

The Knowledge, Attitude and Practice of Fixed Prosthodontics: A Survey among Ahmedabad Dental Practitioners

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ABSTRACT

Aim: The aim of this study was to evaluate the knowledge, attitude and practice of fixed prosthodontics guidelines amongst dental practitioners of Ahmedabad.

Materials and Methods: A descriptive cross-sectional study was done amongst the Dental Practitioners of Ahmedabad. A total of 150 dentists were selected randomly (from public and private dental clinics and dental colleges). A survey was conducted through printed questionnaire composed of 18 closed and multiple-choice questions. Data from the completed questionnaires were analyzed.

Results: This study showed that Knowledge regarding fixed partial dentures was widespread among post graduates and dental practitioners and variations existed among the subjects with respect to age, gender, year of experience, practice area and their specialization. It was also found that the attitude & practice towards fixed prosthodontics and their evidence-based knowledge were variable.

Conclusion: The dental practitioners of Ahmedabad displayed an acceptable level of knowledge and a level of awareness of fixed prosthodontics practicing. However, to further enhance the proficiency, efforts should be made to encourage the practitioners to be aware of the advances in fixed prosthodontics practice through continuous dental education programme.

Keywords: cross-sectional, knowledge, prosthodontics, questionnaire.

INTRODUCTION

The scope of fixed prosthodontic treatment can range from the restoration of a single tooth to the rehabilitation of the entire occlusion. Single teeth can be restored to full function, and improvement in cosmetic effect can be achieved. Missing teeth replaced with fixed prostheses will improve patient comfort and masticatory ability, maintain the health and integrity of the dental arches, and, in many instances, elevate the patient's self-image. It is also possible, that the use of fixed restorations can

render supportive and long-range corrective measures to the temporomandibular joint and its neuromuscular components. On the contrary, with improper treatment of the occlusion, it may lead to disharmony and damage to the stomatognathic system¹ Several studies were conducted to evaluate the knowledge, attitude and practice of fixed prosthodontics among dental practitioners. It is necessary to increase the awareness among dental practitioner about here recent advances and failure

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of fixed partial dentures.² The purpose of this study was to evaluate the knowledge, attitude and practice of fixed prosthodontics among dental practitioners in Ahmedabad.

MATERIALS AND METHOD

Study setting

This descriptive cross-sectional study was done amongst dental practitioners (DPs), general practitioners [GP] and (specialists) of the Ahmedabad. A total of 150 dentists were selected randomly from private and public sectors and dental colleges. The study was approved by ethical committee of Goenka Research Institute of Dental Sciences.

Study subjects

A total of 150 dentists participated in this study. Of which, 85 (56.6%) were females while 65 (43.4%) were males. Also 112 of them were general practitioners whereas 38 were specialists.

Methodology

Questionnaires were distributed amongst all the participants after informing them aims and objectives of the study and obtained informed consent, 18 closed end as well as multiple choice questions delivered to dental practitioners. Questionnaire was prepared in English language. The questionnaire comprised questions to assess the knowledge, attitude, and practice of fixed prosthodontics among dental practitioners (DP's) of Ahmedabad was adapted from Kannan *et al.*³ Questionnaires were distributed among practitioners of Ahmedabad private clinics of Maninagar, Naroda and Narol regions and private and public dental schools of Ahmedabad. The questionnaire was semi-structured and pre-tested to check the validity and reliability. The pre-testing of paper-based questionnaire was done by running a pilot test on 30 dentists. The result of the pilot study was evaluated and a reliability coefficient of 0.80 or more was considered adequate. Adequate time was provided to fill the questionnaire. The response of the practitioners were recorded, tabulated and assessed after analysing the flaws. The questionnaires consisted of two parts. The first part measured gender, level of education, age, place of work and number of years of

practicing experience. The second part evaluated the knowledge of standard guidelines to be followed by the practitioner in prosthodontic practice such as pre-treatment vitality tests, fabrication of study models, use of high speed handpieces, use of carbide/diamond burs, disinfection of impression, radiographic evaluation, type of tray used, type of impression technique, impression material and quality of communication with the dental laboratory technician.

RESULTS

A total of 150 dentists participated in the study; Out of the total 85 (56.6%) were females while 65 (43.4%) were males. Among total, 38 (25.33 %) were specialists and 112 (74.66%) were general practitioners [Table 1]. The experience level of the participating dentists was as follows: 52 (34.66%) of dentists were practicing crown and bridge for 1-3 years, 58 (38.66%) of dentists were practicing crown and bridge for 4-10 years, 29 (19.33%) of dentist were practicing for 11-15 years while 11 (7.33%) of them were practicing for more than 16 years [Table 1]. Among total 90 (60%) worked in private clinics. While, 44 (29.33%) of respondents worked in dental colleges and 16 (10.66%) dentists worked in governmental hospitals [Table 1].

Of the total 150 participants only 45 (30%) fabricated study models before commencing fixed prosthodontic treatment and 30 of them rarely fabricated it and 57 (38%) of participants answered that they often fabricate study models and 18 (12%) of participants stated that they started treatment without study models. There was significant statistical difference (P value=0.011) [Table 2] between both groups.

Vitality test for restored abutments were always done by 66 (44%) respondents while 44 (29.33%) often used it and 12 (8%) of respondents never use it on regular basis [Table 2]. There was significant statistical difference between general dentist and specialists (P value=0.0187).

Majority of respondents 99 (66%) were using high-speed handpieces and 25 (16.66%) were using both high and low speed during preparation]. No significant statistical difference was found regarding the use of hand piece (P value =0.353) between both groups.

The diamond bur was mostly used during preparation 119 (79.33%) and 31 (20.66%) were using carbide and diamond burs during preparation [Table 2]. Also there was no significant statistical

difference between general dentists and specialists regarding the use of burs also ,as almost none of them used only carbide burs for preparation of fixed prosthesis.(P value=0.31949)

Table 1: Demographic structure of sample.

	No	Percentage %
1-Gender		
Female	85	56.6%
Male	65	43.4%
2-Years of practice experience		
1-3 years	52	34.66%
4-10 years	58	38.66%
11-15 years	29	19.33%
More than 16 years	11	7.33%
3-level of education		
General dentists	112	74.66%
Specialists	38	25.33%
4-Place of work		
Private clinics	90	60%
Dental schools	44	29.33%
Government hospitals	16	10.66%

Among them 80 (53.3%) of participants always used radiographs for abutment tooth evaluation 37 (24.66%) of them used it often and 12 (8%) never

used any radiograph before starting treatment. Here also there was significant Statistical difference (P value=0.031) [Table 2] between both groups.

Table 2: Response rate of the participants on different parameters evaluated.

	General dentist	Specialist	Total	
	N (%)	N (%)	N (%)	
5-Do you make study cast?				
Always	29 (25.8)	16 (42.10)	45 (30)	Chi-square test=11.112, P value of 0.01113
Often	39 (34.82)	18 (47.36)	57(38)	
Rare	27 (24.10)	3 (7.89)	30 (20)	
Never	17 (15.17)	1 (2.63)	18 (12)	
6-Do you take a preoperative radiograph for the abutment tooth (teeth)?				
Always	52 (46.42)	28 (73.68)	80(53.33)	Chi-square test=8.829, P value of 0.0316
Often	31 (27.67)	6 (15.78)	37 (24.66)	
Rare	19(16.96)	2 (5.26)	21 (14)	
Never	10 (8.92)	2 (5.26)	12 (8)	
7-Do you do vitality test for restored abutment?				
Always	48(55.35)	18 (47.26)	66 (44)	Chi-square test=9.984, P value of 0.0187
Often	32(28.57)	12 (31.57)	44 (29.33)	
Rare	23(20.53)	5 (13.15)	28 (18.66)	
Never	9(8.03)	3 (7.89)	12 (8)	
8-Which type of hand-piece do you use for the preparation?				
High speed	75 (66.96)	24 (63.15)	99(66)	chi-square test=2.078,

Low speed	21 (18.75)	5 (13.15)	26 (17.33)	P value of 0.353
Both of them	16 (14.28)	9 (23.68)	25 (16.66)	
9-Types of burs you usually use?				
Carbide bur	0 (0)	0 (0)	0 (0)	Chi-square test=0.991, P value of 0.31949
Diamond bur	91 (81.25)	28 (73.68)	119 (79.33)	
Carbide and diamond burs	21 (18.75)	10 (26.31)	31 (20.66)	
10-Which type of impression material do you often use for the final impression?				
Alginate	64 (57.14)	10 (26.31)	74 (49.33)	Chi-square test=13.075, P value of 0.004477
Additional cured silicon	18 (16.07)	15 (39.47)	33 (22)	
Condensation cured silicon	23 (20.53)	10 (26.31)	33 (22)	
Others	7 (6.25)	3 (7.89)	10 (6.66)	
11-Which type of impression tray do you use for final impression?				
Stock trays	74 (66.07)	19 (50)	93 (62)	Chi-square test=9.48, P value of 0.008703
Special trays	28 (25)	8 (21.05)	36 (24)	
Both of them	10 (8.92)	11 (28.94)	21 (14)	
12-If you use elastomeric impression materials, which type of impression techniques do you use?				
Putty and wash techniques	84 (75)	30 (78.94)	113 (75.33)	chi square test=0.81, P value of 0.84
Monophase	7 (6.25)	2 (5.26)	9 (6)	
Single step	14 (21.4)	5 (13.15)	19 (12.66)	
Other	7 (6.25)	1 (2.63)	8 (5.33)	
13-Do you do interocclusal records (bite) for multiple teeth replacement?				
Always	92 (82.14)	24 (63.15)	116 (77.33)	Chi-square test=6.312, P value of 0.09737
Often	14 (12.5)	9 (23.68)	25 (16.66)	
Rare	4 (3.57)	4 (10.52)	8 (5.33)	
Never	2 (2.4)	1 (2.63)	3 (2)	
14-If yes, which material do you use?				
Wax	79 (70.53)	21 (55.26)	100 (66.66)	Chi-square test=3.26, P value of 0.1959
Silicon	14 (12.5)	6 (15.78)	20 (13.33)	
Wax and Silicon	19 (16.96)	11 (28.94)	30 (20)	
15-Do you use retraction cord for soft tissue displacement before you take the impression?				
Always	36 (32.14)	20 (52.63)	56 (37.33)	Chi-square test=6.12, P value of 0.1059
Often	38 (33.92)	11 (28.94)	49 (32.66)	
Rare	21 (18.75)	5 (13.15)	26 (17.33)	
Never	17 (15.17)	2 (5.26)	19 (12.66)	
16-Do you do Provisional or temporary crown or bridge after finishing the preparation?				
Always	31 (27.67)	27 (71.05)	58 (38.66)	Chi-square test=22.851, P value of 0.000043
Often	37 (33.03)	6 (15.78)	43 (28.66)	
Rare	32 (28.57)	3 (7.89)	35 (23.33)	
Never	12 (10.71)	2 (5.26)	14 (9.33)	
17-Do you chemically disinfect the impression after your remove it from the patient mouth and before you pour it or send it to the lab?				
Always	67 (59.82)	28 (73.68)	105 (70)	Chi-square test=14.429, P value of 0.002375
Often	42 (37.5)	5 (13.15)	47 (31.33)	
Rare	2 (1.78)	5 (13.15)	7 (4.66)	
Never	1 (0.89)	0 (0)	1 (0.66)	
18-What is your communication method with the dental technician?				
Written prescriptions	22 (19.64)	12 (31.57)	34 (22.66)	Chi-square test=3.481, P value of 0.32323
Verbal communications	29 (25.89)	8 (21.05)	37 (24.66)	
Both written prescriptions and verbal communications	57 (50.89)	18 (47.36)	75 (50)	
Other	4(3.57)	0 (0)	4 (2.66)	

Of the total 33 (22%) used addition silicon and 33(22%) used condensation silicone for making final impression while majority 74 (49.33%) preferred to make final impressions using alginate while 10 (6.66%) were using other materials. Here also there was no significant clinical difference between general practitioners and specialists.(P value=0.0044)

93 (62%) of respondents were using stock trays and 21(14%) preferred to use both special and stock tray in their practice [Table 2]. Hence no significant statistical difference was observed between general practitioners and specialists (P value=0.008703)

Most of the dentists used putty and wash impression i.e, 113 (75.33%) who use elastomeric impression material followed by single step 19 (12.66%). Monophase technique was rarely used by 9 (6%). Here also no significant statistical difference was observed (P value=0.84) between both groups.

Majority of respondents 116(77.33%) always took bite registration for multiple teeth replacements whereas 3(2%) answered that they never used bite registration material. No significant statistical difference observed (P value=0.09737) [Table 2] between both groups.

100 (66.66%) of them used wax for bite registration,whereas 30 (20%) used wax and silicon while 20 (13.33%) used silicone alone.No significant stastical difference was observed in this aspect also(P value=0.1959) between both the groups.

Out of the total 56 (37.33%) of respondents always used retraction cord while 19 (12.66%) answered that they never used retraction cords. In this aspect also no significant statistical error was found.(P value=0.1059) between both the groups.

Among the total respondents 58 (38.66%) practitioners always gave provisional restoration while 14 (9.33%) of practitioners never gave provisional crown and bridges. In this aspect difference was observed between specialists and general dentists (P value=0.000043)

Majority off the participants i.e,105 (70%) respondents disinfected the final impression chemically before fabricating cast and sending it to

lab, while 1(0.66%) of them did not disinfect it [Table 2].No significant stastical difference observed (P value=0.002375) between both the groups.

Regarding communication with the lab,both written prescriptions and verbal communications were used by 75 (50%) respondents while 34 (22.66%) provide only written instructions. Here significant statically difference was observed between general dentists and specialists (P value=0.32323)[Table 2].

DISCUSSION

The absence of natural teeth is a health problem which not only results in compromised function but it also has a great impact on esthetics and psychological well-being of patient.³Since time immemorial various attempts have been made to replace missing teeth with prosthesis which resemble natural teeth in form, function and appearance. This solution is achieved with removable/fixed partial and complete dentures and fixed bridges.⁴However there are some inherent problems with dentures and fixed bridges such as compromise of adjacent healthy teeth and accumulation of food debris and plaque.⁵Hence knowledge and proper planning is required for success of fixed prosthesis. This cross-sectional study was used to assess knowledge, attitude and fixed prosthodontics practice among Dental Practitioners in Ahmedabad. Study models are essential for proper diagnosis and treatment planning.⁶Anand Sherwood in Madurai, concluded that general dental practitioners are able to detect radiographic changes only when they are extensive but they miss periodontal ligament width and lamina dura changes.⁷While in the present study 53.33%dentists made radiographs before going for fixed partial denture treatment and considered evaluation of the abutment to be an integral part in diagnosis and treatment planning for fixed prosthodontic restorations.⁸Alhoumaiden et al in a study concluded that the vitality test for restored abutments was always done by 132 (45.5%) respondents. In the present study 44% of the total respondents performed vitality tests prior to selection of abutment teeth. Mohammed et al concluded in a study that high-speed hand-pieces were the instrument of choice for 80.54% practitioners⁹Whereas in the present study 66% of the practitioners used high speed handpieces.

Sumeet Sharma et al concluded in his study that most practitioners preferred diamond burs (75%) over carbide burs (15%).¹⁰ The present study concluded that all of the practitioners preferred diamond burs and none of them preferred carbide burs. According to study conducted by Keerthna et al in Chennai, 93% of the dentists used irreversible hydrocolloid, 88% used addition silicone for final impressions in 66% putty reline /dual mix technique without spacer with almost 86% providing provisional prosthesis.¹¹ The present study concluded that most of the practitioners preferred using alginate as final impression material and most of them preferred to use stock metal tray for the same. According to a study conducted in nepal by Lajana et al 60.6% reported the use of gingival retraction cords 5.1% used cordless technique and 18.9% used surgical technique as an aid for gingival displacement.¹² The present study state that 56% dentists used retraction cords to retract gingival before making final impression. Shabir ahmed sha et al in a study concluded that 36.05% never used temporary crowns and bridges.¹³ The present study concluded that 38.66% dentists of Ahmedabad always made provisional crowns and bridges. Another study conducted by Kavitaru et al stated that most of the practitioners preferred wax as interocclusal recording material polyvinyl siloxane and polyether. Also most of them preferred full arch inter-occlusal record and only 51.5% trimmed the records prior sending it to dental laboratory.¹⁴ In the present study it was concluded that 77.33% participants always took interocclusal record and majority of them used wax as material of choice. Hana M.Al-Al Sheikh in a study concluded that half of the written instructions were considered "clear" out of which 34% had to seek clarification from the dentists concerning the written instructions indicating inadequate prescription.¹⁵ Many studies have demonstrated concerns about the quality of dentist technician communication.¹⁶⁻²¹

However the present study concluded that 22.66% dentists always gave written instructions to the laboratory technician According to a study conducted by Ahoumaidan et al 72.4% respondents disinfected the final impression chemically before fabricating the cast and sending it to laboratory.¹⁶ In present study disinfection was carried out for impression by 70% of total dentists.

CONCLUSION

Today is an era of evidence based dentistry .This study gives us a comprehensive real picture regarding the huge gap that prevails between the knowledge practitioners possess to what they implement in their practice. Considering the limitation of the present study conducted it can be concluded that most practitioners considered abutment evaluation to be important part of fixed partial denture, but majority of them did not fabricate study models, neither use vitality test nor take preoperative diagnostic radiographs for abutment evaluation. The technique of final impression most commonly employed by specialists was putty and wash, as they prefer silicone whereas general practitioners on the contrary preferred to use alginate using stock metal tray. Also significant difference was found between specialists and general dentists regarding the use of retraction cord and inter occlusal records for multiple teeth replacement. Wax was clearly the preferred material of choice for making inter occlusal record. Most of dentists disinfected their final impression chemically before fabricating cast and send it to lab and both written prescriptions and verbal communications were used during communication between dentist and lab by majority of participants. Provisional restorations were also mostly always given by specialists while often given by general practitioners. Hence it can be concluded from the present study that the specialists practicing in Ahmedabad displayed a good level of knowledge in fixed prosthodontic practices whereas the general dentists displayed acceptable level of knowledge. Hence, in order to further enhance the proficiency of practitioners; efforts should be made in the direction of increasing awareness about the recent advances of fixed prosthodontics by increasing participation in state of the art continuous dental programs. The present study showed that post graduates had better knowledge compared to general practitioners. However no literature is available to support the same and further research in this direction is required.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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