

**PREVALENCE OF PATIENTS UNDERGOING ROOT CANAL TREATMENT OF
MANDIBULAR MOLAR OF DIFFERENT AGE GROUPS AND GENDER**

Running title: Prevalence of root canal in mandibular molar

Type of study: Original study

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Abstract

Introduction: Mandibular first molars are the first permanent tooth to develop, they usually have five cusps mesiobuccal, mid-buccal, mesiolingual, distobuccal, and distolingual. International notion of numbering system the right mandible first molar is known as 46 and the left first mandibular Molar are known as 36, they usually have two roots and three canals or sometimes four and also they have four pulp horns usually since they are first to develop they are more prone to decay and the left mandibular second molar is known as 37 and right mandibular second molar is known as 47.

Materials and methods: A retrospective university setup study where the data were collected from the record management system, where 86000 case sheets were revived and analyzed out of which 609 collected data was compiled and statistically analyzed.

Results : 48.53% of males and 51.4% of females had undergone root canal treatment in mandibular molars. There were 51.4% in the age group 20-30 years, 26.3% in the age group 31-40 years; 11.7% in the age group 41-50 years; 7.35% in the age group 51-60 years and 2.9% in the age group 61-70 years who had undergone RCT on the mandibular molars

Conclusion: Within the limitations of the study, the age group of 20 to 30 years underwent most endodontic treatment in mandibular molars especially the right mandibular first molars, The female patients had undergone more endodontic treatment in mandibular molars.

Keywords : mandibular molar, Root canal treatment, innovative technology

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Introduction

The distal root of the mandibular first molar is typically straight and wide, with one circular canal [1, 2]. Variations have been discovered among certain ethnic groupings. Variations in the number of canals [3, 4]. An isthmus is a pulpal passage that connects two or more pulpal passages [5] [6]. Additional canals according to Florates et al., class V Isthmus is prevalent in the mesial root of mandibular molars [7]. Wiene et al, Kuttler et al, and Vertucci et al have all classified root canal morphology [5, 8, 9]. The canal morphology of mandibular molars has been shown to be altered in numerous ways[10] .The first permanent teeth to erupt in the oral cavity are the mandibular first molars and they are more susceptible to dental caries and have a higher risk of developing dental caries with pulpitis [11, 12].

Root canal therapy can be performed in a single or numerous visits. The benefits of single-visit root canal treatment versus multiple-visit root canal treatment for infected teeth are debatable. Traditionally, root canal or endodontic therapy was done over several sessions, with medicine administered between root canal preparation and obturation. Prior to obturation, the goal is to minimise or remove microbes and their by-products from the root canal system. Multiple-visit root canal therapy is widely acknowledged as a safe and effective treatment option [13, 14]. However, there has been rising concern in recent years concerning the need for several appointments in endodontic therapy because no significant variations in antimicrobial efficacies have been documented between single-visit and multiple-visit treatments [15]. Adoption of clinical guidelines procedures in endodontic therapy are evaluated not only for their efficacy and biological implications, but also for their ease of use[16].The reduction of sufferers' suffering Focused research on topics relating to treatments or procedures sought to give data to support clinical decisions [17] .

Short-term, medium-term, and long-term discomfort after endodontic therapy can all be classified. The prevalence of short-term post-obturation pain was considerably lower in single-

visit treatment than in multiple-visit treatment [18]. Post-obturation pain is thought to be caused by a number of factors. Infection, retreatment, preoperative pain, intracanal medicines, periapical tissues are harmed and physical and physiological variables are all factors to consider. Single-visit root canal treatment had a decreased incidence of post-obturation discomfort. It's possible that this is due to immediate obturation, which prevents drugs from passing through, as well as recurrent instrumentation. Furthermore, a single-visit method may reduce pain caused by bacterial reinfection of the canals as a result of bacterial infiltration from a leaky temporary restoration or lateral canal [19] [20]. The multiple-visit approach, on the other hand, entails the use of a temporary seal and recurrent visits [21]. Periapical tissues are stimulated physically and chemically. As a result, the purpose of this study is to assess the relationship between age, gender, and mandibular first molar endodontic therapy. Our team has extensive knowledge and research experience that has translate into high quality publications [22–31], [32–35], [36–40], [41]. The aim of this study is to assess the prevalence of patients undergoing Root Canal Treatment of mandibular molar of different age groups and gender.

Materials And Methods

Study settings: This study is a university setting study conducted in Saveetha Dental College, Chennai. Approval from the ethical committee was obtained. Two examiners are involved in this study.

Sample Collection: In this retrospective study, a total of 86000 case sheets were reviewed out of which Data was collected from June 2019 and March 2020. Totally 609 case sheets were reviewed. Cross verification of data for errors was done by the presence of additional reviewers and by photographs. Simple random sampling was done to minimize sampling bias. The study was generalized to the South Indian population.

Data collection/Tabulation: Data of patients who underwent Root canal treatment in the mandibular first molar was collected from the record management system of the college. Data was entered in excel in a methodological manner and imported to SPSS. Incomplete data were excluded from the study.

Analysis: IBM SPSS 23.0 software was used for data analysis. Independent variables include age, gender, tooth. The dependent variable is Root canal treatment in the mandibular first molar. Both descriptive and inferential statistics were done. Frequency distribution was done for age, gender. Chi-square test is done to find the association. The

Results And Discussion

In this study, 11.76% of male patients had root canal treatment in 36, 4.41% had root canal in 37, 25% had root canal treatment in 46 and 7.3% had root canal treatment in 47, whereas 11.76% percent of female patients had root canal treatment in 36, 4.41% had root canal

treatment in 37, 19.12% had root canal in 46 and 16.18% had RCT in 47 (Figure 3). The Chi-square test was used to assess the relationship between gender and the outcome.

Endodontic treatment was performed on mandibular molars, although the results were not statistically significant ($p>0.05$) (Table 1)

Distribution of root canal treatment among patients of various ages: there were 51.4% in the age group 20-30 years, 26.3% in the age group 31-40 years; 11.7% in the age group 41-50 years; 7.35% in the age group 51-60 years and 2.9% in the age group 61-70 years who had undergone RCT on the mandibular molars (Figure 2). This is in accordance with other studies, which suggests that most of the root canal treatment was done in patients less than 30 years [42].

Male patients had more root canals in mandibular first molars, primarily in the mandible right first molar, according to the study, which is similar to a study conducted on the Chinese population by Saunders et al [13]. The many differences in root canal morphology prove to be a challenge for dentists.

The human dental pulp's hard tissue repository comes in a variety of forms and shapes. For a good treatment outcome, a thorough understanding of tooth morphology, careful interpretation of angled radiographs, correct access preparation, and a detailed study of the interior of the tooth are all required. Magnification and lighting are two tools that must be used to accomplish this. It has long been known, according to the most recent studies proving the anatomic intricacies of the root canal system, that the root with a tapering canal and a single foreman is the exception, not the rule. Multiple foramina, additional canals, fins, deltas, intercanal connections, loops, 'Cshaped' canals, and auxiliary canals have all been discovered by researchers. As a result, the dentist must treat each tooth as if complex anatomy is common enough to be deemed normal. The dentist should be aware of the many routes that root canals take to reach the apex. Canals can branch, divide, and reunite in the pulp canal system [43].

Much research has been done to assess the root canal morphology of mandibular molars. According to one study, roughly 46% of mandibular first molars had four canals [6]. The first mandibular molar can occasionally be a Radix endo molaris, with several roots and canals. According to Holtzmann et al, the dynamic concept of the root canal system, which describes a variable morphology of multiple root canals interconnected by anastomoses, has been established as the prevailing state in mandibular molars, with five root canals in his study, three of which were located in the mesial root. A third middle root canal was found between the mesiobuccal and mesiolingual root canals [44].

This study is of shorter duration with a limited population. So to ascertain the findings of our study, we have to do further studies in the future with a larger sample size and longer duration.

This can be helpful to find more information regarding the frequency of root canal treatment done in mandibular first molars and its efficacy based on age and gender

Conclusion

Within the limitations of the study, the age group of 20 to 30 years underwent most endodontic treatment in mandibular molars especially the right mandibular first molars, The female patients had undergone more endodontic treatment in mandibular molars. The mandibular first molars are the first to erupt in the oral cavity and are primary load-bearing teeth during clenching and mastication and in this study, most endodontic treatments were done in patients of younger age group reveals the poor maintenance and poor knowledge of people about the maintenance of the same. Thus it is important to create more awareness about the maintenance of oral hygiene.

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Author Contribution

All the authors contributed equally to the study

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Conflict Of Interest

The author have no conflict of interest

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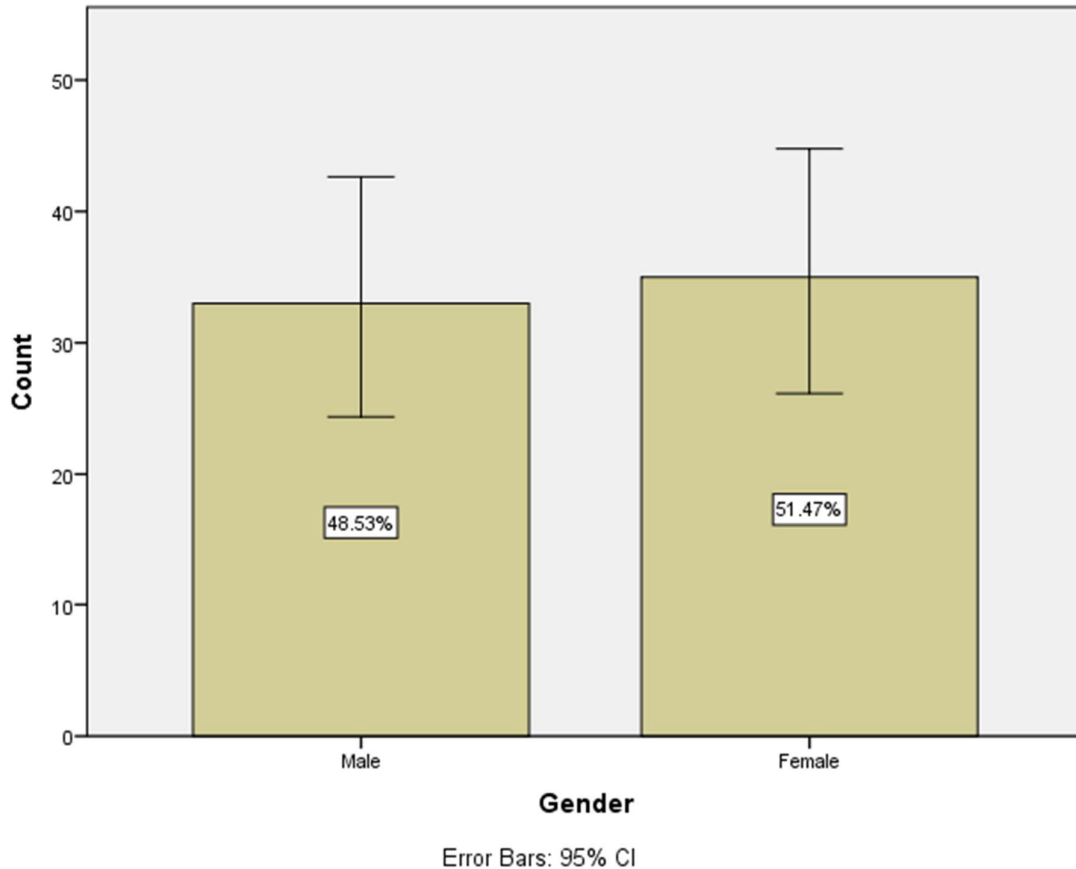


Figure 1: Bar graph showing the frequency of males and females undergoing root canal treatment of mandibular molars. X axis represents the gender and the Y axis represents the number of teeth , where 48.53% of males and 51.4% of females had undergone root canal treatment in mandibular molars.

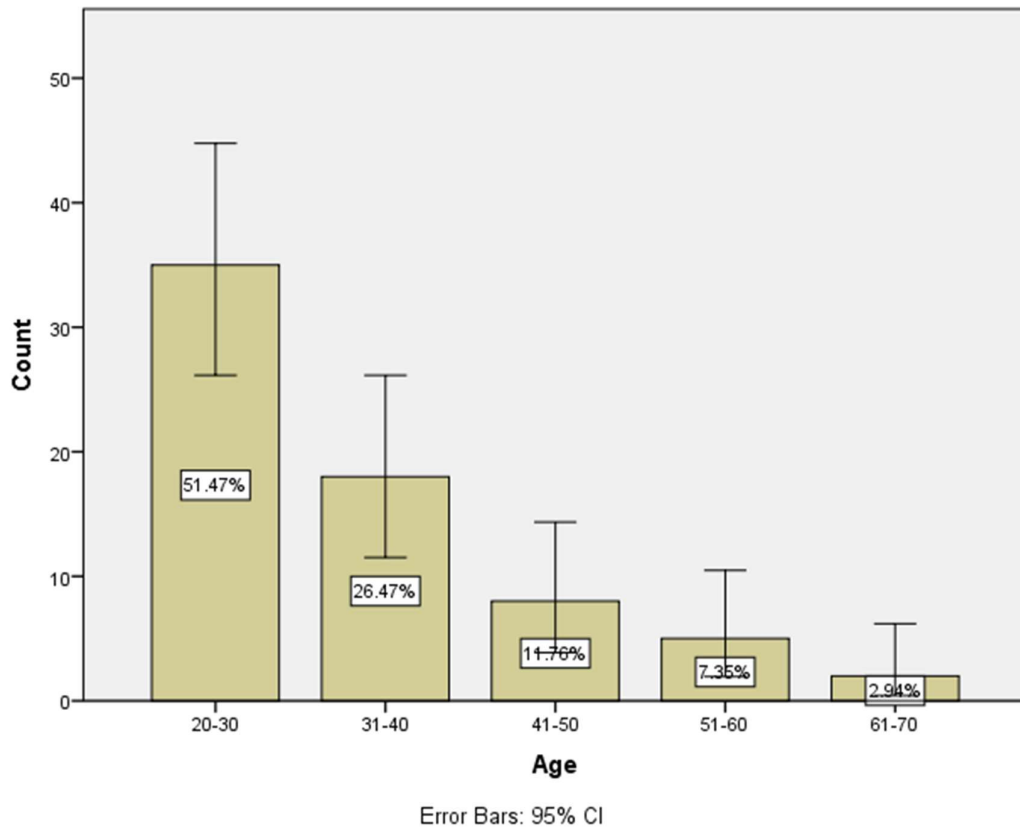


Figure 2: Bar graph showing the frequency of different age groups undergoing root canal treatment of mandibular molars. X axis represents the age and the Y axis represents the number of teeth , where 51.4% of 20 to 30 years old had undergone root canal treatment in mandibular molars, 26.4% of 31.40 years old had undergone root canal treatment in mandibular molars, 11.75 of 41-50 years old had undergone root canal treatment in mandibular molars. 7.3% of 51-60 years old had undergone root canal treatment in mandibular molars and 2.9% of 61-70 years old had undergone root canal treatment in mandibular molars.

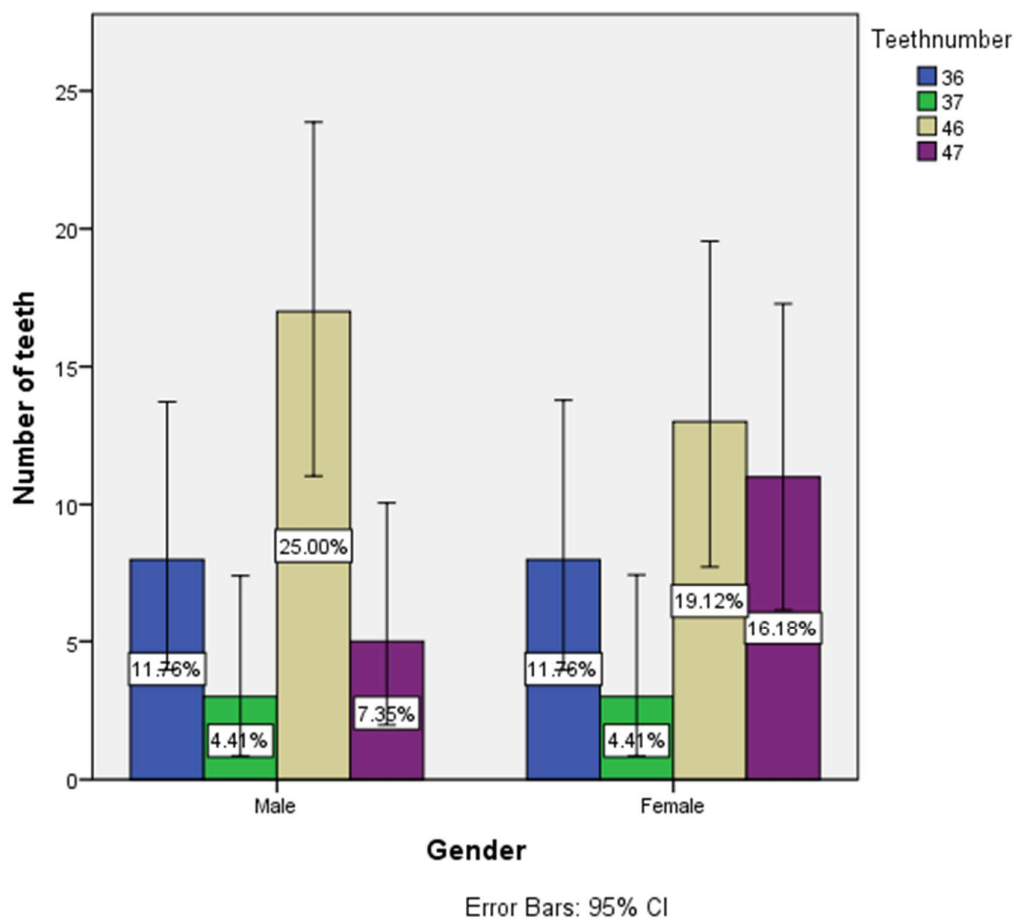


Figure 3: Bar graph showing association between gender and prevalence of root canal treatment in mandibular molars. X axis represents the gender and the Y axis represents the number of teeth , where blue denotes 36, green denotes 37, brown denotes 46 and violet denotes 47. There was significant association between age and shade used ($p=0.02$).

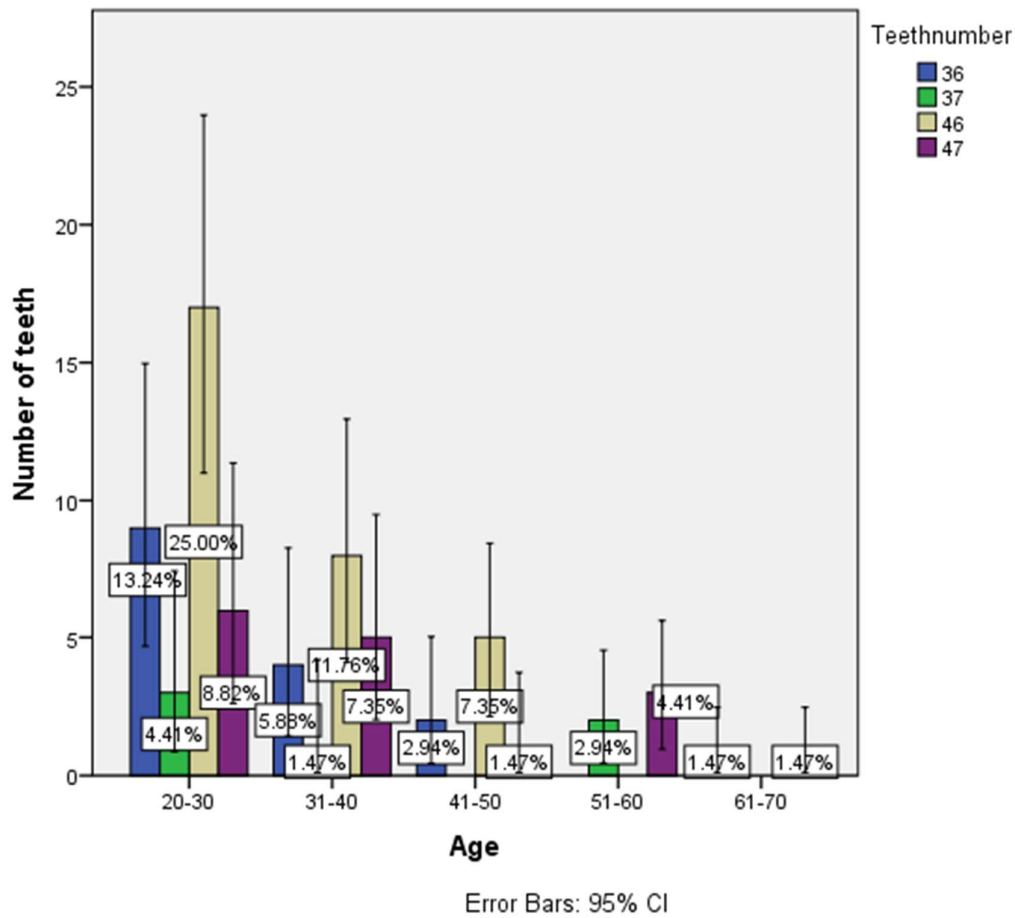


Figure 4: Bar graph showing association between age and prevalence of root canal treatment in mandibular molars. X axis represents the age and the Y axis represents the number of teeth , where blue denotes 36, green denotes 37, brown denotes 46 and violet denotes 47. There was significant association between age and shade used ($p=0.04$).