127]), and this difference was statistically significant. Prosthodontists found the cost as a major factor (58.8% [50/85/9]), but the difference was statistically significant (P = 0.001).

When asked about in how many appointments, they will deliver CPDs, 375 dentists responded to this question, and it was found that 2.6% (10/375) of the dentists delivered them within 2 appointments, 33.1% (124/375) delivered them within 3 appointments, 38.4% (144/375) delivered within 4 appointments, and 25.9% (97/375) delivered within more than 4 appointments. Surprisingly, mostly general practitioners delivered the dentures in 3 appointments (52.8% [67/127]); Prosthodontists (42.3% [36/85] took more than 4 appointments to deliver the denture; differences was statistically significant (P=0.001).

When asked whether acrylic or flexible partial dentures is an alternative to CPDs, 45.6% (171/375) of the dentists justified acrylic or flexible partial dentures as an alternative to CPDs. A total of 204 (54.4%) dentists did not agree with giving acrylic or flexible RPDs. Mostly GDPs (62.9% [80/127;]) agreed for giving acrylic or flexible partial dentures as an alternative, but most of the prosthodontists (81.1% [69/85; P = 0.001]) disagree with it. The differences found were statistically significant.)

When asked for the reason for not recommending CPDs, 375 dentists responded to the question; 58.1% (218/375)

of the dentists told that implant-supported restorations are better options compared to CPDs, but still, majority of the dentists (57.4% [73/375]) were in favor that more importance for teaching CPDs in postgraduation curriculum should be given.

DISCUSSION

The functional and aesthetic rehabilitation of partially edentulous patients, whether missing single or multiple teeth, encompasses a range of treatment options, including provisional removable partial dentures, definitive cast partial dentures (CPDs), resin-bonded prostheses, fixed partial dentures (FPDs), and implant-supported prostheses.[11]

The poor adaptability of patients to removable partial dentures (RPDs), along with the potential need for additional long-term treatment options, highlights the importance of understanding patients' attitudes and expectations, as well as the clinical knowledge and techniques of dentists. By accurately identifying the reasons behind the declining preference for RPDs, effective methods and techniques can be implemented to achieve better outcomes. This study was conducted with the novel aim of understanding the perspectives of dental professionals towards the use of cast partial dentures in Gujarat.

In the present study, we investigated the use of CPDs by mostly Gujarat's dental professionals. With the availability of various treatment options for rehabilitation of partially edentulous patients, in this study, majority of the dentists preferred Implants (55.43%) or FPDs (36.8%) and only 7.5% of dentists preferred RPDs. Dissatisfaction with RPDs therapy was related to the position of tooth replaced (anterior esthetic requirements), patient age, and prior RPDs experience. Similar results were obtained in a study by Dikbas et al. where in 18% of US dental schools, RPDs were not a clinical requirement for graduation, which could be attributed to the increased interest toward implants with high success rates.¹

In the present survey, General practitioners mostly preferred Implants (44.1% [56/127]) and FPDs (40.2% [(51/127)]) and prosthodontists mostly preferred implants (61.1% [52/85]). Similar result was obtained in a study by Nagpal et al. where it was found that dentists' knowledge and attitude toward dental implants was maximum in postgraduate prosthodontists compared to General practitioners.⁸ Similar results were obtained in a study conducted by Maalhigh-Fard et al. which showed that a stronger positive correlation with offering and restoring implants was seen in graduates who had completed the elective program in implant dentistry.⁹ A study conducted by Eckert et al. showed that most prosthodontists used implant-supported prosthesis in their practice.¹⁰

Sometimes, RPDs serve to be the treatment of choice because of some anatomical, cost, and other patient factors.¹¹ In the present survey, 40.2% of dentists preferred CPDs maybe because of the theoretical belief that these are the better choices.

There is an increase in the use of flexible dentures (25.2%), and 45.6% of the dentists justified giving flexible dentures over CPDs. These flexible dentures have better patient acceptance, are comfortable, and are also functionally and esthetically better than CPDs at a low cost. Prosthodontists generally preferred CDs (76.4% [65/85]), whereas flexible dentures were mostly preferred by other specialists (34.3% [56/163]). Surprisingly, General practitioners found that patients regularly agreed for CPDs (40.2%), whereas prosthodontists found that patients regularly agreed for CPDs (76.4%). This is also reported by Hill et al. as specialists had a negative opinion about flexible dentures and more General practitioners compared to specialists prescribe flexible prostheses in their clinical practice, the reason of which may be that there is a lack of enough clinical evidence for the use of flexible dentures.¹²

General practitioners mostly reported raised adjustment of CPDs as the major issue

(44.1[56/127]) for not preferring them in the present survey. Similar result was found by Allen et al. in their survey in England, where majority of the GDPs agreed that the gross national health service (NHS) fee for a RPDs is not feasible and in fact is a disincentive to providing cobalt chrome RPDs.¹³

In the present survey, when asked for the reason of not recommending CPDs, 58.1% (218/375) of the dentists said that implant-supported restorations are better options compared to CPDs, but still, majority of the dentists (56.3% [211/375]) were in favor that more importance for teaching CPDs in postgraduation curriculum should be given.

Although General practitioners did not follow much implants in their clinical practice, still they are in favor of it. The reason for this may be lack of training courses and that patients' economic status led to poor implant results and a negative attitude for the same among General practitioners. Training in the field of implants is an added factor that may enhance the knowledge, provide a good attitude, and increase the practice of implants. Those who have received implant training obviously have an edge over those who did not with regard to the knowledge, attitude, and results.

CONCLUSION

Within the limitations of the present survey, the following conclusions were drawn:

1. In Gujarat, General practitioners (44.1%) prefer Implants and FPDs (40.2%) equally and followed by flexible dentures (36.8%) and very less were recommending removable partial dentures.
2. Prosthodontists and other specialists mostly prefer implants (61.1%) because they are more confident and better trained in these.
3. It is recommended that greater emphasis be placed on teaching implants alongside CPDs in the dental graduation curriculum. This will enable

practitioners to better educate their patients about the advantages of implants over bridge prosthesis and flexible dentures and to utilize implants in cases where patients are unwilling to opt for CPDs.

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