



Knowledge and Practice Awareness of Fixed Prosthodontics Among Dentists in Guntur City: A Cross-Sectional Survey

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Abstract: Background: Fixed prosthodontic treatment plays an important role in restoring oral function, esthetics, and patient comfort. The present descriptive cross-sectional survey was conducted among dentists in Guntur city to evaluate their knowledge and practice awareness regarding fixed prosthodontics using a validated 22-item questionnaire. A total of 220 dentists participated in the study, and the majority demonstrated acceptable awareness regarding diagnostic procedures, impression techniques, gingival retraction, laboratory communication, and post-treatment follow-up protocols. Addition silicone was the most preferred impression material, while glass ionomer cement was the commonly used luting agent. The study concluded that most dentists followed recommended prosthodontic protocols, although continued professional education may further improve evidence-based clinical practice. **Advancement of Knowledge:** The present study provides insight into the current knowledge and practice patterns of dentists regarding fixed prosthodontic procedures in Guntur city. It highlights the level of adherence to recommended clinical protocols and emphasises the need for continuous professional training and incorporation of newer digital prosthodontic techniques for improved treatment outcomes.

Keywords: Fixed prosthodontics, Fixed partial denture, Knowledge, Practice awareness, Dentists, Impression techniques, Prosthodontic survey, Guntur city.

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INTRODUCTION

Fixed prosthodontic treatment plays a vital role in the restoration of oral function, esthetics, mastication, and overall quality of life among partially edentulous patients.[1,2] Awareness and appropriate clinical practice regarding fixed partial dentures (FPDs) among dental professionals are essential for achieving long-term treatment success and patient satisfaction.[3,4]

The success of prosthodontic treatment depends not only on technical expertise but also on adequate diagnosis, treatment planning, material selection, and maintenance protocols followed by the clinician.[5,6] Previous studies have shown that insufficient knowledge and inappropriate clinical practices among dentists may lead to failure of prosthodontic restorations, periodontal complications, secondary caries, and patient dissatisfaction.[7,8]

Recent advancements in dental materials and adhesive technologies have significantly improved the prognosis and durability of fixed prostheses; however, awareness regarding their appropriate use varies among practitioners.[9] Studies conducted among dental professionals and postgraduate students have demonstrated varying levels of knowledge and awareness regarding prosthodontic procedures and medico-legal aspects of dental practice.[10–12]

Oral health awareness among healthcare professionals has been associated with improved patient education, interdisciplinary collaboration, and better healthcare outcomes.[13–16] Several studies have emphasised the importance of assessing dentists' knowledge, attitude, and practice patterns toward prosthodontic treatment to identify gaps in clinical understanding and enhance educational strategies.[17–20]

In India, the increasing demand for fixed prosthodontic treatment highlights the need for adequate professional awareness and evidence-based clinical practice among dentists.[21] Furthermore, collaboration between medical and dental professionals has been recommended to improve overall healthcare delivery and patient

management.[22] Therefore, the present study was undertaken to assess the knowledge and practice awareness of fixed prosthodontics among dentists in Guntur city.

Methodology

The present study was a descriptive cross-sectional survey conducted among dentists practising in Guntur city to evaluate the knowledge and practice awareness of fixed prosthodontics among dental practitioners using a structured questionnaire. Data were collected from dentists randomly selected from both public and private dental clinics using an online/offline self-administered questionnaire. The sample size was calculated using G*Power software version 3.1.9.2. A total sample size of 220 participants was obtained with an effect size of 0.3 and study power ($1-\beta$) of 95%. Dentists willing to participate in the study and practising in Guntur city were included, whereas those not willing to participate and those not involved in clinical practice were excluded. A validated, pre-designed, closed-ended, multiple-choice questionnaire consisting of 22 questions was used for data collection. The questionnaire assessed knowledge and practice awareness regarding various aspects of fixed prosthodontic procedures, including diagnostic impressions, abutment evaluation, tooth preparation, impression techniques, gingival retraction, shade selection, laboratory communication, provisional restorations, luting agents, and follow-up protocols. The responses were recorded using dichotomous and multiple-choice options. Participants who were willing to participate and provided informed consent were asked to complete the questionnaire through online or offline mode. The collected data were entered into Microsoft Excel sheets for tabulation and statistical evaluation. Descriptive statistics were used to summarise demographic details and questionnaire responses. The chi-square test was used to assess associations between variables, with a significance level of $p < 0.05$.

Result :

A total of 220 dentists participated in the present cross-sectional survey assessing the knowledge and practice awareness of fixed prosthodontics among dentists in Guntur city. The responses obtained from the questionnaire were analysed using descriptive statistics and the Chi-square test. Among the participants, 47.3% (104) of dentists routinely made diagnostic impressions and study casts, while 80% (176) utilized IOPA for abutment assessment. Pre-operative vitality testing of abutments was routinely performed by 41.8% (92) of participants, and 79.1% (174) performed a pre-operative clinical abutment evaluation before initiating treatment (Table 1). Regarding tooth-preparation procedures, 61.8% (136) of dentists preferred high-speed handpieces, and 66.4% (146) used specifically designed tooth-preparation burs. Half of the respondents (110) evaluated check casts before making final impressions. Nearly 49.1% (108) of the participants recorded tooth preparations using both conventional impression and digital methods. Gingival retraction before making final impressions was routinely practised by 64.5% (142) of dentists (Table 2). With respect to impression procedures, special trays were preferred by 50.9% (112) of respondents, and addition silicone was the most commonly used final impression material by 70% (154). Silicone-based materials were predominantly used for bite registration by 45.5% (100) of participants. About 50% (110) of dentists routinely provided interim crowns following tooth preparation (Table 3). Regarding laboratory communication and clinical procedures, verbal communication with laboratory technicians was preferred by 50.9% (112) of respondents. About 45.5% (100) sought articulation from laboratory technicians, and 50% (110) insisted on die preparation. Metal trial appointments were considered important by 52.7% (116) of participants, whereas 60% (132) routinely scheduled bisque trial appointments. Glass ionomer cement was the most commonly used luting agent by 60.9% (134). Furthermore, 89.1% (196) of dentists provided post-insertion instructions, and 85.5% (188) requested follow-up appointments after treatment completion (Table 4). The findings of the present study demonstrated that the majority of dentists practising in Guntur city exhibited acceptable knowledge and practice awareness regarding fixed prosthodontic procedures, with adherence to recommended clinical protocols in most aspects of treatment.

Table 1. Distribution of responses regarding diagnostic and pre-operative procedures (n = 220)

Questions	Responses	n (%)
Do you make diagnostic impressions & study casts?	Yes	104 (47.3)
	Sometimes	86 (39.1)
	No	30 (13.6)
Do you utilise IOPA to assess abutments?	Yes	176 (80.0)
	Sometimes	36 (16.4)
	No	8 (3.6)
Do you perform preoperative vitality testing on abutments?	Yes	92 (41.8)
	Sometimes	88 (40.0)
	No	40 (18.2)
Do you perform pre-operative clinical abutment evaluation?	Yes	174 (79.1)
	Sometimes	40 (18.2)
	No	6 (2.7)

The majority of dentists utilised IOPA for abutment assessment (80%) and performed pre-operative clinical abutment evaluation (79.1%) (Table 1).

Table 2. Distribution of responses regarding tooth preparation and impression procedures (n = 220)

Questions	Responses	n (%)
Type of handpiece used in preparation	High speed	136 (61.8)
	Both	80 (36.4)
	Low speed	4 (1.8)
Use of specifically designed tooth preparation burs	Yes	146 (66.4)
	Sometimes	54 (24.5)
	No	14 (6.4)
	Not sure	6 (2.7)
Do you evaluate the check cast before the final impression?	Yes	110 (50.0)
	Sometimes	82 (37.3)
	No	28 (12.7)
How do you record tooth preparations?	Both methods	108 (49.1)
	Impression method	96 (43.6)
	Digital method	16 (7.3)
Do you perform gingival retraction before the final impression?	Yes	142 (64.5)

	Sometimes	64 (29.1)
	No	14 (6.4)

Most dentists preferred high-speed handpieces (61.8%) and specifically designed tooth preparation burs (66.4%). Gingival retraction before final impression making was routinely practised by 64.5% of respondents (Table 2).

Table 3. Distribution of responses regarding impression materials and laboratory procedures (n = 220)

Questions	Responses	n (%)
Choice of trays for impression making	Special trays	112 (50.9)
	Metal trays	94 (42.7)
	Plastic trays	14 (6.4)
Material of choice for final impression	Addition silicone	154 (70.0)
	Condensation silicone	46 (20.9)
	Alginate	14 (6.4)
	Others	6 (2.7)
Material/equipment used for bite registration	Silicone	100 (45.5)
	Modelling wax	80 (36.4)
	Alu wax	30 (13.6)
	Scanners	10 (4.5)
Do you provide interim crowns?	Yes	110 (50.0)
	Sometimes	92 (41.8)
	No	18 (8.2)

In addition, silicone was the most commonly preferred final impression material (70%), while silicone-based bite registration material was used by 45.5% of participants (Table 3).

Table 4. Distribution of responses regarding shade selection, laboratory communication and follow-up procedures (n = 220)

Questions	Responses	n (%)
Preferred communication with the laboratory technician	Verbal	112 (50.9)
	Written	48 (21.8)
	Digital	34 (15.5)
	Pictorial	26 (11.8)
Do you seek articulation from a lab technician?	Yes	100 (45.5)
	Sometimes	80 (36.4)
	No	40 (18.2)
Do you want to prepare the die?	Yes	110 (50.0)
	Sometimes	78 (35.5)
	No	32 (14.5)
Do you schedule a metal trial appointment?	Yes, recommended	116 (52.7)
	Maybe, depends	90 (40.9)
	No	14 (6.4)
Do you offer bisque trial appointments?	Yes, recommended	132 (60.0)
	Maybe, depends	78 (35.5)
	No	10 (4.5)
Material used for luting restorations	Glass ionomer cement	134 (60.9)
	Resin-based cement	70 (31.8)
	Polycarboxylate cement	16 (7.3)
Do you provide post-insertion instructions?	Yes	196 (89.1)
	Sometimes	22 (10.0)
	No	2 (0.9)
Do you request follow-up appointments?	Yes	188 (85.5)
	Sometimes	28 (12.7)
	No	4 (1.8)

Most participants preferred verbal communication with laboratory technicians (50.9%), routinely provided post-insertion instructions (89.1%), and requested follow-up appointments (85.5%) after treatment (Table 4).

DISCUSSION

The present cross-sectional survey was conducted to evaluate the knowledge and practice awareness of fixed prosthodontics among dentists in Guntur city. Fixed prosthodontic treatment requires proper diagnosis, treatment planning, impression procedures, laboratory communication, and maintenance protocols for long-term clinical success.[1,2] The findings of the present study demonstrated that the majority of dentists showed acceptable awareness and adherence toward recommended fixed prosthodontic practices. In the present study, most participants routinely performed diagnostic impressions, study casts, and preoperative abutment evaluations before initiating treatment. Diagnostic casts and proper clinical evaluation are considered essential steps in fixed prosthodontic treatment planning as they improve precision and treatment predictability.[1,2] Similar findings were reported by Ansari et al.[1] And Alhoumaidan et al.[2], who observed that dental practitioners followed recommended diagnostic protocols during fixed prosthodontic procedures. The majority of dentists in the present study preferred high-speed handpieces and specifically designed tooth-preparation burs for tooth-preparation procedures. Appropriate armamentarium and preparation techniques play an important role in achieving ideal tooth reduction and marginal adaptation.[5,7] The present findings are in accordance with previous studies, which reported that most clinicians preferred rotary instruments specifically designed for fixed prosthodontic preparations.[2,5]

A majority of participants in the current study routinely practised gingival retraction prior to final impression making. Gingival displacement is considered a crucial step for obtaining accurate marginal detail and improved impression quality.[8] In addition, silicone was the most preferred impression material among participants, consistent with studies by Ansari et al.[1] And Alhoumaidan et al.[2], who reported widespread use of elastomeric impression materials due to their superior dimensional stability and accuracy.

The present study also observed that most dentists preferred special trays and silicone-based bite registration materials. Accurate bite registration and proper impression techniques are essential for the fabrication of well-fitting prostheses and the prevention of occlusal discrepancies.[4,8] Furthermore, approximately half of the respondents used both conventional and digital methods for recording tooth preparations, indicating gradual adoption of digital dentistry in routine prosthodontic practice.[9]

Interim restorations were routinely provided by many

participants in the present study. Temporary crowns help protect prepared teeth, maintain periodontal health, preserve occlusal relationships, and improve patient comfort during the interim phase.[5] Similar observations were reported in previous studies on prosthodontic awareness among dental practitioners.[2,11]

Communication with laboratory technicians is an important aspect influencing the success of fixed prosthodontic treatment.[22] In the current study, most participants preferred verbal communication with technicians, while many also insisted on the articulation and die-preparation procedures. Effective communication between clinicians and technicians contributes significantly to the precision, esthetics, and functional success of prostheses.[22]

Most dentists in the present study routinely scheduled metal and bisque trial appointments before final cementation. Clinical trial appointments are essential for evaluating marginal fit, occlusion, esthetics, and patient acceptance before the definitive prosthesis is delivered.[7,8] Glass ionomer cement was the most commonly used luting agent among participants, which may be attributed to its fluoride release, adequate adhesion, and ease of manipulation.[5]

The majority of participants provided post-insertion instructions and follow-up appointments to patients after treatment completion. Maintenance protocols and periodic follow-up are important for assessing prosthesis longevity, periodontal health, and patient satisfaction.[13,14] Previous studies have emphasised that patient education and recall visits improve long-term treatment outcomes and oral health awareness.[13–16]

Overall, the findings of the present study suggest that dentists in Guntur city possess an acceptable level of knowledge and practice awareness regarding fixed prosthodontic procedures. However, continued professional education and training programs may further improve adherence to evidence-based prosthodontic protocols and newer digital treatment modalities.[2,9,21]

CONCLUSION

The present study demonstrated that dentists in Guntur city possess an acceptable level of knowledge and practice awareness regarding fixed prosthodontic procedures. Most participants followed recommended clinical protocols related to diagnosis, impression making, laboratory communication, and post-treatment care. Continued professional education and adoption of evidence-based and digital prosthodontic practices may further enhance the quality and predictability of treatment outcomes.

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