

KNOWLEDGE AND PRACTICE ON POST-ENDODONTIC RESTORATIONS AMONG DENTAL PRACTITIONERS; A SURVEY-BASED STUDY IN RIYADH, SAUDI ARABIA

Abdulaziz Alobaidi^{1*}, Bander Abuhaimed¹, Meshari Alhomrani¹, Saud Alshahrani¹

¹Department of Internship Training, Faculty of Dentistry, Riyadh Elm University, Riyadh, Saudi Arabia. abdulaziz.i.alobaidi@student.riyadh.edu.sa

<https://doi.org/10.51847/CjZB5Zv6dg>

ABSTRACT

The major purpose of restoring post-endodontic therapy is to preserve normal function, occlusion, and stabilizing the dental arch. Dentists are encountered with an ever-increasing occurrence of endodontically treated tooth in demand of treatment and with a constantly increasing number of various post-endodontic restoration materials. This study aimed at determining the practice and knowledge concepts of dental practitioners of Riyadh about restorations followed by endodontic treatment.

This cross-sectional study was performed among the dental professionals of Riyadh, The KSA using an online survey. 374 dentists including general practitioners as well as specialists/consultants were included in this study and were contacted using social media. An online questionnaire was prepared that consisted of questions about demographic, professional, and personal information, as well as questions including knowledge, attitude, and practice towards restoring endodontically treated teeth. 47.1% stated that their preferred type of crown was ceramic, 50.5% chose fiber-reinforced prefabricated post, and 43.3% opted for tapered, smooth design of prefabricated post. The overall level of knowledge and practice was found to be satisfactory among the participating dentists.

Key words: Post-endodontics, Restorations, Dentists, Knowledge.

Introduction

The major purpose of restoring post-endodontic therapy is to preserve normal function, occlusion, and stabilizing the dental arch. Dentists are encountered with an ever-increasing occurrence of endodontically treated tooth in demand of treatment and with a constantly increasing number of various post-endodontic restoration materials. Nevertheless, research in this area provides several, primarily material-oriented, and probably confusing findings. Therefore, it is not astonishing that how post-endodontic restorative care is executed doesn't entirely replicate proposals from the literature but is inspired by factors such as specialty status. These discoveries indicate that each dentist builds his/her own experience-based treatment model [1].

In modern dentistry, the restoration of teeth undergoing endodontic treatment continues to be extensively considered. Various aspects of post-endodontic treatment are still controversial. Although the prognosis of endodontically treated teeth can be affected in many ways, the major issues critical for the choice of whether to place a post and the core type used are the type of tooth and the degree of the remaining dental matter after caries removal and endodontic treatment are accomplished [2].

A study conducted in Germany reported that glass-fiber posts were the most common restoration materials used by participating dentists, regardless of the prosthodontic restoration intended. Composite resin cores were favored by

a majority of the participating dentists. Fifty percent of the dentists performed adhesive post-placement. An agreement was made on the importance of Ferrell and its impact. The bulk of dentists stated they wouldn't place a post for direct restoration, whereas in abutment teeth for laboratory restoration, only a little minority asserted they would do so [3].

Another study done in Jeddah, Saudi Arabia among dental practitioners revealed that in respect to the post type, the nonmetallic prefabricated post was the first preference for anterior teeth and molars followed by cast post and core, the usage of which in anterior teeth may possibly hinder with the existing trend of using all-ceramic restorations for anterior teeth. When questioned regarding the frequency of applying various kinds of posts for premolars, dentists demonstrated a similar inclination for nonmetallic prefabricated post and cast post and core. The majority of study subjects indicated that they mostly employ composite resin as a core buildup for endodontically treated teeth. Conversely, the participants in their research stated that they often used amalgam as a basic buildup material in restoring root canal-treated molars. This tendency regarding the use of amalgam is anticipated to drop in the near future as a consequence of the Saudi Arabian latest pledge in Minamata Convention to diminish mercury-containing products [4].

One more Riyadh, Saudi Arabia-based investigation concluded that the usage of posts for restoring endodontically treated teeth was popular among the

participating dentists and the majority thought that it strengthens the ETT. The utilization of prefabricated parallel-sided posts was the favored method regardless of the type of material employed. Usage of composite resin as a core material was also found to be common [5].

Aims of the study

- Determining the practice and knowledge concepts of dental practitioners in Riyadh about restorations followed by endodontic treatment.
- To compare the findings based on work experience and qualification.

Materials and Methods

Design

This cross-sectional study was carried out using an online survey of the dental professionals in Riyadh, Saudi Arabia.

Samples

374 dentists including general practitioners as well as specialists/consultants were used in this study and were contacted using social media.

Instrument

An online questionnaire was prepared that consisted of questions about demographic, professional, and personal information, as well as questions including knowledge, attitude, and practice towards restoring endodontically treated teeth.

Instrument reliability and validity

The survey was sent to twenty participants and Cronbach's alpha (0.708) was used to determine the **reliability**. **Validity** was assessed by sending the questionnaire to expert scholars in REU and changes were made based on their comments and feedback.

Statistical analyses

Data were analyzed using SPSS v22, where inferential and descriptive statistics were performed. P-values <0.05 were considered significant using the Chi-square test.

Results and Discussion

Figures 1, 2, and 3 show the demographics of study participants with 67% males and 33% females. Based on their qualification, 74.3% were general dentists and 25.7% were specialists/consultants. Regarding work experience, 75.4% had <10 years, and 24.6% had <10 years.

Table 1 shows the overall responses to the survey questions, which revealed that 58% of dentists opted for composite as a material of choice if the remaining crown were more than 50%. 50% reported that every tooth with post and core should be crowned and 61% believed the ferrule effect enhances the fracture resistance of endodontically treated teeth. 47.1% stated that their preferred type of crown was

ceramic, 50.5% chose fiber-reinforced prefabricated post, and 43.3% opted for tapered, smooth design of prefabricated post.

Table 2 exhibits the comparison of survey responses based on qualification, which shows that the overall difference between qualifications regarding the knowledge and practice of post-endodontics restorations was not statistically significant. However, statistically significant differences were seen when inquired about rubber dam isolation requirement (p-value: .004) and whether every tooth should be crowned (p-value: .016).

Table 3 discloses the comparison of responses based on the work experience of participants, which shows that statistically significant differences were achieved when inquired about rubber dam requirement (p-value: .000), material of choice in restoring ETT (p-value: .005), preferred crown type (p-value: .045), type of prefabricated post preferred (p-value: .028), and design of prefabricated post (p-value: .007).

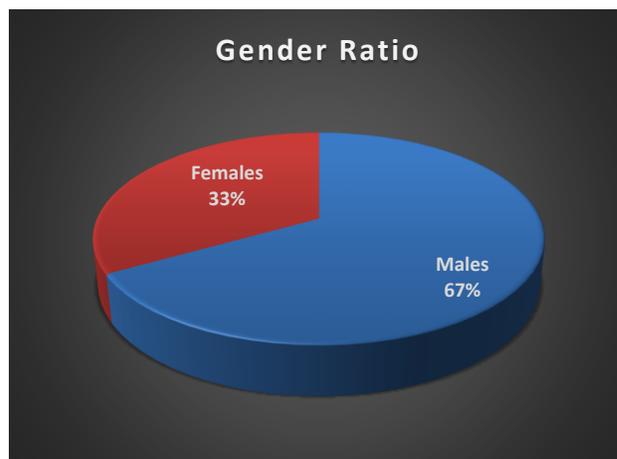


Figure 1. Gender ratio of the study participants

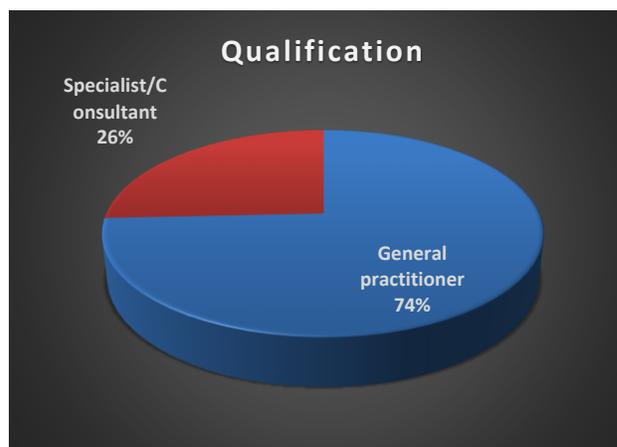


Figure 2. Qualification of the study participants



Figure 3. Work experience of the study participants

Table 1. Frequencies of survey responses

Survey Questions	Frequencies
Is rubber dam isolation required during post-endodontic restoration?	Yes: 61.8% No: 16.3% Not sure: 21.9%
What is your material of choice to treat endodontically treated tooth when more than 50% crown is remaining?	Composite: 58% Amalgam: 26.2% GIC: 15.8%
Does ferrule effect increase the fracture resistance of endodontically treated teeth?	Yes: 61% No: 18.2% Not sure: 20.9%
Which type of post would you use?	Custom cast posts: 44.9% Prefabricated posts: 55.1%
Should every tooth with post and core be crowned?	Yes: 50% No: 34.8% Not sure: 15.2%
When would you prefer to do post and core?	24 hours after obturation: 50% One week after obturation: 50%
What is your preferred type of crown?	Metal: 24.6% PFM: 28.3% Ceramic: 47.1%
Which prefabricated post would you prefer?	Fiber-reinforced: 50.5% Metallic: 21.7% Composite: 16.3% Ceramic: 11.5%
Which design of prefabricated post would you prefer?	Tapered, smooth: 43.3% Parallel, serrated: 15.5% Tapered, self-threading: 13.9% Parallel, threaded: 10.4% Parallel, serrated, tapered end: 16.8%

Table 2. Comparison of survey responses based on qualification

Survey Questions	General Practitioner	Specialist/ Consultant	p-value
Is rubber dam isolation required during post-endodontic restoration?	Yes: 64% No: 13% Not sure: 23%	Yes: 54% No: 27% Not sure: 19%	.004
What is your material of choice to treat endodontically treated tooth when more than 50% crown is remaining?	No Statistically Significant Association		.182
Does ferrule effect increase the fracture resistance of endodontically treated tooth?	No Statistically Significant Association		.888
Which type of posts would you use?	No Statistically Significant Association		.721
Should every tooth with post and core be crowned?	Yes: 53% No: 35% Not sure: 12%	Yes: 42% No: 34% Not sure: 24%	.016
When would you prefer to do post and core?	No Statistically Significant Association		.407
What is your preferred type of crown?	No Statistically Significant Association		.117
Which prefabricated post would you prefer?	No Statistically Significant Association		.342
Which design of prefabricated post would you prefer?	No Statistically Significant Association		.539

Table 3. Comparison of survey responses based on work experience

Questions	Less than 10 years	More than 10 years	p-value
Is rubber dam isolation required during post-endodontic restoration?	Yes: 67% No: 15% Not sure: 17%	Yes: 45% No: 20% Not sure: 36%	.000
What is your material of choice to treat endodontically treated tooth when more than 50% crown is remaining?	Composite: 62% Amalgam: 22% GIC: 16%	Composite: 47% Amalgam: 39% GIC: 14%	.005
Does ferrule effect increase the fracture resistance of endodontically treated teeth?	No Statistically Significant Association		.279
Which type of posts would you use?	No Statistically Significant Association		.400

Should every tooth with post and core be crowned?	No Statistically Significant Association	.063	
When would you prefer to do post and core?	No Statistically Significant Association	.118	
What is your preferred type of crown?	Metal: 22% PFM: 28% Ceramic: 50%	Metal: 34% PFM: 28% Ceramic: 38%	.045
Which prefabricated post would you prefer?	Fiber reinforced: 13% Metallic: 11% Composite: 54% Ceramic: 21%	Fiber reinforced: 25% Metallic: 12% Composite: 39% Ceramic: 24%	.028
Which design of prefabricated post would you prefer?	Tapered, smooth: 48% Parallel, serrated: 14% Tapered, self-threading: 13% Parallel, threaded: 8% Parallel, serrated, tapered end: 16%	Tapered, smooth: 28% Parallel, serrated: 20% Tapered, self-threading: 16% Parallel, threaded: 17% Parallel, serrated, tapered end: 18%	.007

The present study assessed the preference and knowledge of dentists in Riyadh towards the use of restorative techniques after the completion of root canal treatment. Several studies have been done in this area of dentistry and we will compare their findings with ours. A study conducted by Alenzi *et al.* (2018) concluded that most dentists studied did not contemplate that ETT should be given a post. Nevertheless, the majority stated that ETT must be crowned, and the favored option was all-ceramic crowns. Most of the dentists indicated that a post can strengthen ETT. The ruling to employ any sort of post was primarily dependent on the structure of the remaining tooth. Most dental practitioners considered that the ferrule presence can improve the fracture resistance of ETT [6]. When compared these outcomes with our study, it was revealed that our participants' majority preferred all-ceramic crown, which is similar to the above-mentioned study. More than half of the dentists stated that the ferrule effect would increase the fracture resistance of ETT, which is similar to the compared study.

Our findings suggest that there was no overall difference between the general practitioners and specialists when inquired about their preference and knowledge regarding

ETT restoration. The only statistically significant differences were when inquired about rubber dam isolation required during post-endodontic restoration and if every tooth with post and core should be crowned. However, when compared our results with another similar investigation carried out by Sharma *et al.* (2020), it was noticed that there was an overall statistically significant difference between the two groups when inquired about similar variables and the specialists had better awareness as compared to general practitioners [7].

Another Indian-based study reported that the participants were deficient in the theoretical knowledge of case selection for post and core restorations. Though, approach and practice skills compensated for it. Furthermore, a statistically significant association was seen among the year of post-graduation of the study participants and the answers to the understanding, approach, and practice-based queries. The majority of the experienced dentists had better knowledge and practice in regard to choosing cases for post and core as compared to the less experienced [8]. However, our study results showed that there was also a statistically significant difference between the two groups based on experience, but a better level of knowledge and attitude was observed in the less experienced participants, which is opposite to what was achieved by the compared study.

The limitation of this study includes the small number of specialists/consultants and highly experienced dentists participating in this study, which could be increased in order to achieve more accurate results.

Conclusion

- The overall level of knowledge and practice was found to be satisfactory among the participating dentists.
- However, no statistically significant difference was achieved when compared on the basis of qualification.
- Whereas the lesser experienced dentists showed better knowledge and practice as compared to more experienced ones.

Acknowledgments: Authors of this study would like to acknowledge the support and cooperation of the research center of Riyadh Elm University.

Conflict of interest: None

Financial support: None

Ethics statement: An ethical approval was obtained from REU review board.

References

1. Bowsiya S, Ganapathy D. Knowledge and awareness on post-endodontic restoration among dental

- practitioners-A questionnaire-based study. *Drug Invent Today*. 2020;14(5):669-72.
2. Mitov G, Dörr M, Nothdurft FP, Draenert F, Pospiech PR. Post-endodontic treatment of incisors and premolars among dental practitioners in Saarland: an interactive Web-based survey. *Clin Oral Investig*. 2015;19(5):1029-37.
 3. Naumann M, Neuhaus KW, Kölpin M, Seemann R. Why, when, and how general practitioners restore endodontically treated teeth: a representative survey in Germany. *Clin Oral Investig*. 2016;20(2):253-9.
 4. Zahran M, El-Madhoun M, Redwan S, Merdad K, Sonbul H, Sabbahi D. Treatment concepts for restorations of endodontically treated teeth: Survey of dentists in Jeddah city, Saudi Arabia. *Saudi Endod J*. 2021;11(2):154.
 5. Habib SR, Al Rifaiy MQ, Alkunain J, Alhasan M, Albahrani J. Concepts of restoring endodontically treated teeth among dentists in Saudi Arabia. *Saudi J Dent Res*. 2014;5(1):15-20.
 6. Alenzi A, Samran A, Samran A, Nassani MZ, Naseem M, Khurshid Z, et al. Restoration strategies of endodontically treated teeth among dental practitioners in Saudi Arabia. A nationwide pilot survey. *Dent J*. 2018;6(3):44.
 7. Sharma D, Agrawal S, Gangurde P, Agarwal S, Srichand R, Sharma V. Awareness, attitude, and practice of dental practitioners toward management of endodontically treated teeth and factors associated with it: A questionnaire descriptive survey. *J Family Med Prim Care*. 2020;9(2):1113.
 8. Kamath KA, Nasim I, Haripriya S. Knowledge, attitude and practice among endodontic postgraduates regarding case selection for post and core-a questionnaire study. *PalArch's J Archaeol Egypt/Egyptol*. 2020;17(7):547-62.