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Assessment Of Knowledge, Attitude And Practice Survey On Endodontic Failure Among Endodontists, Post Graduates And General Practitioners In South Indian Population - A Survey

Research Article

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Abstract

The causes of endodontic failures are due to the variations in the anatomy of the teeth, the presence of additional root canals, lateral canals, depend on technical, biological and iatrogenic factors so the correct diagnosis, optimal mechanical and chemical preparation with three- dimensional obturation of the root canal will be the main goal of endodontic treatment. Having knowledge about the relation between these factors may help in increasing the chances of preventing the possible endodontic treatment failures. The questionnaire was closed- ended type consisting 15 questions, of which 5 were knowledge- baked, 5 were attitude based, and 5 were practice -based questions. The questionnaire contained multiple responses. The answers to each question were numerically coded, and the data were entered in the SPSS software. The results were analyzed by descriptive statistics including frequencies and percentages.In the study, it was seen that the overall mean and standard deviation of knowledge score (53.4%), attitude (44%) and practice (61%). Dentists, being members of the healthcare profession, should know about endodontic mishaps and its management which may occur during procedure. Only 56.4% areaware of endodontic mishaps and its management according to the study.

Keywords: Root Canal Treatment; Endodontic Failures; Retreatment.

Introduction

Endodontic failure is a recurrence of a clinical symptom with well definedperiapical radiolucency, the success rate was upto 86-98%. The factors which causes endodontic failure are the persistence of bacteria (Intra- canal and Extra- canal), Inadequate filling of the canal (canals that are poorly cleaned and obturated), overextension of Root filling materials, Improper coronal seal (Leakage), Untreated canals (both Major and accessory), Iatrogenic procedural errors such as poor access cavity design, complications of instrumentation (ledges, perforations (or) separated instruments. All endodontically treated should be evaluated clinically as well as radiographically [7]. To ensure the success of the treatment patients should be given appointments for follow up.

The important role of an endodontic treatment is to retain the tooth in the oral cavity. The purpose of root canal treatment is to block all the passages for causing infections in the root canal lumen and to form a fluid tight seal on apical foramen of tooth, thereby leakage in the root canal system can be avoided and occurrence of secondary infection is prevented [5]. Endodontic failures can also be related for treating wrong tooth, missed canals, damage to existing restorations, access cavity perforations, crown fractures, instrumentation with ledge formation, cervical canal perforations, mid root perforations, apical perforations, separated instruments, foreign objects, canal blockage and obturation related due to over extended, under- extended root canal fillings and vertical root fractures [19, 3, 10]. Endodontic treatment is fairly predictable in nature with reported success rate up to 86-98% [18, 4, 6]("Impact of case difficulty on endodontic mishaps in an undergraduate student clinic", 2019).

The aim of Endodontic treatment should be thorough cleaning and debridement of the root canal of an infected pulp, and filled with an inert material, thus preventing (or) minimizing any chanc-

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es of reinfection.

Materials And Methods

A total of 220 questionnaires were distributed with the guidance of previous studies, the questionnaires were developed. A web based survey tool was used to create the survey. The survey was sent by email to Endodontists, post - graduates, General dental practitioners in the South Indian population. The participants were asked to answer 15 Multiple choice questions. The questions were based on general approach towards Knowledge, attitude and practice towards Endodontic failures.

Results And Discussion

200 respondents were received from the respondents. Among 200 responses received from the participants, 58.9% consisted of males and 41% females of the participants [Figure 1] were of mean group age (43%) age- (25- 30 yrs) followed by mean age group (52%) age- (31- 40 yrs)of the 200 respondents [Figure 2] and it was seen that the overall mean and standard deviation of knowledge score (53.4%), attitude (44%) and practice (61%). Survey results are explained in the figures given below (Figures 2- 16).

In the present study of era, emerging new advent methods and tools, therapeutic and controlling measures applicable to the pulp and periradicular diseases have been developed significantly to an

Figure 1. Bar chart showing comparison of responses based on gender to the field of practice in the survey, where X axis represents the field of practice and Y axis represents the number of respondents. Higher number of males reported (119) when compared to females (81) and there is no significant difference in responses between males and females (Chi square test;(p value >0.05)- Not Significant [Blue- Female; Green- Male]

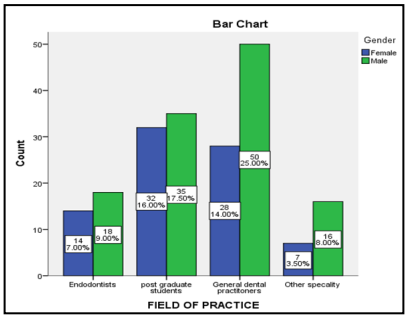


Figure 2. Bar chart showing the age distribution of the respondents to the field of practice involved in the survey, where X axis represents the field of practice and Y axis represents the number of respondents. Higher number among (19-25 years) of age groups was 2.5 times higher when compared to other age groups and this was found to be statistically significant. (Chi square test;(p value < 0.05)- Significant [Blue- 19-25yrs, Green-25-30 yrs, Grey- 31-40 yrs and Violet- 41-50 yrs]

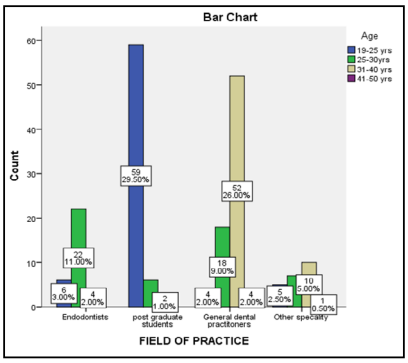


Figure 3. Bar chart showing the correlation between the field of practice and their response regarding common missed canals, where X axis represents the field of practice and Y axis represents the number of respondents and there was significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality.(Chi square test;(p value < 0.05)- Significant [Blue- Mesiobuccal canal of maxillary first molars, Green- Mesiobuccal canal of maxillary second molars, Grey- Mesiolingual canal of mandibular second molars, Violet- Medial mesial canal of mandibular second molars].

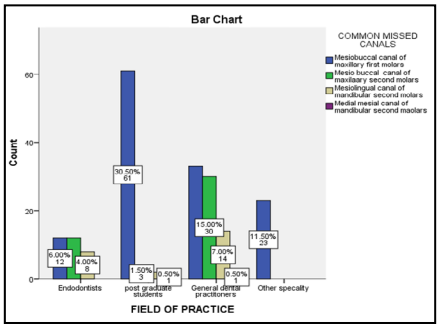


Figure 4. Bar chart showing the correlation between the field of practice and their response regarding common cause of endodontic failure, where X axis represents the field of practice and Y axis represents the number of respondents and there is no significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality (Chi square test;(p value >0.05)- Not Significant [Blue- Instrument separation, Green- Canal blockage, Grey- Ledge formation and Violet- Perforations]

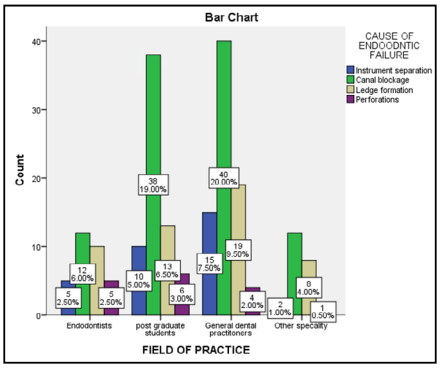


Figure 5. Bar chart showing the correlation between the field of practice and their response regarding Factors affecting failure of endodontic therapy, where X axis represents the field of practice and Y axis represents the number of respondents and there was significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality.(Chi square test;(p value < 0.05)- Significant [Blue- Diagnosis and a treatment planning, Green- Radiographic interpretation , Grey- Anatomy of the tooth and root canal system, Violet- Debridement of root canal system and Yellow- All of the above].

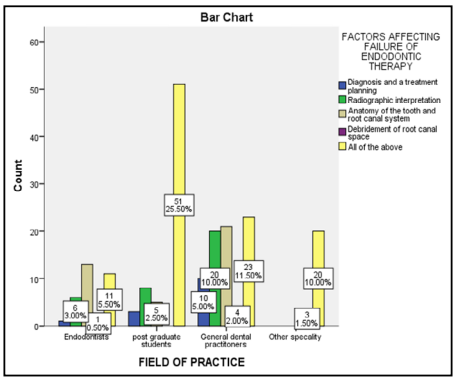
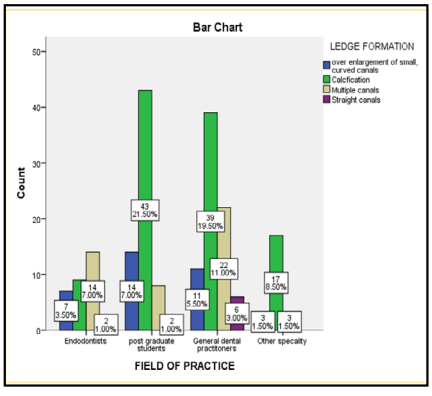


Figure 6. Bar chart showing the correlation between the field of practice and their response regarding ledge formation, where X axis represents the field of practice and Y axis represents the number of respondents and there was significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality.(Chi square test;(p value < 0.05)- Significant [Blue- Over enlargement of small curved canals,Green- Calcification, Grey- Multiple canals and Violet- straight - Straight canals].



extent that most of the teeth pulled out because of root damages and dental caries in the past, which are now maintained by undergoing Endodontic treatment with a relatively good prognosis [13]. Many teeth require RCT due to caries, trauma, (or) other reasons. Considering millions of people needing RCT, patients should be aware of the success rate and soundness of this method. Investigations have revealed that the majority of root canal failures are due to procedural accidents [14]. Moreover, based on these findings, the level of students' knowledge about treatment and prognosis is higher than their knowledge about the causes and prevention Methods.

Some of the most common procedural accidents include perforation of the pulp chambers during preparation of access cavity, creating ledges, broken instruments, root perforation, and a vertical root breakage [2]; such accidents can happen in various stages of Endodontic treatment such as developing access chamber, canal formation and cleaning, canal filling or preparation of

Figure 7. Bar chart showing the correlation between the field of practice and their response regarding cause of perforation during access cavity, where X axis represents the field of practice and Y axis represents the number of respondents and there was significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality. (Chi square test;(p value < 0.05)- Significant [Blue-Improper size of the bur, Green- Lack of proper degree of axial inclination, Grey- Additional canals and Violet- Debris accumulation].

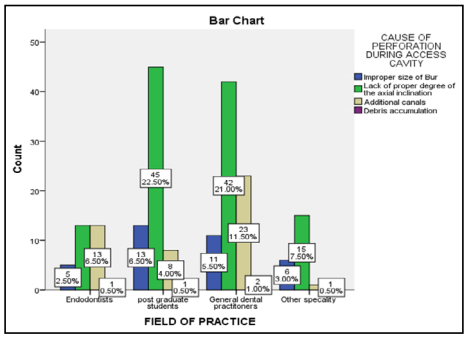


Figure 8. Bar chart showing the correlation between the field of practice and their response regarding ,errors that happen during instrument separation, where X axis represents the field of practice and Y axis represents the number of respondents and there is no significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality (Chi square test;(p value >0.05)- Not Significant Green-Inadequate lubrication, Grey- increased speed of instrumentation and violet- improper radiographic examination]

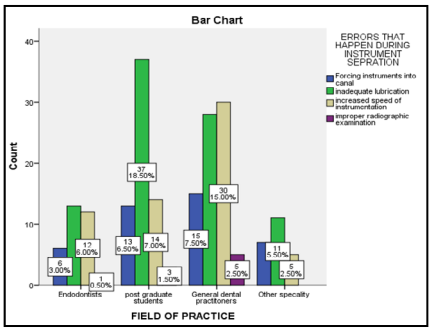


Figure 9. Bar chart showing the correlation between the field of practice and their response regarding ,errors that happen during instrument separation, where X axis represents the field of practice and Y axis represents the number of respondents and there was significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality.(Chi square test;(p value < 0.05)- Significant [Blue- Accurate working length measurement, Green- proper cleaning and shaping, Grey- proper radiographic examination, Violet- All of the above]

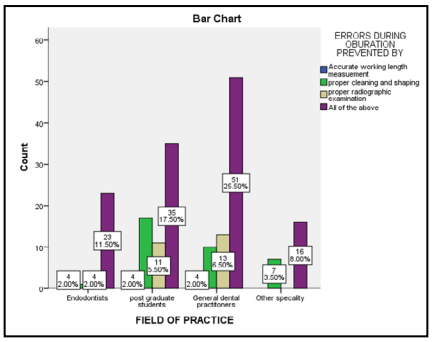


Figure 10. Bar chart showing the correlation between the field of practice and their response regarding Is age is successful for endodontic treatment , where X axis represents the field of practice and Y axis represents the number of respondents and there is no significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality (Chi square test;(p value >0.05)- Not Significant [Blue- yes, Green- no and Grey- may be]

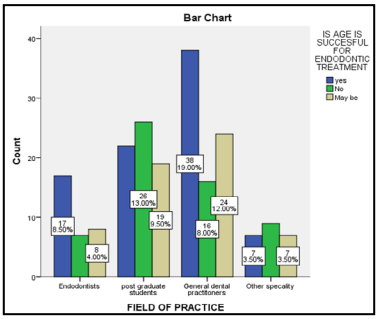


Figure 11. Bar chart showing the correlation between the field of practice and their response regardingIsendodontically treated tooth is always successful , where X axis represents the field of practice and Y axis represents the number of respondents and there is no significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality (Chi square test;(p value >0.05)- Not Significant[Blue- yes, Green- no, Grey- sometimes and Violet- not always]

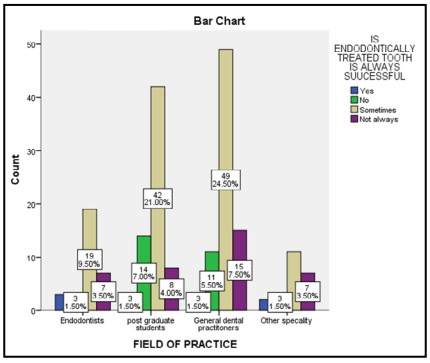


Figure 12. Bar chart showing the correlation between the field of practice and their response regarding In which file is not retrievable easily, where X axis represents the field of practice and Y axis represents the number of respondents and there is no significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality. (Chi square test;(p value >0.05)- Not Significant[Blue- apical third, Green- middle third and grey- coronal third].

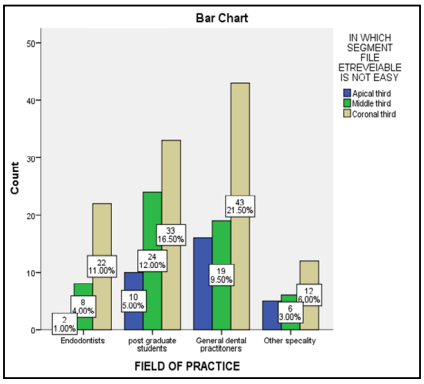
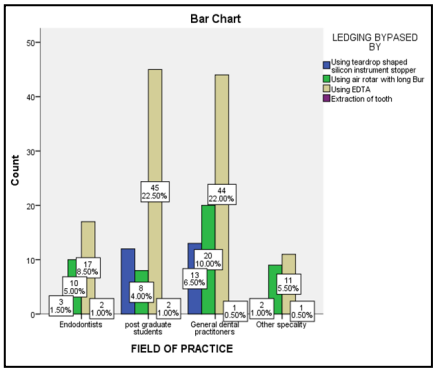


Figure 13. Bar chart showing the correlation between the field of practice and their response regarding Ledging bypassed by , where X axis represents the field of practice and Y axis represents the number of respondents and there is no significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality (Chi square test;(p value >0.05)- Not Significant [Blue- using teardrop shaped file, Green- using air rotor with long bur, Grey- using EDTA and violet- Extraction of tooth].



post chambers. Being unaware of the causes (Teja KV 2018) [15], prevention and method of treating procedural accidents cause different complications such as canal blockage, Incomplete canal cleaning (or) various physical , chemical and thermal stresses. Furthermore , being aware of the procedural accidents can be useful to prevent them. The therapists should also know how to diagnose and treat such procedural accidents, reviewed the outcome of Endodontic procedural errors [8, 9]. They indicated that Endodontic procedural errors are not the direct cause of treatment failure [16]. Many authors reported that one of the stresses of reasons for furcation perforations, Missed canals, over perforations ,strip perforations, kedge , zipping , broken Files, and apical perforation (R et al., 2019). There has not been any research to compare the level of knowledge of Male and female respondents about Endodontic procedural accidents, However , increasing hours of practical teaching and workshops can be helpful in increasing students' awareness in this area. Furthermore, it is essential to have knowledge about the procedural accidents [12]. Moreover, therapeutic and diagnostic methods and the impacts of such accidents on prognosis should be learned [8]. Most of the pertinent problems can be prevented by observing the fundamental principles of diagnosis, tooth selection, treatment plan,

Figure 14. Bar chart showing the correlation between the field of practice and their response regarding materials used in management of perforations, where X axis represents the field of practice and Y axis represents the number of respondents and there was significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality.(Chi square test;(p value < 0.05)- Significant [Blue- Zinc oxide eugenol, Green- MTA, Grey- Dycal and Violet- composites]

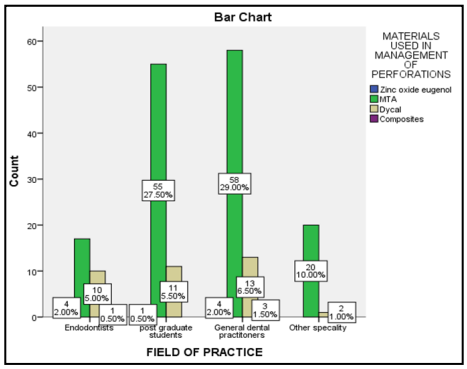


Figure 15. Bar chart showing the correlation between the field of practice and their response regarding best method to treat endodontic failure , where X axis represents the field of practice and Y axis represents the number of respondents and there is no significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality (Chi square test;(p value >0.05)- Not Significant [Blue- non surgical root canal treatment, Green- surgical method, Grey- leave as it is and Violet- Extraction]

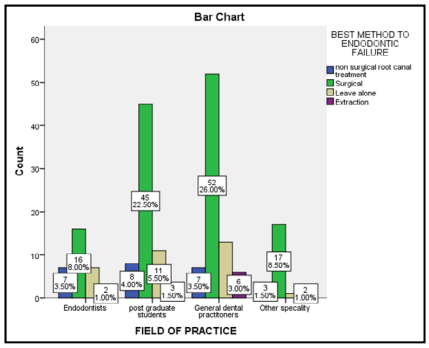
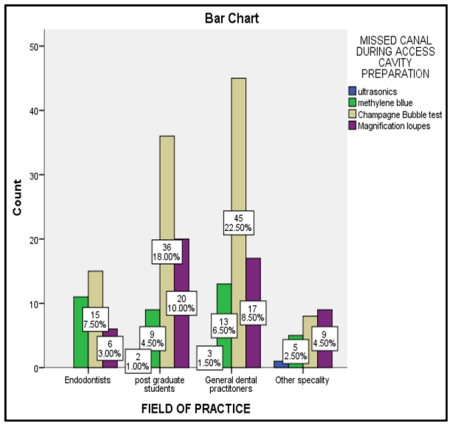


Figure 16. Bar chart showing the correlation between the field of practice and their response regarding missed canal during access cavity preparation, where X axis represents the field of practice and Y axis represents the number of respondents and there is no significant difference in the responses obtained from Endodontists,generalpractitioners,postgraduates and other speciality (Chi square test;(p value >0.05)- Not Significant [Blue-ultrasonics, Green- methylene blue, Grey- champagne bubble test and violet- magnification loupes]



preparation by observing the fundamentals. Principles of diagnosis, tooth selection, treatment plan, preparation of access cavity, canal formation and cleaning, canal filling and preparation of post chamber [20].

Conclusion

The clinician must practice careful treatment strategies for working length, precautions against over instrumentation. The direct cause of treatment failures are the endodontic procedural errors, with high enhanced magnification by operating microscope, almost all procedural errors during endodontic therapy can be minimised.

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