

Awareness and Attitude toward the Replacement of Missing Teeth among Patients at a Dental Institute: A Cross-sectional Study

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ABSTRACT

Aim: To evaluate the awareness among the patients visiting a dental college in replacing the missing teeth.

Materials and methods: A cross-sectional survey was conducted to know the patient's awareness and preference for the treatment options. A list of the closed-ended questionnaire was used to record the patient's response about being edentulous. The collected data were statistically analyzed. SPSS, Version 2.1, statistical software was used. The descriptive statistics were done using frequency and percentage. Bar graphs and pie graphs were used wherever applicable.

Results: Maximum patients reported to dental treatment with less than 1 year period of edentulousness. This directly indicates an increased awareness among the patients (77.5%). The need to replace the missing teeth was a function such as mastication of food for 42.6% of the patients and 36.6% of the patients wanted to replace their missing teeth for improving their appearance. The most preferred method of the replacement is fixed partial denture (FPD) as it was cost-effective and affordable for them. Only 22% of the patients wanted an implant as a treatment option as it did not involve the adjacent teeth.

Conclusion: The awareness and knowledge about the treatment options among the patients visiting the dental college have increased, but still, the awareness about the consequences of being edentulous for a long time should be improved through social media by the dentists.

Clinical significance: The replacement of missing teeth is important in rehabilitating the form, function, esthetics, and integrity of the stomatognathic system. There are various treatment options available for replacing missing teeth. Very few patients are aware of all the options and the consequences of not replacing the posterior teeth.

Keywords: Awareness, Edentulousness, Missing teeth, Stomatognathic.

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INTRODUCTION

Teeth play a very important role in maintaining the integrity of the dentition. The harmonious relationship between teeth and surrounding soft tissues together with the temporomandibular joint (TMJ) forms a healthy stomatognathic system. Esthetics and function are considered the significant roles of dentition.

There are many reasons for the loss of teeth including dental caries, periodontal disease, trauma, and congenital loss. The most common reason is the dental caries. Loss of teeth results in altered speech, ineffective mastication, loss of self-confidence, and concerns about the appearance. It also results in malocclusion and TMJ disorders. Hence, the replacement of missing teeth is essential in maintaining not only the health of the stomatognathic system but also in improving the quality of life.¹⁻³

The necessity for the artificial replacement of anterior missing teeth to restore the esthetics is well understood by most patients, whereas the role of posterior teeth in maintaining the integrity of the stomatognathic system is often overlooked. The loss of posterior teeth can cause positional changes of the opposing teeth such as supraeruption, rotation, and tipping if it is not replaced within 6 months after the extraction of the teeth. An excessive supraeruption of opposing teeth reduces the height available for the artificial replacement of teeth, especially for implant restorations which require an interocclusal space of at least 8 mm from the alveolar crest. Hence, an insufficient interocclusal space

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can result in biomechanical complications such as decreased retention of the crown, occlusal interference, and occlusal overload.

The patient's awareness regarding these complications has to be emphasized by the dentists. Media acts as an important tool in educating the public through radio and television interviews, books, magazines, and newspapers. The dental camps can be conducted in urban and rural public health centers to educate and create awareness in patients about the early replacement of missing teeth.⁴

There are various treatment options for the replacement of missing teeth, namely, removable partial dentures (RPD), fixed dental prosthesis, complete dentures, and implant-supported dentures. A non-removable replacement for missing teeth appears to provide patients with an enhanced sense of confidence, security, and social well-being. Hence, there is a significant decline in the provision of exclusive tissue borne RPD in the last few decades, but an increase in the use of fixed options especially implants. Also, esthetics is given priority in the replacement of anterior missing teeth immediately after extraction due to their desire to appear good in public. However, the posterior teeth replacement before supraeruption is greatly ignored due to a lack of awareness.⁵

Hence, a questionnaire was designed to assess patients' awareness and preference toward the particular treatment option, and their negligence in not restoring the teeth at the right time.^{6,7} Are they aware of the adverse consequences of being edentulous the need to create awareness for them plays a very important role in public health dentistry? Therefore, this study was done to get the awareness and knowledge of the options for treating missing teeth among the patients reporting to our dental college.⁸

MATERIALS AND METHODS

A cross-sectional survey was conducted among 102 patients attending the prosthodontics outpatient department, Thai Moogambigai Dental College and Hospital, Chennai, India. The Institutional Ethics Committee (IEC) approval number is Dr.MGRDU/TMDCH/2021-22/905. The study was conducted between August 2021 and October 2021.

The questionnaire for this study consisted of 20 questions and was divided into 5 sections. The first section was used to record the patient's demographic details. The second and third sections consisted of five questions each to assess the patient's edentulism and the impact of being edentulous, respectively. The fourth section had seven questions to assess the awareness of the patient and the last section consisted of three questions to assess the patient's interest in dental health care.

A pilot study was conducted among 30 patients to validate the questionnaire and calculate the required sample size. The internal consistency of the questionnaire was adequate (Cronbach's $\alpha = 0.75$). The reliability of the tool was evaluated by the κ statistic (0.85). The questionnaire was validated by the experts. Two investigators were trained for conducting the study.

The sample size was determined by the awareness of the patients in replacing the missing teeth in the pilot study which was 93%. With the alpha error at 5 and 95% confidence interval (CI); the sample size can be calculated using the formula:

$$N = \frac{t^2 \times p(1-p)}{m^2}$$

The estimated sample size value is approximately 102.

Source of support: Nil

Conflict of interest: None

Table 1: Frequency of age-group with missing teeth

Age	Frequency	%	Valid %	Cumulative %
<25	12	11.8	11.8	11.8
26–35	21	20.6	20.6	32.4
36–45	26	25.5	25.5	57.8
46–55	17	16.7	16.7	74.5
>55	26	25.5	25.5	100.0
Total	102	100.0	100.0	

Table 2: Frequency in the location of missing teeth

Location of missing teeth	Frequency	%	Valid %	Cumulative %
Anterior	34	33.3	33.3	33.3
Posterior	49	48.0	48.0	81.4
Anterior and posterior	19	18.6	18.6	100.0
Total	102	100.0	100.0	

A non-probabilistic convenient sampling method was used to select the participants for this study. Informed consent was obtained from the patient. The questionnaire was explained to the patients by the investigators on a one-to-one interview basis in their mother tongue, Tamil, to avoid any ambiguity. The filled questionnaire was collected on the same day and the patients not willing to give consent were excluded from the study. All partially edentulous patients with a completely healed extraction site, with more than 1 month healing period and in the age range of 18–60 years were randomly selected for the study. It included both single and multiple missing anterior and posterior partially edentulous conditions. The patients with extracted third molars, patients with intellectual disability or physically challenged patients, and those from dental-related professionals, and those who were not willing to participate in the survey were excluded from the study.

The collected data were analyzed using a statistical package for social sciences, SPSS (IBM Corporation, SPSS Inc., Chicago, USA, Version 21, software package). The descriptive statistics with frequency and percentage were used to assess the awareness of patients about edentulism and its impact.

RESULTS

The questionnaire was answered by all 102 patients (54 males and 48 females). Among them, 11.8% of patients were in the age-group of less than 25. A maximum of 25.5% of patients were in the age-group of 36–45 as shown in Table 1.

A total of 48% of the patients reported for replacement of missing teeth in the posterior region alone and 33.3% of patients reported for missing teeth in the anterior region alone; 28.4% of patients had only one tooth missing when compared to 27.5% of patients who had more than five teeth missing as shown in Tables 2 and 3.

The most common reason for tooth loss is decay (52.9%) and only 1% reported congenitally missing teeth. Trauma and periodontal problems as reasons for tooth loss were 18.6 and 27.5%, respectively as shown in Table 4. Maximum patients reported dental treatment with less than 1 year period of edentulousness.

Table 3: Frequency in number of missing teeth

Number of missing teeth	Frequency	%	Valid %	Cumulative %
1	29	28.4	28.4	28.4
2	16	15.7	15.7	44.1
3	16	15.7	15.7	59.8
4	13	12.7	12.7	72.5
>5	28	27.5	27.5	100.0
Total	102	100.0	100.0	

Table 4: Frequency in reason for tooth loss

	Frequency	%	Valid %	Cumulative %
Valid				
Decay	54	52.9	52.9	52.9
Congenitally missing	1	1.0	1.0	53.9
Periodontal problem	28	27.5	27.5	81.4
Trauma	19	18.6	18.6	100.0
Total	102	100.0	100.0	

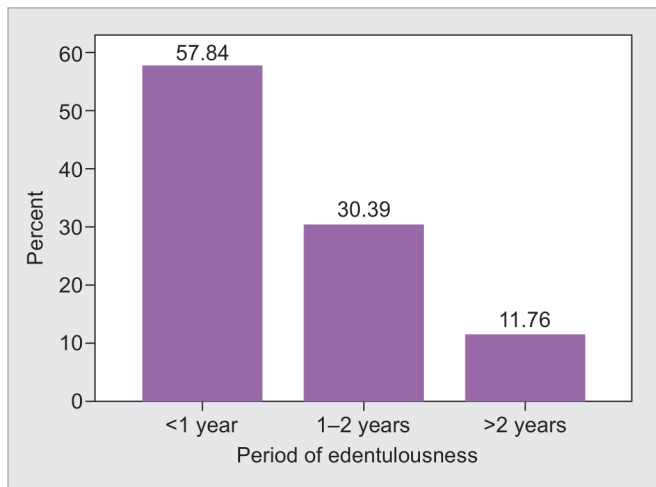


Fig. 1: The period of edentulousness (period from loss of tooth to initiation of dental treatment)

This directly indicates an increased awareness (77.5%) among the patients as shown in Figure 1. The primary need for the replacement of the missing teeth was a function such as mastication of food for 42.6% of patients and 36.6% of the patients want to replace their missing teeth for improving their appearance. This is depicted in the bar diagram as shown in Figure 2.

The source of information for various treatments is mostly given by dentists (49%), then followed by friends and relatives (41.2%). A comparison of responses obtained based on the preferred treatment options as shown in Figure 3 conveys that the FPD is the most preferred method of replacement as it is cost-effective and affordable for them. Due to awareness of recent treatment options, 22% of patients want an implant as it does not involve adjacent teeth. Almost 100% of patients believe in regular maintenance of teeth and 92.2% of patients are willing to spend money.

As per the results of this study, it is inferred that some proportion of patients lacks awareness about not replacing the

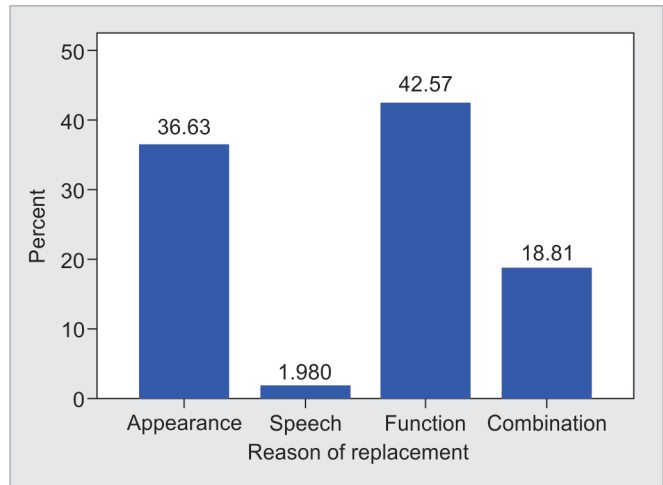


Fig. 2: The primary need for replacement of missing teeth

missing teeth and being edentulous over a long period. Though awareness and knowledge about the treatment options among the patients are good, the awareness about the consequences of being edentulous for a long time should still be improved. Although 77.5% of patients are aware of the consequences, only 57.8% of patients have reported to the dentist before 1 year. The remaining 42.2% reported after 1 year. By then, the space for the replacement of missing teeth is lost which is not good for maintaining the integrity of the stomatognathic system.

DISCUSSION

This study was conducted to estimate the awareness among the partially edentulous patients about the need to replace the missing teeth and the preference for treatment options.

In this study, a total of 102 patients were asked about their awareness of replacing their missing teeth, the treatment preferences, the reasons for their choice of treatment, and the source of information. A total of 77.45% of patients in our study were aware of their state of partial edentulism. A similar study was done by Teja et al.⁴ where more than 90% of the patients were aware of their partial edentulism and the female patients had a higher incidence as compared to their male counterparts.

Many patients (52.94%) stated that the extraction of decayed teeth was the main cause of their tooth loss and around 67.84% of patients reported to our hospital within a year of extraction for replacing their missing teeth. This was in line with a study conducted by Shekhawat et al.⁸ where the dental caries and loosening of teeth were the main reasons for extraction and a major proportion of patient-reported within a year.

A total of 42.67% of patients felt that they are unable to chew their food properly and the need for replacement is masticatory function. This is similar to the findings in a study by Shah et al., who found that 60% of his study population need the replacement of missing teeth due to their inability to chew food.^{5,9} Out of the 102 patients, 31.36% preferred FPD, as it is cost-effective and affordable by them, 16.95% preferred RPD due to its cost-effectiveness, and 14.41% preferred implants as it does not involve adjacent teeth. This was contrary to a study by Rahman et al. in 2016, who found that 74.66% of patients preferred RPD, 56.66% preferred FPD, and 13.33% wanted implants.¹⁰

Although a total of 92.16% of patients were willing to spend time and money for the dental treatment, the remaining patients

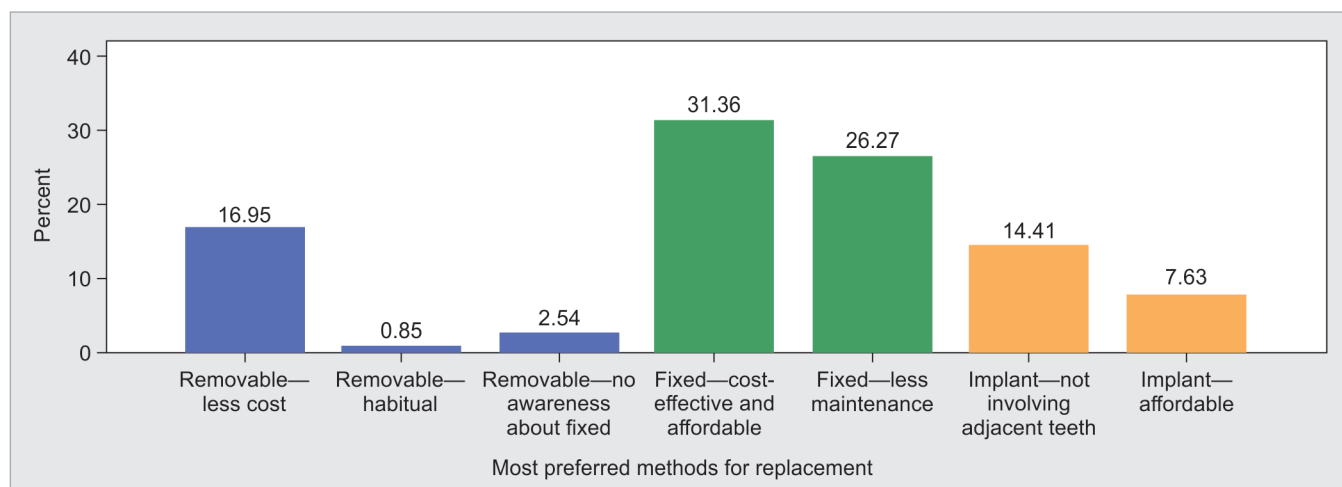


Fig. 3: Preferred methods of replacement of teeth

felt that their poor socioeconomic status was the prime reason for not replacing the missing teeth. This was following Macek et al. and Pallegedara in 2005 who observed that cost was a hindrance in seeking dental treatment.^{11,12} When the patients were questioned about their source of information regarding the treatment options and their motivation, 49.02% stated dentist, whereas 41.18% stated relatives/friends, and the remaining 9.8% stated media. This is similar to a study by Mukatash et al., who stated that the dentists were the main source of motivation to get their missing teeth replaced.¹³ Almost all the patients believe in regular maintenance of artificial teeth for their longevity which needs to be appreciated.

The replacement of lost teeth involves a multidisciplinary approach in both educating and treating the patients. The role of oral medicine and radiologist in diagnosing and educating the patient at the very first patient visit should be more emphasized. The knowledge and awareness can be improved through a variety of orientation methods and camps by public health dentistry. Prosthodontists with the interdisciplinary involvement of orthodontists in regaining the lost space and periodontists in crown lengthening can efficiently replace the missing teeth when addressed at a late stage.

Hence, the dentist with multispecialty involvement and with the power of media should educate the public about the consequences of not replacing the missing teeth on time especially the posterior teeth and its indispensable role in maintaining the integrity of a healthy occlusion and surrounding soft tissues.

CONCLUSION

The awareness about the consequences of being edentulous for a long time should still be improved. This is especially for those patients who are edentulous for more than 1 year. Therefore, the future direction should be oriented toward educating the public through awareness orientation programs, camps, and mass media communication.

ETHICAL APPROVAL

The study was conducted following the Declaration of Helsinki, approved by the Institutional Ethical Committee of Dr MGR Educational and Research Institute (Deemed to be University) by Department of Prosthodontics, Thai Moogambigai Dental College

and Hospital. The IEC approval No. is Dr.MGRDU/TMDCH/2021-22/905.

INFORMED CONSENT

Informed consent was obtained from all subjects involved in the study. The study was approved by the Institutional Review Board. The IEC approval No. was Dr.MGRDU/TMDCH/2021-22/905.

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