Original Article

Treatment concepts for restorations of endodontically treated teeth: Survey of dentists in Jeddah city, Saudi Arabia

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Abstract

Introduction: Practices followed by dentists for restoring endodontically treated teeth (ETT) vary with a variety of available techniques and materials for post- and-core restorations. The aim of this study was to identify concepts for restoring ETT among dentists in Jeddah, Saudi Arabia.

Materials and Methods: A two-section questionnaire was developed using online web-based application (Google forms) and sent to 400 dentists. The first section collected demographic information and the second section concerned about the treatment concept and materials for restoring ETT. Descriptive statistics were used to analyze the data, followed by Chi-square or Fisher's exact test to compare the responses to different questions among general dentists and specialists/consultants.

Results: A total of 138 questionnaires were completed. Most of the participants reported a frequently or always use of extracoronal restoration in anteriors (55.1%), premolars (89.1%) and 88.4% for molars. Participant reported frequent placement of posts in anteriors (56.5%), premolars (84.1%) and 64.5% for molars. Nonmetallic post and cast post and core were the preferred option for anteriors and molars, while responses were equally divided between nonmetallic post and cast post and core for premolars. Composite resin was the preferred core material for all teeth.

Conclusions: The use of endodontic posts, composite resin as a core and extracoronal restoration for restoring ETT is common among participants. Some of the concepts expressed by the participants are outdated and does not coincide with the evidence-based practice.

Keywords: Coronal restoration, dental cement, endodontically treated teeth, post and core technique, survey

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INTRODUCTION

The goal of restoring endodontically treated teeth(ETT) is to restore esthetics, phonetic, and function.[1] Restoring ETT requires two additional goals which are providing coronal seal and protection against fracture, which necessitate conserve the natural tooth structure.[2] The survival of ETT is affected by many factors.[3] It is well known that failure of ETT is more likely due to restoration failure than endodontic treatment itself.[3]

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Ray and Trope evaluated the effect of the quality of the coronal restoration and root canal obturation on the radiographic periapical status. They concluded that the quality of coronal restoration was significantly more important than the quality for endodontic treatment for the healing of apical periodontitis.[4] Therefore, the final restoration of ETT is of very crucial for a successful outcome.

The amount of remaining tooth structure would dictate the options of final restoration and that would be different regarding anterior versus posterior teeth. Despite the fact the post is used to retain the core, the decision-making regarding the need of post placement, type of post (postdesign), and postmaterial is controversial.[5]

Dentists are challenged with the increasing number of ETT needed to be restored and with a growing inventory of different materials designed for restoring them. Scientific literature contains many studies which investigated the restoration of ETT.[6] Unfortunately, these studies are mostly in vitro and material-oriented and performance of materials in these studies might not reflect the real clinical performance.[7,8] In addition, literature lacks of well-designed clinical trials that answers different questions concerning restoration of ETT.[9,10] Hence, it is expected that the materials and techniques that are used in restoring ETT does not always reflect the best available scientific evidence. Dentists' choices of materials and techniques will be influenced by their knowledge level, years of experience, availability of materials, and clinician preference. Thus, collecting data regarding the dentists' practices and preferences for restoring ETT through surveys will help in understanding the current pattern, which will guide the dental curricula, continuous education courses, and future research interest. Therefore, the aim of the present study was to investigate the concepts, techniques, and materials used in restoring ETT by the dentists in Jeddah, Saudi Arabia, and the influence of level of specialization on the dentists' choices.

MATERIALS AND METHODS

Ethical approval

The study protocol was approved by Ethical Committee at King Abdulaziz University, Faculty of Dentistry (#004-01-17) and all procedures performed were in accordance with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Questionnaire development

A self-administrated questionnaire was developed in English to identify the treatment concepts for restoration of ETT. The questionnaire was developed using previous surveys conducted in other parts of the world.[7,8,11-15]

The developed questionnaire consisted of two sections: the first section collected demographic information and the second section concerned about the treatment concept and materials for restoring ETT. Two of these questions were conceptual and focused on the ferrule concept and the reason for postplacement. The rest of the questions asked about the preferred restorative option (direct or extracoronal), posttype (prefabricated metallic, prefabricated nonmetallic or cast post and core), core type (amalgam, composite resin, glass ionomer, or compomer), and luting cement type (zinc phosphate, zinc polycarboxylate, glass ionomer, resin, or other). Most of the questions were built on Likert scale (never, rarely, frequently, and always). Majority of the responses were collected taking in consideration the tooth position (anterior, premolar, or molar). All questions will be presented in the result section to avoid repetition. The face validity of the questionnaire was established by three experts in the fields of prosthodontic, restorative dentistry, and endodontics.

Study population

The research population was inclusive of general practitioners and residents, specialists or consultants in the field of prosthodontics, restorative dentistry and advance general dentistry.

Data collection

Two of the authors visited four major governmental hospitals in Jeddah, Saudi Arabia: King Abdulaziz University Dental Hospital, King Fahad hospital-North Dental Center, King Fahad Armed Force Hospital and King Abdulaziz Medical City (National Guard Hospital). Staff in these hospitals were approached to participate and asked to fill the questionnaire electronically using a provided hand-held device. The questionnaire was administrated using Google forms (Alphabet Co., Mountain View, CA) online web-based application. All participants were consented electronically before filling the online questionnaire. In addition, the questionnaire link was distributed to the Restorative Dentistry and Prosthodontics residency program directors in Jeddah to be distributed to the residents. Furthermore, the link was distributed by sending massages to a network of prosthodontists using the instant messaging software WhatsApp (WhatsApp Inc., Mountain View, California, USA).

Statistical analysis

Data was collected, tabulated, and statistically analyzed to estimate descriptive statistics (frequencies and percentages).

Chi-square or Fisher's exact test was used to compare the responses to different questions among general dentists and specialists or consultants. All statistical analyses were conducted using IBM Statistical Package for Social Science for Windows (SPSS, Version 23, SPSS Inc., IBM, Somers, New York, NY, USA) at a significance level of (0.05).

RESULTS

A total 400 potential participants were approached and invited to fill the questionnaire and 138 of them agreed to participate and completed the questionnaire, with a response rate of (34.8%). The responders included (n = 45, 32.6%) general dentists and (n = 93, 67.4%) specialist\consultants and about 53% of them were male. The majority of the dentists who filled the questionnaire have more than 10 years of experience (43.5%) and about 33% of them reported that they have restored 10–50 ETT during the last 12 months [Table 1].

Table 1: Sample characteristics

	n (%)
Years of experience	
<5	41 (29.7)
5-10	37 (26.8)
>10	60 (43.5)
Rank	
General dentists	45 (32.6)
Specialists/consultants	93 (67.4)
Specialty	
Prosthodontics	58 (62.3)
Restorative dentistry	30 (32.3)
Advance general dentistry	5 (5.4)
Number of ETT restored in the past 12 months	
<10	20 (14.5)
10-50	46 (33.3)
51-100	38 (27.5)
>100	34 (24.6)

ETT: Endodontically treated teeth

Out of the total 138 dentists, majority of the participants (81.2%) believe that lowering the level of the finish line apically below the core foundation increases the fracture resistance, while 10.1% believe that it does not increase the fracture resistance, and 8.7% are not sure.

More than 60% of the general dentists and specialists/consultants reported that they frequently to always restore anterior teeth with direct restorations. Similar percentages (about 40%) of the participants stated that they frequently to always place direct restorations in premolars and molars, while majority of them (about 89%) stated that they frequently to always place extracoronal restorations in premolars and molars. Responses to questions regarding the type of restorations placed in ETT can be seen in [Table 2].

When the dentists were asked about the reason for postplacement in ETT, almost all the dentists believed that the reason is to retain the core (93.5%), and many of them stated that the reason for post placement is to reinforce the tooth structure and reduces the fracture probability (23.3%) [Table 3].

Most of participants reported that they frequently place a post in endodontically treated anterior teeth (50.7%), premolars (55.8%), and molars (47.1%). Responses to the question regarding the frequency of postplacement in ETT can be seen in [Table 4].

Regarding the appropriate time for postplacement after root canal treatment, most of the responses were almost equally divided between immediately after obturation (31.2%), 48 h after obturation (31.2%) and 1–2 weeks after obturation (26.8%), while only 10.9% said that it does not matter.

About 2/3 of the participants reported that they frequently to always place nonmetallic prefabricated post in anterior teeth and premolars, while 63% of them reported that they rarely to never place them in molars. More than half of the participants reported that they frequently to always place cast post and core for anterior teeth (58%), premolars (69.9%) and molars (54.3%). Responses to the question regarding the type post preference for restoring ETT can be seen in [Table 5].

The participants in this study stated that they frequently to always preferred to use composite resin as a core buildup material in anterior teeth (92%), premolars (85%), and molars (78%). Responses to the question regarding the usage of different core buildup for ETT can be seen in [Table 6].

More than three-fourth of participants indicated that they cement the nonmetallic prefabricated post with resin cement (82%) followed by glass ionomer cement (8.7%). About 33% of the participants indicated that they cement metallic prefabricated posts with resin cement followed by glass ionomer for 31% of the participants. Forty-eight of participants (34.8%) use glass ionomer cement for cast post and core, followed by resin cement (30.4%). Responses to the question regarding the cement preference for cementing different type of posts can be seen in [Table 7].

DISCUSSION

The present study has provided information about the current treatment concept, techniques, and materials used in restoring ETT by the general dentists and specialists in

Table 2: Responses to the question on the frequency of restoring endodontically treated teeth with direct restoration (e.g., composite or amalgam) or extracoronal restoration (e.g., crown)

	Direct restoration		Extracoronal restoration	
	General dentist (total 45), *n* (%)	Specialist/consultant (total 93), *n* (%)	General dentist (total 45), *n* (%)	Specialist/consultant (total 93), *n* (%)
Anterior teeth				
Never	2 (4.4)	3 (3.2)	5 (11.1)	2 (2.2)
Rarely	12 (26.7)	32 (34.4)	22 (48.9)	33 (35.5)
Frequently	17 (37.8)	39 (41.9)	11 (24.4)	43 (46.2)
Always	14 (31.1)	19 (20.4)	7 (15.6)	15 (16.1)
*P**	0.499		0.018	
Premolars				
Never	6 (13.3)	20 (21.5)	4 (8.9)	2 (2.2)
Rarely	21 (46.7)	36 (38.7)	5 (11.1)	4 (4.3)
Frequently	12 (26.7)	29 (31.2)	14 (31.1)	30 (32.3)
Always	6 (13.3)	8 (8.6)	22 (48.9)	57 (61.3)
*P**	0.509		0.099	
Molars				
Never	8 (17.8)	21 (22.6)	4 (8.9)	2 (2.2)
Rarely	20 (44.4)	35 (37.6)	2 (4.4)	8 (8.6)
Frequently	11 (24.4)	23 (24.7)	11 (24.4)	27 (29.0)
Always	6 (13.3)	14 (15.1)	28 (62.2)	56 (60.2)
*P**	0.870		0.272	

*Using Chi-square or (Fisher's exact test)

Table 3: Responses to the question on the reason for placing a post in endodontically treated teeth

	Yes, *n* (%)	No, *n* (%)
To retain the core	129 (93.5)	9 (6.5)
To reinforce the tooth structure and reduces the fracture probability	32 (23.2)	106 (76.8)
To improve esthetics (for nonmetallic posts)	9 (6.5)	129 (93.5)
To prevent tooth discoloration due to the gutta-percha and sealer	3 (2.2)	135 (97.8)
Because it is financially rewarding in comparison to the core buildup without post	1 (0.7)	137 (99.3)

Table 4: Responses to the question on the frequency of postplacement in an endodontically treated teeth

	General dentist (total 45), *n* (%)	Specialist/consultant (total 93), *n* (%)
Anterior teeth		
Never	8 (17.8)	2 (2.2)
Rarely	18 (40.0)	5 (5.4)
Frequently	16 (35.6)	54 (58.1)
Always	3 (6.7)	
*P**	0.003	
Premolars		
Never	6 (13.3)	2 (2.2)
Rarely	7 (15.6)	7 (7.5)
Frequently	22 (48.9)	55 (59.1)
Always	10 (22.2)	29 (31.2)
*P**	0.022	
Molars		
Never	5 (11.1)	2 (2.2)
Rarely	9 (20.0)	33 (35.5)
Frequently	19 (42.2)	46 (49.5)
Always	12 (26.7)	12 (12.9)
*P**	0.013	

*Using Chi-square or (Fisher's exact test)

Jeddah city of Saudi Arabia with a special focus on the tooth position (anterior, premolar, or molar) as a factor that might influence the decision making.

Ferrule effect is considered an important factor for preventing failures of ETT. Lowering the level of the finish line 1–2 mm apically below the core foundation in an ETT increases the fracture resistance.[16] In the present study, 81.2% of the participants held this belief. This figure is in line with other investigations in Germany and Saudi Arabia where between 78% and 88% of the participants held the same belief,[7,8,14] and in contrast to a study in Sweden, in which 44%–53% of the participants held this belief.[13] It has to be emphasized that about 13% of the specialists/consultants and 31% of the general dentists failed to recognize the importance of ferrule for improving the fracture resistance although this is considered as a basic knowledge. This knowledge gap should receive a significant attention in designing a continuous education courses in the future.

When asked about the frequency of restoring anterior teeth using direct or extracoronal restorations, participants were divided between direct and extracoronal restorations. Previous studies showed survival rate above 90% for direct composite restorations retained using nonmetallic posts.[17-19] Responses of general dentists were similar to specialists/consultants in relation to direct restoration, but not for the extracoronal restoration. Higher percentage of the specialists/consultants indicated that they prefer to place extracoronal restorations for anterior teeth in comparison to general dentists, 63.2%–40%, respectively. This could be explained by the difference between the pool of cases seen by specialists/consultants and general dentists, as the former are expected to see complex, esthetically demanding and structurally compromised cases which might require

Table 5: Responses to the question on the frequency of using different type of posts

	Nonmetallic prefabricated post		Metallic prefabricated post		Cast post and core	
	General dentist (total 45)	Specialist/ consultant (total 93)	General dentist (total 45)	Specialist/ consultant (total 93)	General dentist (total 45)	Specialist/ consultant (total 93)
Anterior teeth						
Never	8 (17.8)	7 (7.5)	26 (57.8)	43 (46.2)	8 (17.8)	11 (11.8)
Rarely	7 (15.6)	14 (15.1)	14 (31.1)	31 (33.3)	10 (22.2)	29 (31.2)
Frequently	18 (40.0)	37 (39.8)	4 (8.9)	15 (16.1)	20 (44.4)	33 (35.5)
Always	12 (26.7)	35 (37.6)	1 (2.2)	4 (4.3)	7 (15.6)	20 (21.5)
*P**	0.265		0.573		0.420	
Premolars						
Never	11 (24.4)	11 (11.8)	24 (53.3)	35 (37.6)	7 (15.6)	9 (9.7)
Rarely	7 (15.6)	15 (16.1)	14 (31.1)	34 (36.6)	5 (11.1)	21 (22.6)
Frequently	15 (33.3)	51 (54.8)	7 (15.6)	22 (23.7)	22 (48.9)	43 (46.2)
Always	12 (26.7)	16 (17.2)	0 (0.0%)	2 (2,2)	11 (24.4)	20 (21.5)
*P**	0.06		0.326		0.364	
Molars						
Never	13 (28.9)	20 (21.5)	20 (44.4)	21 (22.6)	8 (17.8)	11 (11.8)
Rarely	16 (35.6)	38 (40.9)	11 (24.4)	35 (37.6)	8 (17.8)	36 (38.7)
Frequently	6 (13.3)	25 (26.9)	10 (22.2)	25 (26.9)	15 (33.3)	25 (26.9)
Always	10 (22.2)	10 (10.8)	4 (8.9)	12 (12.9)	14 (31.1)	21 (22.6)
*P**	0.105		0.067		0.1	

*Using Chi-square or (Fisher's exact test)

Table 6: Responses to the question on the frequency of using different core buildup materials

	Amalgam		Composite resin		Glass ionomer		Compomers	
	General dentist (total 45)	Specialist/ consultant (total 93)	General dentist (total 45)	Specialist/ consultant (total 93)	General dentist (total 45)	Specialist/ consultant (total 93)	General dentist (total 45)	Specialist/ consultant (total 93)
Anterior teeth								
Never	32 (71.1)	62 (66.7)	1 (2.2)	3 (3.2)	22 (48.9)	57 (61.3)	22 (48.9)	49 (52.7)
Rarely	12 (26.7)	26 (28.0)	3 (6.7)	4 (4.3)	13 (28.9)	29 (31.2)	15 (33.3)	32 (34.4)
Frequently	1 (2.2)	5 (5.4)	13 (28.9)	24 (25.8)	7 (15.6)	5 (5.4)	6 (13.3)	7 (7.5)
Always	0 (0)	0 (0)	28 (62.2)	62 (66.7)	3 (6.7)	2 (2.2)	2 (4.4)	5 (5.4)
*P**	0.759		0.876		0.096		0.719	
Premolars								
Never	17 (37.8)	30 (32.3)	1 (2.2)	2 (2.2)	24 (53.3)	55 (59.1)	27 (60.0)	49 (52.7)
Rarely	20 (44.4)	41 (44.1)	5 (11.1)	12 (12.9)	11 (24.4)	31 (33.3)	8 (17.8)	32 (34.4)
Frequently	5 (11.15)	17 (18.3)	17 (37.8)	39 (41.9)	7 (15.6)	3 (3.2)	6 (13.3)	9 (9.7)
Always	3 (6.7)	5 (5.4)	22 (48.9)	40 (43.0)	3 (6.7)	4 (4.3)	4 (8.9)	3 (3.2)
*P**	0.742		0.917		0.056		0.125	
Molars								
Never	10 (22.2)	19 20.4%	2 (4.4)	3 (3.2)	24 (53.3)	58 (62.4)	29 (64.4)	49 (52.7)
Rarely	13 (28.9)	23 (24.7)	2 (4.4)	23 (24.7)	13 (28.9)	26 (28.0)	8 (17.8)	30 (32.3)
Frequently	12 (26.7)	26 (28.0)	20 (44.4)	34 (36.6)	3 (6.7)	5 (5.4)	6 (13.3)	8 (8.6)
Always	10 (22.2)	25 (26.9)	21 (46.7)	33 (35.5)	5 (11.1)	4 (4.3)	2 (4.4)	6 (6.5)
*P**	0.913		0.019		0.417		0.265	

*Using Chi-square or (Fisher's exact test)

full coverage restorations. A recent survey evaluated the preferences of undergraduate students and newly graduate dentists in Saudi Arabia toward direct and extracoronal restorations as a restorative option for anterior ETT. More than 90% of participants in the survey chose direct restorations for teeth with <50% loss of coronal tooth structure and extracoronal restorations for teeth with more than 50% loss of coronal tooth structure.[20]

Responses to the frequency of using direct and extracoronal restorations for premolars and molars showed preference toward extracoronal restorations. This is in agreement with expected reduction in the strength of the tooth structure with endodontic access cavity opening, caries and restorative procedures which require occlusal coverage to protect the remaining tooth structure.[21-24]

In the present study, only 31% of the participants stated that they tend to place the postimmediately after obturation. This is contradicting with the obvious advantages of immediate postplacement following obturation including greater familiarity with the root canal morphology and its working length and less risk of coronal tooth tissue fracture and loss of reference point, which leads to better control over the amount of gutta-percha removal and less risk of root canal perforation.[25]

Table 7: Responses to the question on the cement type with each posttype

	General dentist (total 45), *n* (%)	Specialist/ consultant (total 93), *n* (%)
Nonmetallic prefabricated post		
Zinc phosphate cement	4 (8.9)	1 (1.1)
Polycarboxylate cement	1 (2.2)	1 (1.1)
Glass Ionomer cement	9 (20.0)	3 (3.2)
Resin cement	28 (62.2)	86 (92.5)
Other	3 (6.7)	2 (2.2)
*P**	<0.001	
Metallic prefabricated post		
Zinc phosphate cement	12 (26.7)	24 (25.8)
Polycarboxylate cement	1 (2.2)	2 (2.2)
Glass Ionomer cement	16 (35.6)	30 (32.3)
Resin cement	8 (17.8)	35 (37.6)
Other	8 (17.8)	2 (2.2)
*P**	0.006	
Cast post and core		
Zinc phosphate cement	10 (22.2)	27 (29)
Polycarboxylate cement	2 (4.4)	1 (1.1)
Glass ionomer cement	16 (35.6)	32 (34.4)
Resin cement	10 (22.2)	32 (34.4)
Other	7 (15.6)	1 (1.1)
*P**	0.006	

*Using Chi-square or (Fisher's exact test)

In the present study, the majority of participants (93.5%) believed that the purpose of postplacement is to retain the core This percentage is similar to previous studies in United Kingdom and Sweden,[13,26,27] and in contrast to other studies in Germany, Kuwait and Saudi Arabia in which a higher percentages were reported.[7,8,14,15] Surprisingly, 23.2% of the participants stated that they believe that post placement will reinforce the tooth structure. This is in contrast to the general believe that placement of post does not enforce the tooth structure.[10,24,28] It is worth mentioning that about 35% of general dentists and 17% of the specialists/consultants shared this believe. This misconception should receive a special attention during the future continues education courses.

It was apparent that most of the participants always to frequently place a post in ETT regardless of the tooth position. This finding is in agreement with previous reports from Sweden and Saudi Arabia.[13,14] Comparing general dentists to specialists/consultants' responses revealed a statistically significant tendency for post placement among specialists/consultants when restoring anterior teeth or premolars. It has to be stressed that the decision of post placement requires visualization of the remaining tooth structure after preparation which might need an initial preparation of the involved tooth. Specialists/consultants are expected to have better ability in visualizing the remaining tooth structure after preparation, thus they might tend to place post more frequently. In contrast, specialists/consultants reported lower tendency to place post in molars when compared to general dentists. This is could be due to the better experience and knowledge among specialists and consultants with the innovative conservative approaches in restoring ETT (e.g., utilizing pulp chamber for core retention and using intracoronal direct and indirect restorations with cuspal coverage).[29-31]

In regard to the posttype, nonmetallic prefabricated post was the first choice for anterior teeth and molars followed by cast post and core. The use of cast post and core in anterior teeth might interfere with the current trend of utilizing all-ceramic restorations for anterior teeth. When asked about the frequency of utilizing different type of posts for premolars, participants showed equal tendency for nonmetallic prefabricated post and cast post and core. Findings from previous studies are controversial. With some studies, in Germany and Saudi, Arabia favored nonmetallic prefabricated glass-fiber,[7,8,14] and other studies, in Sweden, United States, and United Kingdom, favored cast post and core.[13,26,32] These controversies could be attributed to the continuous changes in the trends in dentistry throughout the years as a result of the developments in the field of dental materials and new findings from *in vitro* and clinical studies.

Majority of participants stated that they frequently to always use composite resin as a core buildup for ETT. This is in agreement with previous studies in Germany and Saudi Arabia.[7,8,14] On the other hand, the participants in the present study reported that they frequently use amalgam as a core buildup material in restoring endodontically treated molars. This is in contrast to a previous study in Germany[7] and in agreement with previous studies in the United States and United Kingdom.[26,32] This inclination toward the use of amalgam is expected to decline in the near future as a result of the Saudi Arabia recent commitment in Minamata Convention to phasing out mercury containing product.[33]

The majority of participants use resin cement for cementation of nonmetallic prefabricated post, while for metallic prefabricated post and cast post and core they use glass ionomer cement, followed by composite resin cement. Previous studies differ in regard to the type of cement used. Two studies in United States and Saudi Arabia favoring the glass ionomer cement,[8,32] while one study in Saudi Arabia favoring the use of resin cement.[14] The use of glass ionomer with nonmetallic prefabricated post interferes with the need of proper bonding of the post with the root dentin to achieve mechanically homogeneous units "monoblock," which improves the stress distribution within the root and provides better sealing ability for better clinical outcomes.[34,35]

It has to be emphasized that comparing the results of the present study to previous studies should be perused with caution, as practices and material selections might be influenced by the geographic region and the trends changes in dentistry as a result of evolutionary advancement in relation to dental materials and body of the dental literature over the years. In addition, the differences in the responses between general dentists and specialists/consultants can be attributed to the differences in the experience. About 60% of the specialists/consultants had more than 10 years of experience in comparison to about 9% of the general dentists. In addition, 58% of the specialists/consultants restored more than 50 ETT during the past 12 months in comparison to 40% of the general dentists.

This study has some limitations. The survey was based on self-administrated closed-ended questions and the results might be affected by the inherited limitations of self-administrated questionnaires, including recall bias, providing ideal answers that do not reflect the real practice and providing answers based on different understanding and interpretation of the questions. Alternatively, collecting data via face-to-face interview through structured questionnaire might provide valuable data as it allows for discussion and provide insight on the rationale for different answers provided by the participants.

The questionnaire in the present study focused on gathering data regarding the common practice followed by participants and did not assess the decision-making ability. This could be the aim for a future study, in which the decision-making ability of the dentists can be assessed using structured hypothetical scenarios. The current study can be the nidus for a nation-wide dental practice-based research aiming to assess the common practices and material selections followed by dentists and link them to different clinical outcomes.

CONCLUSIONS

The practical use of endodontic posts, composite resin as a core foundation and extracoronal restoration for restoring ETT is common among participating dentists in this study. This survey shed the light on certain misconception and knowledge gap among the participants. These misconceptions should be stressed in the dental curricula and continuous education courses.

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Conflicts of interest
There are no conflicts of interest.

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