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# Prevalence in Replacement of Missing Mandibular First Molar among Young Adult

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**ABSTRACT:**
Patients frequently need treatment to replace a single missing tooth in posterior regions, lost due to various reasons like decay, periodontal problems, injuries, impactions etc. The aim of the study was to compare the prevalence of treatment alternatives of missing mandibular first molar in young adults in a private hospital setting. Date of age, gender, type of replacement were obtained from the records at the dental hospital. Most common type of replacement of a single missing first molar is FPD (54.6%) followed by implant (40.1%). 21-30 years of age group was found to be the most common age group with replacement of single missing mandibular first with higher incidence of males. The great majority of patients with a single missing tooth had a higher interest in FPD than implants. Patients with no replacement were also prevalent.

**Keywords:** Fixed partial denture, Impaction, Implant, Periodontal problems, Treatment modalities.

## INTRODUCTION:

Partial edentulousness is a dental arch in which one or more teeth are missing. Generally, it occurs by caries, periodontal problems, traumatic injuries, impactions, supernumerary teeth, neoplastic and cystic lesions. According to Zaigham and Muneer 2010 et al., and Saleh et al. 2013, dental caries and periodontal disease were the major causes of tooth loss in early childhood and adolescence.Missing tooth is known to have an important role in the loss of esthetics, mastication.(Zaigham and Muneer, 2010; Saleh, Tahir and Abdel-Rahman, 2013) Partial edentulism leads to several drawbacks to the subjects, including clinical challenges and lifestyle compromises (A. Sheiham and J. Steele, 2001)(Sheiham and Steele, 2001) Clinically, partial edentulism leads to drifting and tilting of adjacent teeth, supra eruption of opposing teeth, altered speech, changes in facial appearance and tempero-mandibular disorders.On the life-style compromises, partial edentulism restricts dietary options, results in weight loss. Further, it leads to lack of confidence and confined social activities, which may adversely affect the quality of life and lead to psychological dissatisfaction.(Jeyapalan, 2015)

Replacement of missing teeth has become one among the foremost important needs for patients attending clinics to restore esthetics and/or function. Many treatment modalities are available for replacing a single missing tooth; removable partial denture, fixed partial denture or dental implant. Each modality is a possible treatment option and has its own advantages and disadvantages. Salinas et al (Salinas, Block and Sadan, 2004) reported that the choice to replace a single missing tooth depends on the primary decision which is restorability of the tooth. Treatment decisions cannot be performed depending on the idea of clinical examination or a dentist's opinion alone, but should be discussed in close consultation with patients. Hence, it is necessary to familiarize the patients with literature comparing success rates of fixed partial dentures, single tooth implant restorations and a removable partial denture or techniques used in the replacement of single missing tooth.(Al-Quran, Al-Ghalayini and Al-Zu'bi, 2011)

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Recording the prevalence and pattern of partial edentulism it is vital for identifying the prosthetic needs of a community also as aiding the availability of educational and preventive materials suitable for this population (Lana A. Shinawi, 2012) (Shinawi, 2012). Previously our team had conducted numerous clinical trials (Ashok *et al.*, 2014; Venugopalan*et al.*, 2014; Ganapathy *et al.*, 2016; Vijayalakshmi and Ganapathy, 2016; Ranganathan, Ganapathy and Jain, 2017; Duraisamy*et al.*, 2019), in-vitro studies (Ashok and Suvitha, 2016; Ajay *et al.*, 2017; Jyothi *et al.*, 2017; Basha, Ganapathy and Venugopalan, 2018a) and systematic reviews(Selvan and Ganapathy, 2016; Subasree, Murthykumar and Others, 2016; Kannan and Others, 2017; Ariga*et al.*, 2018a; Kannan and Venugopalan, 2018a) over the past 5 years. This led us to work on the current topic.

Our team has rich experience in research and we have collaborated with numerous authors over various topics in the past decade (Ariga*et al.*, 2018b; Basha, Ganapathy and Venugopalan, 2018b; Hannah *et al.*, 2018; Hussainy*et al.*, 2018; Jeevanandan and Govindaraju, 2018; Kannan and Venugopalan, 2018b; Kumar and Antony, 2018; Manohar and Sharma, 2018; Menon *et al.*, 2018; Nandakumar and Nasim, 2018; Nandhini, Babu and Mohanraj, 2018; Ravinthar and Jayalakshmi, 2018; Seppan*et al.*, 2018; Teja, Ramesh and Priya, 2018; Duraisamy*et al.*, 2019; Gheena and Ezhilarasan, 2019; Hema Shree *et al.*, 2019; Rajakeerthi and Ms, 2019; Rajendran *et al.*, 2019; Sekar*et al.*, 2019; Sharma *et al.*, 2019; Siddique *et al.*, 2019; Janani, Palanivelu and Sandhya, 2020; Johnson *et al.*, 2020; Jose, Ajitha and Subbaiyan, 2020).

Therefore, this study is aimed to compare the prevalence of treatment alternatives of missing mandibular first molar in young adults in a private hospital setting.

## MATERIALS AND METHODS:

A single centre retrospective study was done in a hospital setting. The ethical approval was received from the hospital's ethical committee. The study involved selected patients data who reported with a chief complaint of missing mandibular first molar teeth. The necessary approvals in gaining the data were obtained from the hospitals ethical committee (SDC/SIHEC/DIASDATA/0619-0320). The number of people involved in this study includes 3 i.e guide, reviewer and researcher.

### Selection of Subjects:

All patients who reported to the private hospital with a chief complaint of missing mandibular first molar teeth from the time period of June 2019 to April 2020 were selected for this study. There were three people involved in this study (guide, reviewer, and researcher). All available data were taken into consideration and there was no sorting process.

### Data Collection:

The patient's details were retrieved from the hospital’s patient record management software. Data regarding patient name, age, gender, tooth number, treatment plan for missing mandibular first

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molar were taken into consideration for this study. Cross verification of the data was done with the help of photographs and radiographs. The data was manually verified, tabulated and sorted.

**Inclusion Criteria:**
All patients who reported with a chief complaint of missing mandibular first molar teeth in the age groups of 18-35 years were taken into consideration.

**Exclusion Criteria:**
Patients' records that were incomplete were removed from the study. Repetitive entries were excluded as well. Patients aged less than 18 years and more than 35 years were not included in the study.

**Statistical Analysis:**
The tabulation of data was analysed using SPSS software. (IBM SPSS Statistics 26.0) The method of statistical analysis that was used in this study was Chi Square Test to compare two proportions. The analysis was done for: age, gender, tooth number, treatment plan for missing mandibular first molar in this study.

**RESULTS:**
The study included 959 participants. In this study, it is observed that FPD was the most common type of replacement of single missing mandibular molar (54.6%) followed by implant (40.1%), not willing for treatment (3.9%) and no treatment required (1.4%). 21-30 years of age was reported with maximum number of replacement of missing mandibular first molar with higher incidence among males ($p>0.05$) and is not statically significant.

**DISCUSSION:**
In our study of comparing the different treatment alternatives for a missing mandibular first molar, the majority of patients showed a very high interest in treatment with FPD's (54.6%) but some showed interest in implant (40.1%) while others preferred for no replacement of missing tooth. Many factors may explain these results. One of the main reasons is, implant services involve higher fees than traditional services such as FPDs, and most of the dental insurance does not financially support implant therapy. The costs may increase, as even additional surgical procedures such as lifting and grafting are required when bone and soft tissues are inad-equate. Therefore, the higher cost of implant therapy may cause patients to choose FPD's.

On the other hand, an FPD is usually completed in a short time. The treatment time for a 3-unit FPD is only 2 weeks.(Christensen, 2008) An implant-retained crown takes longer to complete because of the waiting period for osseointegration, which is about 4 to 6 months. Many patients do not want to wait such a long time. The placement of implants requires clinical training which is insufficiently addressed in undergraduate dental education schemes of dentistry

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facilities.(Hebel, Gajjar and Hofstede, 2000) Although FPDs could also be applied to all or any patient, implant therapy requires surgical procedures, and it may be contraindicated for patients who have severe systemic disorders such as uncontrolled diabetes mellitus or a smoking habit.(Sclar, 2004) Patients may also be afraid to undergo a surgical intervention, because they usually think that such a procedure is painful. However, replacement of single missing molar could serve as a valid and successful surgical treatment modality, with a high survival and success rate.(Levin, Laviv and Schwartz-Arad, 2006) with no abutment teeth have to be prepared avoiding the danger for extra endodontic treatment, discomfort due to hypersensitivity, difficult access for plaque control, etc. This finding is in line with a study done in turkey who reported FPD as the most common interest of patients in replacement of missing mandibular first molar in comparison with other treatment modalities.(Özkurt and Kazazoğlu, 2010)

There were 39% of patients with a single missing mandibular first molar tooth with no replacement. The rate is quite high because a single missing tooth especially in the posterior region might not adversely affect either esthetics or function. From a patient's perspective, replacing a missing posterior tooth might seem less important.(Tervonen, 1988) About 1.4% of patients were suggested to have no treatment required because rotating, tilting and shifting of the adjacent teeth or over eruption of antagonist teeth might complicate subsequent construction of a prosthetic restoration or compromise function and aesthetics.(Sadan*et al.*, 2004) In present study, we observed no significant gender differences however it was more commonly seen among males (55.3%) than females (44. 7%) which is in line with the study of Abdurahiman VT et al., who observed that men are more prone to partial edentulousness than women(Abdurahiman, Abdul Khader and Sanju John Jolly, 2013) which is contradicting the finding of sapkota et al., and Patel JY et al who observed that women are more edentulous compared to males.(Sapkota, Adhikari and Upadhaya, 2013; Patel *et al.*, 2014) Among the various factors studied, age is the key factor found to have significant relationship with the prevalence of replacement of missing mandibular first molar. In our study, it was more commonly observed in the 21-30 years age group of patients. This finding is in accordance with Abdelrahman et al., who found that young age group patients had more class III and class IV in comparison to older patients.(Saleh, Tahir and Abdel-Rahman, 2013) These are advantages and disadvantages of each treatment modality but economic parameters are also decisive factors in the presence of a particular type of treatment. It is very important to emphasize to patients that the quality of life outweighs the differential in fees. Patients should be properly advised of the advantages and disadvantages of the both types of treatment modalities so they can make informed decisions.

Our institution is passionate about high quality evidence based research and has excelled in various fields ( (Pc, Marimuthu and Devadoss, 2018; Ramesh *et al.*, 2018; VijayashreePriyadharsini, SmilineGirija and Paramasivam, 2018; Ezhilarasan, Apoorva and Ashok Vardhan, 2019; Ramaduraiet *al.*, 2019; Sridharan *et al.*, 2019; VijayashreePriyadharsini, 2019; Chandrasekar *et al.*, 2020; Mathew *et al.*, 2020; R *et al.*, 2020; Samuel, 2021)

**CONCLUSION:**

In conclusion, The present study shows that the patients visiting the private hospital more likely preferred FPD over implants retained Crown. Hence effective continuous education programs focusing on the two common treatment alternatives as well as possible adverse effects of leaving the missing tooth without a replacement should be provided for the patients.

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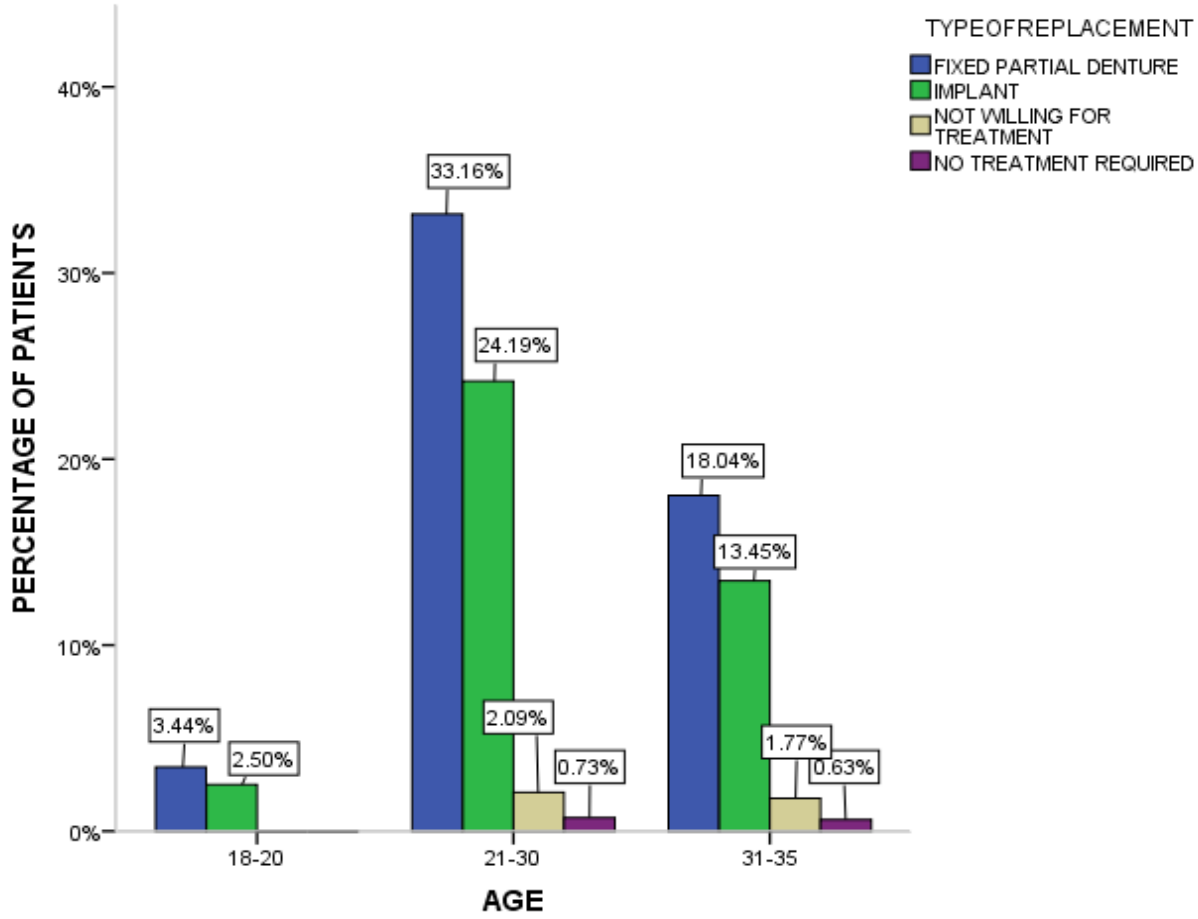
**GRAPHS:**




GRAPH- 1: Bar graph depicting the type of replacement for missing mandibular first molar among young adults based on different age groups. The X- axis represents the different age groups and the Y- axis represents the percentage of distribution of patients with respect to missing mandibular first molar. Patients with age group of 21-30 years reported with maximum number of replacement of missing mandibular first molar (60.71%). There was a clinical significance but no statistically significant difference was seen in patients with missing mandibular first molar with respect to age (chi-square value- 5.77, p value>0.05).

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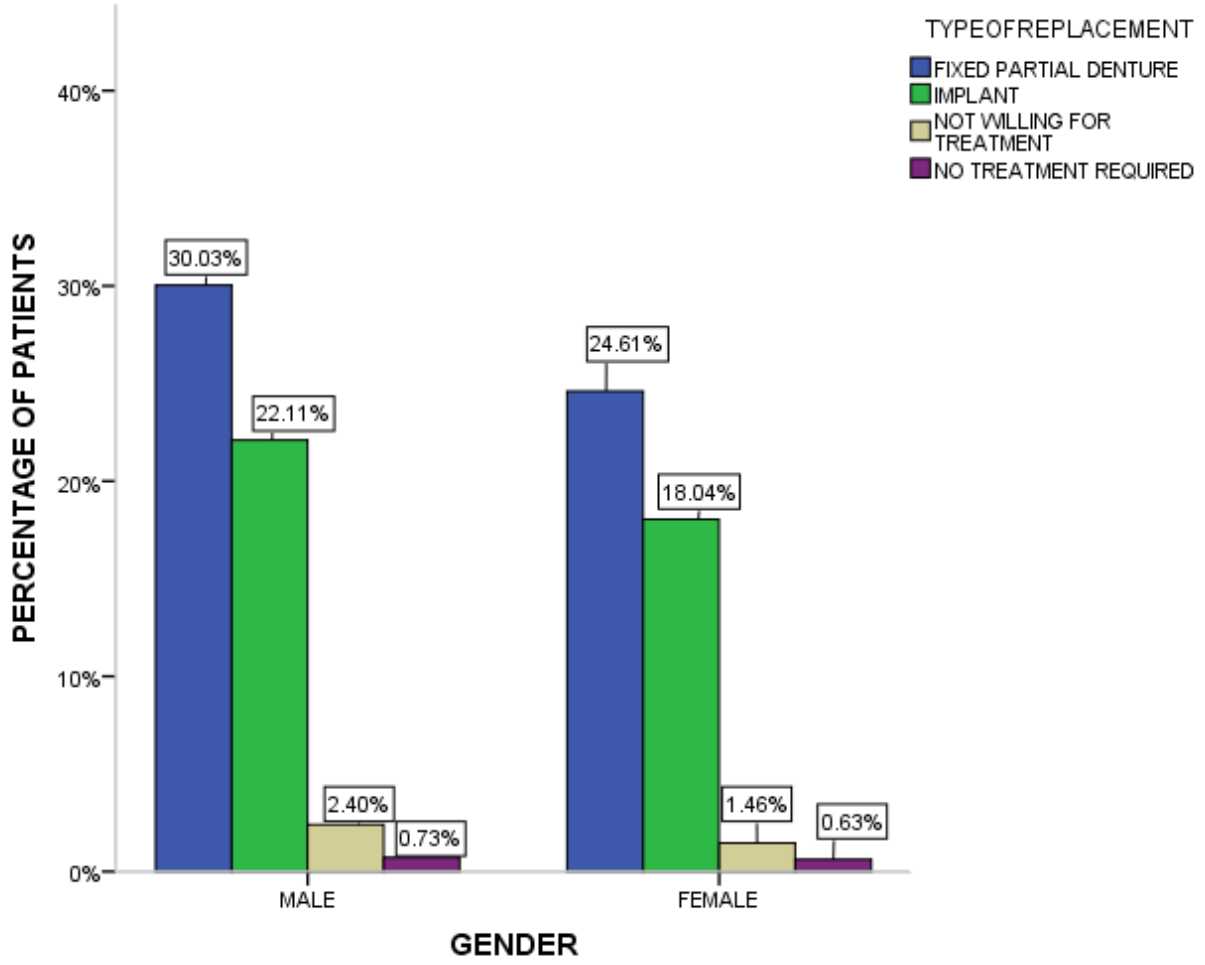


GRAPH- 2: Bar graph depicting the type of replacement for missing mandibular first molar among young adults based on gender. The X- axis represents the gender and the Y- axis represents the percentage of distribution of patients with respect to missing mandibular first molar. Male patients reported the maximum number of replacement of missing mandibular first molar (55.27%) compared to female patients (44.74%). There was a clinical significance but no statistically significant difference was seen in patients with missing mandibular first molar with respect to age (chi-square value- 0.74, p value>0.05).

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FIGURE LEGENDS

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