

Knowledge, attitude, and practice survey on the use of dental operating microscope in endodontics: A cross-sectional survey

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ABSTRACT

This knowledge, attitude, and practice survey were carried on to determine the level of awareness on the usage of dental operating microscope in endodontic procedures among the endodontist and general practitioners in Chennai. This survey was conducted during April 2017. The participants of this survey included both the endodontist and nonendodontist. To encourage unbiased data, no identification of participant's data was requested. A questionnaire consisting of 15 questions was used in this survey. 224 questionnaires were handed to various dental practitioners including endodontist and nonendodontist. Responses were obtained from all the 100 endodontist. Among the 124 nonendodontist, 12 did not respond giving a response rate of 90.32% for this group. The findings of the present study revealed that the endodontists had a more knowledge and clinical exposure of working under a dental operating microscope.

Keywords: Dental operating microscope, endodontist, nonendodontist

Introduction

The dental operating microscope has become an important part in surgical and nonsurgical endodontic treatments. The use of dental operating microscope has increased the visualization of operating field, improved the treatment quality, documentation made easier, and enhanced ergonomics.^[1] In 1978, Dr. Jako and Abotheker discovered dental operating microscope^[2] and they made their first commercially available microscope, but it was not accepted widely. The dental operating microscope gained its serious attention 11 years later at the University of Pennsylvania School of Dental Medicine.^[3] Later, the microscopy training is mandatory was accepted by the Commission on Dental Accreditation of the American Dental Association.^[4] The use of dental operating microscope has been increasing day by day among endodontist.

Materials and Methods

The purpose of this study was to survey the general

practitioners and endodontist whether dental operating microscope was a part of their endodontic practice in Chennai. This cross-sectional survey was conducted during April 2017. The participants of the survey were divided into endodontist and nonendodontist. To encourage unbiased data, no identification of participant's data was requested. A questionnaire consisting of 15 questions was used in this survey of which five questions were knowledge-based, five questions were attitude-based, and five questions were practice-based. 224 questionnaires were handed to various dental practitioners including endodontist and nonendodontist [Figure 1]. Responses were obtained from all the 100 endodontist. Among the 124 non- endodontist, 12 did not respond giving a response rate of 90.32% for this group. All the responses were recorded on individual survey forms for each practitioner.

Practice survey

- Endodontist
- Nonendodontist

1. Have you used a dental operating microscope to perform dental procedures?
 - a. Yes
 - b. No.
2. Do you think the use of dental operating microscope in the field of endodontics is mandatory?
 - a. Yes
 - b. No

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3. Magnification power of dental operating microscopes ranges from
 - a. $2.5\times - 6\times$
 - b. $3\times - 30\times$
 - c. $8\times - 16\times$
 - d. $16\times - 25\times$.
4. Do you think the ease of locating the second mesiobuccal canal in maxillary molars has increased on the use of microscopes?
 - a. Yes
 - b. No.
5. How will you clean the lenses of dental operating microscope?
 - a. Using distilled water
 - b. Using digital lens cleaning solution
 - c. Using normal water
 - d. Both a and c.
6. How often will you clean the lenses of the microscope?
 - a. After every procedure
 - b. Once in a day
 - c. Once in a week
 - d. Never clean.
7. Arrange the preparation of dental operating microscope in chronological order.
 - A. Adjustment of interpupillary distance
 - B. Fine focus adjustment
 - C. Fine positioning of patient
 - D. Assistant scope adjustment
 - E. Operator positioning
 - F. Rough positioning of the patient
 - G. Positioning of DOM and focusing.
 - a. A-C-E-G-B-F-D
 - b. E-F-G-A-C-B-D
 - c. G-E-C-A-F-D-B
 - d. C-E-G-A-E-F-B.
8. Do you record every patient's procedure using a video recorder provided in the dental operating microscope?
 - a. Yes
 - b. No.
9. What is Trendelenburg positioning?
 - a. Feet raised above head
 - b. Feet raised above heart
 - c. Knees bend, brought closer to chest
 - d. Feet placed in same line as the head (placed parallel to the floor).
10. Do you think microscopes help in early detection/diagnosis of dental caries?
 - a. Yes
 - b. No.
11. Which color filter do you use while curing composite restorations under microscopes?
 - a. Orange
 - b. White
 - c. Green
 - d. Any of the above.
12. Class II law of ergonomics refers to.
 - a. Moving only fingers
 - b. Moving only fingers and wrist
 - c. Movement originating from elbow
 - d. Movement originating from shoulder.
13. In your opinion, which light source provides enough illumination for quality documentation under microscopes?
 - a. Halogen
 - b. Xenon
 - c. Neon
 - d. All of the above.
14. Which according to you is the ideal chair position for working under microscopes?
 - a. 11 o' clock
 - b. 7 o' clock
 - c. 9 o' clock
 - d. All of the above.
15. Green filter in the microscope is preferably used for
 - a. Conservative procedures
 - b. Endodontic procedures
 - c. Surgical procedures
 - d. None of the above.

Results

Survey was completed among 100 endodontist (45%) and 124 nonendodontist (55%). Table 1 summarizes the correlation between knowledge, attitude, and practice toward the use of dental operating microscope. A statistical correlation was found in between the knowledge and practice score (0.000); knowledge and attitude (0.00); attitude and perception (0.00).

Pearson's correlation

Table 1 summarizes the correlation between knowledge, attitude, and perception toward the use of dental operating microscope. A statistically significant correlation was found in between the knowledge and perception score (0.000); knowledge and attitude (0.00); attitude and perception (0.000).

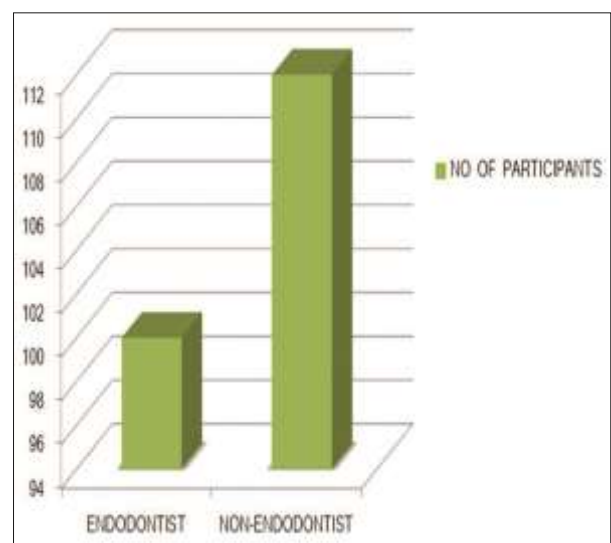


Figure 1: No of participants

Table 1: Correlations between knowledge, attitude, and perception scores

Scores	Knowledge score	Attitude score	Perception score
Knowledge score			
Correlation	-	0.567	0.443
P	-	0.000*	0.000*
n	-	224	224
Attitude score			
Correlation	0.567	-	0.562
P	0.000*	-	0.000*
n	224	-	224
Perception score			
Correlation	0.443	0.562	-
P	0.000*	0.00 *	-
n	224	224	-

Table 2: Comparison of mean scores of knowledge, attitude, and perception between genders

Scores	Gender	n	Mean±SD	P
Knowledge score	Endodontist	100	18.7612 2.00824	0.124
	Nonendodontist	124	18.5608 2.44357	
Attitude score	Endodontist	100	22.1940 3.20624	0.468
	Nonendodontist	124	23.0635 3.42491	
Perception score	Endodontist	100	15.7015 2.90253	0.201
	Nonendodontist	124	16.2751 2.50074	

SD: Standard deviation

Independent t-test

Table 2 summarizes mean scores of knowledge attitude and perception between the genders.

The mean knowledge score of endodontist (18.7612 ± 2.00824) and nonendodontist (18.5608 ± 2.44357) was not found to be statistically significant ($P = 0.124$).

The mean attitude score of endodontist (22.1940 ± 3.20624) and nonendodontist (23.0635 ± 3.42491) was not found to be statistically significant ($P = 0.468$).

The mean practice score of endodontist (15.7015 ± 2.90253) and nonendodontist (16.2751 ± 2.50074) was not found to be statistically significant ($P = 0.201$).

Discussion

Microscopes have been reported in endodontics by Baumann^[5] and Selden.^[6] The use of DOM has enhanced the results of endodontic and nonendodontic procedure due to adequate illumination and magnification.^[7] The results do not reveal adoption of technology by endodontist in Chennai, with <50% reporting to access and the use of DOM in their practice. More emphasis on microendodontic training such as academics, workshops, and seminar might result in increased frequency for endodontic procedures.

The results of this study confirmed that there is an increasing frequency of the usage of microscopes during endodontic procedures among both the endodontist and nonendodontist. Endodontist had a more percentage of clinical exposure of working under microscopes. Studies have shown that dental operating microscope is effective in detecting the root canal orifice than the dental loupes.^[8] In the previous study by Mines *et al.* had a significantly higher acceptance as well increased daily usage in most of the endodontic treatment procedure.^[9]

The use of DOM showed improved results in managing the calcified canals,^[10] location of two mesiobuccal canals of maxillary molars,^[11] and nonclinical situations.^[12] Microscopic method of detecting orifices is more effective in the surgical loupes. DOM has increased the results of nonsurgical treatment of the calcified canals. Perforation cases done under the dental operating microscope showed good prognosis.^[13]

Conclusion

The knowledge, attitude, and practice among endodontist were good. The findings of the present study revealed that the endodontist had a more knowledge and clinical exposure of working under a dental operating microscope. There is a positive correlation between the knowledge, attitude, and practice among the study individuals.

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