

Awareness, attitude, and practice of dental practitioners toward management of endodontically treated teeth and factors associated with it: A questionnaire descriptive survey

Deepak Sharma¹, Sneh Agrawal², Parag Gangurde³, Sumeet Agarwal⁴,
Reema Srichand⁴, Vivek Sharma²

Departments of ¹Conservative Dentistry and Endodontics, ²Periodontology, ³Orthodontics and ⁴Prosthodontics, Bharati Vidyapeeth University Dental College and Hospital, Navi Mumbai, Maharashtra, India

ABSTRACT

Background: Endodontically treated teeth should be prosthodontically managed properly to add life to the teeth, and hence the main aim of this study was to explore awareness, attitude, and practice of dental practitioners toward management of endodontically treated teeth and factors associated with it. **Materials and Methods:** It was a cross-sectional, descriptive questionnaire study conducted among dental practitioners working in private clinics. The study was conducted in August 2019. The survey was conducted among 239 participants. In this study, a close-ended interview schedule was prepared for perception and practice of dental specialists. **Results:** Most of the dental professionals (31.79%) preferred full coverage crown for restoring the grossly decayed endodontically treated teeth. Awareness regarding prosthodontic management of endodontically treated teeth was better among specialists (13.75%) than bachelor's degree holders. Attitude was neutral among most of the study participants (46.86%) and practice scores toward prosthodontic management of endodontically treated teeth was good. Gender and degree were significantly associated ($P = 0.02^*$) ($P = 0.05^*$), ($P = 0.0028-02-2020$) ($P = 0.05^*$) with awareness and practice of study participants. **Conclusion:** A majority of study subjects in this study had moderate awareness, neutral attitude, and good practice regarding restoration of endodontically treated teeth.

Keywords: Awareness, behavior, endodontics, perception

Introduction

“The part of dentistry worried about the morphology, physiology and pathology of the human dental pulp and peri radicular tissues is Endodontics. Its investigation and practice incorporate the fundamental and clinical sciences including the science of the

typical pulp and the etiology, diagnosis, prevention and treatment of illnesses and injuries of the pulp and related peri radicular conditions.”^[1]

The remedial strategy relies on the measure of bolstered coronal tooth structure and the remaining parts of the tooth. Assuming that zero coronal tooth structure remains, arrangement must be made for making a post, an engineered crown planning, with gold, amalgam, composite, or glass ionomer, over which a crown can be put. The ideal way is a post embedded in a preparation

Address for correspondence: Dr. Deepak Sharma,
Department of Conservative Dentistry and Endodontics,
Bharati Vidyapeeth Dental College and Hospital, Navi Mumbai,
Maharashtra, India.
E-mail: deepakdent@gmail.com

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within the bounds of the root using the trench as a guide which gives ideal help to the core.^[2]

Some studies^[3,4] have detailed that the main reason of endodontic treatment disappointment is because of the reclamation disappointment instead of endodontic treatment itself. The various parameters which influence the endodontically treated teeth are the measure of tooth structure loss, periapical status of the tooth, position of the tooth, occlusal contacts, number of nearby teeth, remaining coronal and root dentine, type of final restoration, kind of post, core material, and presence of a ferrule preparation (if necessary).^[5,6]

Coronal microleakage is viewed as one of the significant reasons for endodontic treatment failure. Therefore, well-sealed temporary and permanent coronal restoration is important for the clinical success of endodontic therapy.^[7]

The experts are treating endodontically treated teeth depending on their past experience without reestablishing the legitimate treatment rules.^[8,9] A large number of studies^[10,11] were conducted in the past to explore the awareness, attitude, and practice of dental practitioners toward restoration of endodontically treated teeth, but none of the studies have found out the factors associated with the treatment of endodontically treated teeth. Therefore, the main aim of this study was to explore awareness, attitude, and practice of dental practitioners toward management of endodontically treated teeth and factors associated with it.

Materials and Methods

This study was a cross-sectional, descriptive questionnaire study conducted among dental practitioners working in private clinics in Mumbai City. Approval from the ethics Committee not required as it was a descriptive questionnaire study wherein signed consent has already been taken from all participating practitioners.

The city was divided into four directions: north, south, east, and west. From each direction, five dental clinics were selected randomly. In selected clinics, written consent was availed from the dentists and those giving consent were included in the study. The survey was conducted among 239 dental practitioners.

A pilot survey was conducted before the main survey on some of the study participants to test the validity and reliability of the questionnaire. The reliability of the questionnaire was determined using test-retest method, and the values of measured Kappa (k) = 0.75 and weighted Kappa (k_w) = 0.81. Internal consistency of questionnaires was measured by applying Cronbach's alpha (α) and the value of α = 0.86 was measured.

A close-ended interview schedule was prepared which consisted of four parts. The first part consisted of demographic details of patients. The second part consisted of questions related to awareness of dental practitioners regarding prosthodontic management of endodontically treated teeth. It consisted of eight questions to

test awareness of dental practitioners. The third part consisted of questions exploring the attitude regarding prosthodontic management of endodontically treated teeth. It consisted of five questions. The fourth part consisted of questions regarding practice of study participants. It consisted of five questions.

Regarding awareness, each correct answer was given a score 1 and 0 for wrong answer. The score for awareness ranges from 0 to 8. The attitude of study participants was measured on a Likert scale, ranging from 4 indicating *strongly disagree* to 1 indicating *strongly agree*. The practice score was measured as follows: 0 for "No" and 1 for "Yes."

Statistical analysis

After entry of data in Microsoft Excel 2007, SPSS version 19.0 was used to analyze the data. Descriptive statistics was used to determine the demographic details and awareness, perception, and practice of study participants. Chi-square test was used to find the association between demographic details and awareness, perception, and practice of study participants.

Table 1: Demographic details of study participants (n=239)

Demographic variables	n	%
Age (years)		
25-30	39	16.31
31-35	71	29.70
36-40	89	37.23
More than 40	40	16.76
Total	239	100
Gender		
Male	148	61.92
Female	91	38.08
Total	239	100
Degree		
BDS	108	45.18
MDS	131	44.82
Total	239	100
Speciality		
Endodontics	41	31.29
Prosthodontics	43	32.82
Oral pathologist	04	3.05
Oral medicine	07	5.35
Oral surgeon	12	9.16
Periodontists	19	14.50
Public health dentists	05	3.83
Total	131	100
Years of practice		
1-5	63	26.35
6-10	129	53.97
More than 10	47	29.68
Total	239	100
Number of OPD per month		
1-30	78	32.63
31-60	104	43.51
More than 60	57	23.86
Total	239	100

OPD: Out patient department

Table 2: Awareness, attitude, and practice of study participants toward prosthodontic management of endodontically treated teeth (n=239)

Awareness questions	n (%)		
	BDS	MDS	Total
Mode of restoring the grossly decayed endodontically treated teeth			
Composite	39 (36.11)	23 (17.55)	62 (25.94)
Inlay or onlay	14 (12.96)	38 (29)	52 (21.75)
Full coverage crown	46 (42.59)	30 (22.90)	76 (31.79)
Post and core	09 (8.34)	40 (30.55)	49 (20.52)
Total	108 (100)	131 (100)	239 (100%)
Is rubber dam necessary for restoring the endodontically treated teeth?			
Yes	12 (11.11)	68 (51.90)	80 (33.40)
No	96 (88.88)	63 (48.10)	159 (66.60)
Total	108 (100)	131 (100)	239 (100%)
Most frequent reason for failure of endodontically treated teeth.			
Endodontic failure	51 (47.22)	79 (60.30)	130 (54.39)
Crown failure	37 (34.25)	41 (31.29)	78 (32.63)
Root fracture	13 (12.03)	08 (6.10)	21 (8.78)
Other	07 (6.5)	03 (2.31)	10 (4.2)
Total	108 (100)	131 (100)	239 (100%)
Is creating a ferrule below the core foundation following post cementation increases fracture resistance?			
Yes	53 (49.07)	100 (76.33)	153 (64.01)
No	55 (50.93)	31 (23.67)	86 (35.99)
Total	108 (100)	131 (100)	239 (100%)
What type of cement do you use for post cementation?			
Dual-polymerized adhesive resin cement	38 (35.18)	71 (54.19)	109 (45.60)
Chemically polymerized adhesive resin cement	22 (20.37)	28 (21.37)	50 (20.92)
Self-adhesive resin cement	18 (16.66)	11 (8.39)	29 (12.13)
Others	30 (27.79)	21 (16.05)	51 (21.35)
Total	108 (100)	131 (100)	239 (100%)
Post reinforces endodontically treated teeth and reduces fracture probability.			
Yes	67 (62.03)	111 (84.73)	178 (74.47)
No	41 (47.97)	20 (15.27)	61 (25.53)
Total	108 (100)	131 (100)	239 (100%)
Placement of a post is affected by factors.			
Quantity of the tooth structure	69 (63.88)	91 (69.46)	160 (66.94)
Location of the tooth in arch	12 (11.11)	11 (8.39)	23 (9.62)
Type of planned restoration	21 (19.44)	19 (14.50)	40 (16.73)
Other	06 (5.57)	10 (7.65)	16 (6.71)
Total	108 (100)	131 (100)	239 (100%)
The type of prefabricated post that has more retentive			
Parallel-sided post	32 (29.62)	12 (9.16)	44 (18.41)
Tapered post	61 (56.48)	101 (77.09)	162 (67.78)
Parallel tapered post	10 (9.25)	16 (12.21)	26 (10.87)
Combined parallel-sided/tapered design	05 (4.65)	02 (1.56)	7 (2.94)
Total	108 (100)	131 (100)	239 (100%)
Attitude questions	BDS	MDS	TOTAL
Restoration of endodontically treated is very important			
1 - strongly agree	69 (63.88)	98 (74.80)	167 (69.87)
2 - agree	32 (29.62)	33 (25.19)	65 (27.19)
3 - disagree	5 (4.6)	0 (0.0)	5 (2.09)
4 - strongly disagree	2 (1.9)	0 (0.0)	2 (0.85)
Total	108 (100)	131 (100)	239 (100%)
Restoration of endodontically treated teeth increases the longevity of teeth			
1 - strongly agree	58 (53.70)	121 (92.36)	179 (74.89)
2 - agree	41 (37.96)	10 (7.64)	51 (21.33)
3 - disagree	9 (8.34)	0 (0.0)	9 (3.78)

Contd...

Table 2: Contd...

Awareness questions	n (%)		
	BDS	MDS	Total
4 - strongly disagree	0 (0.0)	0 (0.0)	0 (0.0)
Total	108 (100)	131 (100)	239 (100%)
Use of rubber dam is necessary is very important during restoring endodontically treated teeth			
1 - strongly agree	06 (5.55)	32 (24.42)	38 (15.89)
2 - agree	09 (8.33)	71 (54.19)	80 (33.47)
3 - disagree	59 (54.62)	21 (16.03)	80 (33.47)
4 - strongly disagree	33 (31.5)	7 (5.36)	41 (17.17)
Total	108 (100)	131 (100)	239 (100%)
Post and core is the most favorable method to restore teeth with 50% destroyed crown structure			
1 - strongly agree	09 (8.33)	24 (18.32)	33 (13.80)
2 - agree	12 (11.11)	79 (60.30)	91 (38.07)
3 - disagree	76 (70.37)	18 (13.74)	94 (39.33)
4 - strongly disagree	11 (10.19)	10 (7.64)	21 (8.8)
Total	108 (100)	131 (100)	239 (100%)
Root canal treatment failure is the most important reason for endodontically treated teeth failure			
1 - strongly agree	78 (72.22)	99 (75.57)	177 (74.05)
2 - agree	20 (18.51)	18 (13.74)	38 (15.89)
3 - disagree	10 (9.25)	10 (7.63)	20 (8.36)
4 - strongly disagree	0 (0.0)	4 (3.06)	4 (1.7)
Total	108 (100)	131 (100)	239 (100%)
Practice questions	BDS	MDS	Total
I restore every endodontically treated teeth			
Yes	44 (40.74)	122 (93.12)	166 (69.45)
No	64 (59.36)	09 (6.88)	73 (30.55)
Total	108 (100)	131 (100)	239 (100%)
I use different materials and methods to treat endodontically treated teeth depending on the condition of the teeth			
Yes	22 (30.37)	101 (77.09)	123 (88.48)
No	86 (69.63)	30 (22.91)	116 (11.52)
Total	108 (100)	131 (100)	239 (100%)
I increase my knowledge time with the help of articles, participating in CDE programs, Internet			
Yes	09 (8.33)	64 (48.85)	73 (30.55)
No	99 (91.67)	67 (51.15)	166 (69.45)
Total	108 (100)	131 (100)	239 (100%)
I always use rubber dam during restoration of ETT			
Yes	00 (0.0)	23 (17.55)	23 (9.62)
No	108 (100)	108 (82.44)	216 (91.38)
Total	108 (100)	131 (100)	239 (100%)
I always use post and core in grossly decayed endodontically treated teeth			
Yes	02 (1.86)	30 (22.90)	32 (13.39)
No	106 (98.14)	101 (78.10)	207 (86.61)
Total	108 (100)	131 (100)	239 (100%)

Results

Table 1 shows that a majority of study participants (37.23%) were in the age group of 36–40 years. Dental professionals with master's degree (44.82%) were more in number than those with BDS degree. A majority of study participants with master's degree were from prosthodontic speciality (32.82%).

Table 2 shows the answers of study participants regarding awareness, attitude, and practice of study participants toward prosthodontic management of endodontically treated teeth. Most of the dental professionals (31.79%) preferred full coverage crown for restoring the grossly decayed endodontically treated teeth.

A majority of the study dentists with master's degree (77.09%) used different materials and methods to treat endodontically treated teeth depending on the condition of teeth.

Table 3 shows that awareness regarding prosthodontic management of endodontically treated teeth was better among specialists (13.75%) than bachelor's degree holders. Attitude was neutral among most of the study participants (46.86%) and practice scores toward prosthodontic management of endodontically treated teeth was good among specialists (79.39%).

Table 4 shows that gender and degree were significantly associated ($P = 0.02^*$) ($P = 0.05^*$), ($P = 0.0028$ – 0.2 –

Table 3: Awareness, perception, and practice scores toward prosthodontic management of endodontically treated teeth

Variables	No. of subjects	BDS n (%)	MDS n (%)	Total n (%)
Awareness	0-2 (low)	65 (60.18)	31 (23.66)	96 (40.16)
	3-5 (moderate)	32 (29.62)	82 (62.59)	114 (47.69)
	6-8 (high)	11 (10.20)	18 (13.75)	29 (12.15)
	Total	108 (100%)	131 (100%)	239 (100%)
Attitude	5-10 (negative)	21 (19.44)	02 (1.52)	23 (9.63)
	11-15 (neutral)	78 (72.22)	34 (25.95)	112 (46.86)
	16-20 (positive)	9 (8.34)	95 (72.53)	104 (43.51)
	Total	108 (100%)	131 (100%)	239 (100%)
Practice	0-1 (poor)	81 (75.00)	00 (0.0)	81 (33.89)
	2-3 (fair)	12 (11.11)	27 (20.61)	39 (16.31)
	4-5 (good)	15 (13.89)	104 (79.39)	119 (49.8)
	Total	108 (100%)	131 (100%)	239 (100%)

Table 4: Correlation analysis of demographic variables with awareness, attitude, and practice regarding toward prosthodontic management of endodontically treated teeth using χ^2 test

Demographic variables	Awareness		Attitude		Practice	
	χ^2	P	χ^2	P	χ^2	P
Age group	2.190	1.20	0.005	1.43	0.556	0.55
Gender	0.810	0.02*	6.022	0.11	2.601	0.05*
Degree	0.781	0.0028-02-2020	1.200	0.46	3.666	0.05*
Specialty	1.099	0.11	1.455	1.59	0.241	0.92
Year of practice	4.201	1.77	3.911	0.99	2.900	1.7
No. of OPD per month	1.944	1.34	1.222	0.33	1.788	2.03

OPD: Out patient department. * $P \leq 0.05$ (Significant), ** $P \leq 0.01$ (Highly significant), 28-02-2020 $P \leq 0.001$ (Very highly significant)

2020) ($P = 0.05^*$) with awareness and practice of study participants toward prosthodontic management of endodontically treated teeth.

Discussion

This study was conducted to explore the awareness, attitude, and practice of dental practitioners toward prosthodontic management of endodontically treated teeth and factors associated with it. Restoration of endodontically treated teeth depends on various factors, and a dental professional should keep all factors in mind before restoration of endodontically treated teeth.^[12]

In this study, the study participants were above 25 years of age. In the study conducted by Alenzi A *et al.*^[11] the dental professionals were of the age range 23–65 years. Among all study participants, most of them were males (61.95%). Dental professionals with master's degree (44.82%) had MDS degree. Similar results were seen in the studies conducted by Alenzi A *et al.*^[11] and Akbar I;^[10] in both studies, male respondents

were more than females. While in the same studies general practitioners were in majority than specialists, which is contrary to this study. In this study, years of experience range from 1 to 40 years, and similar results were obtained by Alenzi A *et al.*^[11] In a study by Prasada LK *et al.*,^[13] specialists study participants were more than general dental practitioners, similar to this study.

In this study, most of the dental professionals prefer full coverage crown to restoring the grossly decayed endodontically treated teeth. In a study by Prasada LK *et al.*,^[13] a majority of the study participants preferred composite restorative material for restoring endodontically treated teeth. This may be due to the fact that a formerly un-restored tooth requiring endodontic treatment for the most part did not need a post and core rebuilding as its characteristic quality is as yet present. Teeth are dealt sufficiently by situation of filling material in the root channel using glass ionomer, reinforced composite, and fortified circular amalgam.^[14]

In this study, a majority of study participants did not use rubber dam. Different results were shown in the study by Prasada LK *et al.*,^[13] a majority of clinicians were aware of rubber dam isolation during a post endodontic restoration. In this study, according to dental practitioners, the main reason for failure of endodontically treated teeth was endodontic failure. Similar results were seen in the study by Prasada LK *et al.*^[13]

In this study, a majority of dental professionals both BDS and MDS thought that creating a ferrule below the core foundation following post-cementation increases fracture resistance. Similar results were seen in the studies conducted by Prasada LK *et al.*,^[13] Akbar I,^[10] and Alenzi A *et al.*^[11] This may be due to the fact that a ferrule with 1 mm of vertical height has been shown to double the resistance to fracture versus teeth restored without a ferrule.^[15]

A majority of the study subjects agree with the statement that post reinforces endodontically treated teeth and reduces fracture probability. Similar results were seen in the studies by Akbar I^[10] and Alenzi A *et al.*^[11]

In this study, it was reported that dental practitioners mainly the specialists had moderate awareness, neutral knowledge, and good practice regarding restoration of endodontically treated teeth. Whereas in the study conducted by Prasada LK *et al.*,^[13] the awareness and attitude regarding post endodontic restoration was found to be adequate among dental practitioners.

Appropriate prosthodontic treatment after endodontic work is the life-saving procedure for the tooth. The dental treatment in a endodontically treated tooth is not complete if prosthodontically not treated, and it saves the tooth and thereby improves the shelf-life of the tooth; the latest technology further aids the same, and hence, the need of the hour was to explore the knowledge, attitude, and practice of various dental professionals and how

they manage these teeth. There is an urgent need for various programs for the dentists to improve their knowledge regarding the same and preventing further complications of endodontically treated teeth.

Conclusion

From above, it was concluded that a majority of study subjects in this study had moderate awareness, neutral knowledge, and good practice regarding restoration of endodontically treated teeth. Gender and degree are the factors that were significantly associated with awareness and practice regarding restoration of endodontically treated teeth.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflict of interest

There is no conflict of interest.

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