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Evaluation of treatment modalities selected by patients for replacing single missing tooth: A questionnaire-based study

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Abstract

Introduction: Tooth loss caused by recurrent caries, traumatic incidents, endodontic complications, or periodontal diseases is an important event that may lead to functional disability of the masticatory system. To our knowledge, there is little data available on the knowledge and attitude of the various prosthodontic treatment modalities for the replacement of a single missing tooth in the population of Mumbai. The present study aimed to assess the knowledge and attitude of the patients with a single missing tooth regarding the three different prosthodontic treatment alternatives.

Materials and Methods: Patients reporting with a single missing tooth were considered eligible for the study. A sample size of 200 subjects was calculated to be adequate enough to generalize the results to a larger target population.

Result: The total number of participants was 200. Duration of missing teeth: 55.5% of the study participants had the tooth missing for less than 6 months, 24% for less than a year, 16.5% for between 1 to 5 years, and 4% for more than 5 years. 52% of the participants did not get the tooth replaced because they lacked awareness about the importance of prosthodontic therapy. A statistically significant difference was noted in the duration of missing teeth wherein females exhibited a higher frequency of teeth missing for more than five years.

Keywords: Missing teeth, replacement, treatment modalities

Introduction

Tooth loss caused by recurrent caries, traumatic incidents, endodontic complications, or periodontal diseases is an important event that may lead to functional disability of the masticatory system^[1]. In addition to those factors, congenital failures, dental experience, therapeutic skill, and treatment planning may also determine the survival rate and cause loss of teeth^[2].

The prosthetic replacement of missing teeth is an important element of dental care. Patients with a single missing tooth can be treated with removable partial dentures, tooth-supported fixed partial dentures (FPDs), and implant-retained crowns (IRCs)^[3].

To our knowledge, there is little data available on the knowledge and attitude of the various prosthodontic treatment modalities for the replacement of a single missing tooth in the population of Mumbai.

The present study aimed to assess the knowledge and attitude of the patients with a single missing tooth regarding the three different prosthodontic treatment alternatives- Tooth-supported fixed partial dentures (FPDs), Implant retained crowns (IRCs), Removable partial dentures (RPDs).

The objectives of This study were as follows

- To gauge the preference patterns of the patients with a single missing tooth for the various prosthodontic treatment modalities available
- To understand various factors associated with the particular preferences of the study population.

c. To aid clinicians in understanding the mindset of the patients enabling them to tailor treatment plans according to their preferences.

Materials and Methods

The present prospective study was conducted in the Department of Prosthodontics, Nair Hospital Dental College, Mumbai. Patients reporting with a single missing tooth were considered eligible for the study. A sample size of 200 subjects was calculated to be adequate enough to generalize the results to a larger target population.

1. Inclusion criteria

- Patients older than 18 years of age
- Patients having only one missing tooth except third molars
- The missing teeth had adjacent teeth present/Missing spaces were bordered by 1 or more natural teeth on both sides

2. Exclusion criteria

- Edentulous spans of more than one teeth
- Any other missing tooth/teeth in the same arch
- Patients who wished to opt out of the survey process

Table 1: Demographic characteristics of the study population

Demographic Parameters		Frequency	Percent
Gender	Female	77	38.5
	Male	123	61.5
Qualification	10th pass	6	3.0
	11th pass	2	1.0
	12th pass	55	27.5
	Graduate	132	66.0
	Professional	5	2.5
Marital Status	Married	136	68.0
	Unmarried	64	32.0

- **Duration of missing teeth:** 55.5% of the study participants had the tooth missing for less than 6 months, 24% for less than a year, 16.5% for between 1 to 5 years, and 4% for more than 5 years. Interestingly, those with teeth missing for more than 5 years were all females of age ranging from 21 to 36 years.
- **Reason for loss of teeth:** Loss of teeth due to caries was most commonly reported by 90% of the respondents. Tooth mobility (5.5%) and traumatic injury (4.5%) were reported to be other causes.

Informed consent was obtained from the patients who fulfilled the selection criteria following which they were provided with a 10-point questionnaire with questions relevant to knowledge and attitude about prosthodontic treatment modalities for single missing tooth.

3. Study period and duration

6 months

4. Statistical analysis

Parameters used for assessment of study objectives with statistical details: The data obtained was compiled, tabulated, and subjected to statistical analysis. Statistical analysis was carried out using SPSS software v26. The level of significance was kept at 5%. Descriptive statistics for the data were calculated and the frequencies were expressed in terms of number and percentage wherever applicable. Chi-square test was performed to identify differences in the frequencies between two groups.

Results

The final study population comprised of n=200 participants.

- **Attitude toward replacement:** 52% of the participants did not get the tooth replaced because they lacked awareness about the importance of prosthodontic therapy. Financial problems and lack of time for treatment were stated as reasons for avoiding treatment by 25% and 22.5% of the respondents respectively. 93% of the respondents felt that missing teeth had to be replaced while the remainder felt it unnecessary (3%) or were unsure (4%) about it.

Table 2: Reason for replacement of teeth

Reason for replacement	Frequency	Percent	Valid Percent	Cumulative Percent
Function	85	42.5	42.5	42.5
Function + aesthetics	13	6.5	6.5	49.0
Function + Aesthetics + Speech	12	6.0	6.0	55.0
Aesthetics	62	31.0	31.0	86.0
Speech	28	14.0	14.0	100.0
Total	200	100.0	100.0	

Significant differences noted

- A statistically significant difference was noted in the duration of missing teeth wherein females exhibited a higher frequency of teeth missing for more than five years.
- A statistically significant difference was noted for the reason for replacement of the tooth with a greater number of males opting to replace the tooth for speech as compared to females who sought a replacement for

aesthetics.

Preference for replacement

A statistically significant difference was noted with males exhibiting a higher preference for RPD>FPD>DIC and a greater number of females than expected value exhibiting preference for FPD>DIC>RPD. None of the participants marked FPD as the least preferred modality.

Table 3: A) Preference of replacement

			None	RPD>FPD>DIC	FPD>DIC>RPD	FPD>RPD>DIC	DIC>FPD>RPD
Gender	Female	Count	1	6	57	0	13
		Expected Count	.4	14.6	47.0	.8	14.2
		% within Gender	1.3%	7.8%	74.0%	0.0%	16.9%
	Male	Count	0	32	65	2	24
		Expected Count	.6	23.4	75.0	1.2	22.8
		% within Gender	0.0%	26.0%	52.8%	1.6%	19.5%
Total	Count	1	38	122	2	37	
	Expected Count	1.0	38.0	122.0	2.0	37.0	
	% within Variable	0.5%	19.0%	61.0%	1.0%	18.5%	

B) Chi-Square Test

	Value	df	Asymptotic Significance (2-sided) <i>p-value</i>
Pearson Chi-Square	14.787 ^a	4	.005
Likelihood Ratio	16.860	4	.002
N of Valid Cases	200		

Discussion

Prompt replacement of the missing teeth is essential to minimize space loss and restore function, aesthetics, and speech. In the present study, the participants exhibited adequate knowledge about the need for replacement of teeth wherein only one disregarded the need for replacement of the tooth.

It has generally been observed that females are more concerned about aesthetics and thus, seek dental care for improvement of orofacial aesthetics. Our findings corroborate with the established facts wherein females sought replacement of tooth for aesthetics while males opted for speech or function as the reason of replacement.

In contrast, a significantly greater number of females also exhibited a missing tooth for duration longer than five years which displays their neglect for the condition. Considering the fact that females seek early dental treatment for aesthetic purposes, a possible reason for this neglect could be that the missing teeth in these cases would be a posterior one. However, the tooth missing was not recorded and therefore, this constitutes a limitation of the study.

Conclusion

A satisfactory knowledge was noted in the study population regarding the replacement of single missing tooth. The participants were well aware about the removable and partial fixed dentures, although only about 30% knew about the dental implant-supported crown. Overall, the participants displayed a preference for fixed replacement modalities giving preference to the more feasible and non-invasive FPDs.

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