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## Assessment of knowledge, attitude and practice regarding replacement of missing teeth among general population in Pune city

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### Abstract

**Background:** Teeth play an important role in the maintenance of a positive self-image, and loss of teeth may result in significant disabilities. The replacement of missing teeth is important for the individual to return to the optimum ability of chewing, maintain muscle tone and esthetics thus enabling individual to improve the quality of life.

**Purpose:** The aim of this study was to assess the knowledge, attitude and practice regarding replacement of missing teeth among general population of Pune city.

**Materials and Methods:** A questionnaire study was conducted among general population in Pune city. The structured, self-administered, close ended questionnaire was designed to collect the data and comprised of 30 questions related to knowledge, attitude and practice regarding replacement of missing teeth. The reliability statistics was calculated and Cronbach Alpha value was 0.685. Informed consent was taken from all the participants. Statistical analysis was done using descriptive statistics.

**Results:** There were a total of 162 participants with the age group being 18 years and above. Majority of the participants (83.3%) felt the need for replacement of missing teeth. Majority of the subjects i.e. 56.2% stated that financial constraint or high cost was the prime reason for not getting their missing teeth replaced. Majority of subjects preferred fixed partial prosthesis to replace their missing teeth.

**Conclusion:** The study concluded that the overall knowledge, attitude and practice of study participants regarding replacement of missing teeth were average.

**Keywords:** awareness, edentulism, prosthesis, replacement, treatment

### Introduction

Oral health is always an inseparable part of general health, and awareness plays a vital role in determining the oral health of an individual [1]. Teeth play an important role in the maintenance of a positive self-image [12], and loss of teeth may result in significant disabilities. Tooth loss may be traumatic and upsetting, and it is regarded as a serious life event that affects one at a social as well as at a psychological level [3]. Loss of teeth or edentulism is a common condition and also the final marker of disease burden for oral health [4]. The complications that are seen in edentulous patients are masticatory deficiency, speech problems, loss of facial support and esthetics. Apart from these complications, tooth loss also results in psychological stress to the patients [5]. Tooth loss not only adversely impact an individual's personality but also the level of confidence [2]. Furthermore, to avoid these complications, missing teeth should be replaced immediately. Otherwise there are chances of drifting of adjacent spaces and protrusion of opposite teeth into the spaces, causing bite or gum problems and affecting the quality of life [5]. The replacement of missing teeth is important for the individual to return to the optimum ability of chewing, maintain muscle tone and esthetics, restore the individual's ability to pronounce words and speak better, and promote the patient to overcome the social stigma thus enabling individual to improve the quality of life. Various types of edentulism can exist in a patient. Edentulism refers to a state in which a single tooth or multiple teeth are absent. It is often referred to as partial edentulism or semi-edentulism. It is necessary to evaluate the edentulous areas of patient and determine the number of missing teeth [6].

There are several options available to the patients to replace the missing teeth. Broadly there are two types of treatment modalities available, removable (RPD) and fixed prosthesis. Among fixed prosthesis, fixed partial dentures (FPD) and implants are the available options [5]. The choice of prosthesis for replacing missing teeth is determined by various factors, such as aesthetics, number of missing teeth, quality of ridge and alveolar bone, age, gender, education, socioeconomic conditions, patient's choice etc [2]. The number of patients that should be visiting a dentist for dental prosthetic rehabilitation treatment is comparatively low, due to various reasons, such as lack of awareness, poor socioeconomic status, lack of monetary incentives from the government, etc [7]. The attitude of the patient towards the replacement of teeth should be assessed to educate the patient accordingly and improve patient compliance with the acceptance of prosthesis [1]. For a dentist, it is important to know whether patients feel adequately informed and if their knowledge reflects reality; this helps to match patient expectations with what can be achieved [8].

Hence there is a need to improve the patient awareness regarding available treatment options, advantages and disadvantages of each option, so that they can choose accordingly. The aim of this study was to assess the knowledge, attitude and practice regarding replacement of missing teeth among general population of Pune city, Maharashtra, India.

### Materials and Methods

A questionnaire study was conducted among the general population in the Pune city. The study was aimed to assess the knowledge, attitude and practice regarding replacement of missing teeth among the general population. The study duration was three months. The participants were selected based on the following inclusion criteria: i) Age group above 18 years, ii) participants who are willing to participate in the study. Mentally challenged people were excluded from the study. The input parameters for sample size calculation were as follows: 80% power of the study, alpha error 0.05, effect size 0.3 (medium), and degree of freedom as 5. The calculated sample size was 162 using G\* Power software version 3.1.9.2 (Heinrich Heine University, Düsseldorf). The final considered sample size for the study was around 160. The convenient sampling technique was used in the study. A questionnaire was pretested and validated among 20 subjects to check reliability and variability. The reliability statistics were calculated and Cronbach alpha value was 0.685. The structured, self-administered, close-ended questionnaire was designed to collect the data which consisted of two parts and comprised of 30 questions. The first part consisted of demographic data such as age, gender, education, occupation and annual family income. The second part consisted of questions based on knowledge, attitude and practice regarding replacement of missing teeth. The questionnaire was prepared using Google forms (Google LLC, Mountain View, California, United States) and the link was distributed to the general population via e-mail, WhatsApp number and other social media platforms (Instagram, Telegram, etc.). A brief introduction about the study was given and informed consent was also taken from all the participants. Data collected was entered in a spreadsheet (Microsoft Excel, 2019). Statistical analysis was done using descriptive statistics using SPSS

(Statistical Package for the Social Science) 23.0 version software (IBM Chicago, Illinois, United States). The p-value was set at 5%.

### Results

Table 1 gives the demographic data of the participants. There were a total of 162 participants with the age group being 18 years and above. The male participants were 42.6% whereas the female participants were 57.4%. In the education category, the highest percentage was of the graduates being 50%. In table 2, assessment of knowledge of the general population regarding replacement of missing teeth was taken into consideration. 75.8% patients had knowledge about removable prosthesis, 74.6% patients were aware of fixed bridges and awareness regarding implants was 64.8%. In table 3 attitude of the general population regarding missing teeth was seen. On being questioned about the need of getting the missing teeth replaced, 83.3% responded in the positive. Majority of the subjects i.e. 56.2% stated that financial constraint or high cost was the prime reason for not getting their missing teeth replaced. In table 4 is related to the practice of general population regarding replacement of missing teeth. It was observed that 39.6% patients preferred fixed partial prosthesis to replace their missing teeth and 30.2% of participants preferred implant as a treatment option. A total of 21.6% participants looked favorably upon the removable dentures as a treatment option.

**Table 1:** Demographic details of study participants. (N=162)

Sr. No.	Particulars	Number (N)	Percentage (%)
1	<b>Age(years)</b>		
	18 – 30	42	25.9
	31 - 45	57	35.2
	46 - 60	43	26.5
2	>60	20	12.3
	<b>Gender</b>		
	Male	69	42.6
3	Female	93	57.4
	<b>Education</b>		
	Less than 8 <sup>th</sup> Std	15	9.3
	8 <sup>th</sup> - 12 <sup>th</sup> Std	37	22.8
	Graduation	81	50
4	Post-graduation	17	10.5
	Diploma or other courses	12	7.4
	<b>Occupation</b>		
	Unemployed	28	17.3
	Employee	65	40.1
	Business or Self – Employed	25	15.4
	Healthcare professional	10	6.2
	Government or Civil services	8	4.9
5	Student	18	11.1
	Retired	8	4.9
	<b>Annual Family Income(Lakhs)</b>		
	Less than 5	42	25.9
	5 - 15	76	46.9
	15 - 30	42	25.9
30 - 50	1	0.6	
More than 50	1	0.6	

**Table 2:** Knowledge related questions' responses of study participants (N=162)

Sr. No.	Questions	Responses	Number (N)	Percentage (%)	Total N (%)
1	Which of these is a possible cause of tooth loss/ reason for extraction?	Tooth decay or caries	49	30.2	162 (100)
		Loose teeth	29	17.9	
		Traumatic injury to teeth	8	4.9	
		Only options A and B	18	11.1	
		Options A, B and C	58	35.8	
2	Which of the following are problems caused by missing teeth?	Ugly look	24	14.8	162 (100)
		Difficulty in eating	57	35.2	
		Negative social impact	6	3.7	
		Other teeth will shift	9	5.5	
		Only option A, B and C	13	8.0	
		Options A, B, C and D	53	32.7	
3	Which of the following are treatment options available for replacing lost teeth?	Denture	30	18.5	162 (100)
		Bridge	28	17.3	
		Implant	12	7.5	
		Both options A and B	21	13	
		Options A, B and C	71	44.3	
4	Which of the following are different types of dentures?	Removable or fixed denture	64	39.5	162 (100)
		Partial or complete denture	27	16.7	
		Flexible denture	2	1.2	
		All of the above	69	42.6	
5	Ideally, how often should the denture be cleaned?	Twice a day	69	42.6	162 (100)
		Once a day	83	53.9	
		Once in 2 to 3 days	6	3.7	
		Once a week	4	2.5	
6	Which of the following is NOT a material used for bridge?	Metal	24	14.8	162 (100)
		Ceramic/ tooth coloured	17	10.5	
		Acrylic/ Polyether	65	40.1	
		Zirconia	56	34.6	
7	Placing a bridge requires cutting of a healthy natural tooth for support. True or False?	True	79	48.7	162 (100)
		False	24	14.8	
		Don't know	59	36.5	
8	A longer bridge replacing many missing teeth has	Longer life span	23	14.2	162 (100)
		Shorter life span	45	27.8	
		No effect on lifespan	24	14.8	
		Don't know	70	43.3	
9	Which of the following treatment options requires surgery	Denture	3	1.8	162 (100)
		Bridge	16	9.8	
		Implant	87	53.7	
		Don't know	56	34.5	
10	Implant can be used in which of the following cases of missing teeth?	No teeth at all	7	4.3	162 (100)
		Single missing tooth	32	19.8	
		Multiple missing teeth	33	20.4	
		All of the above	90	55.5	
11	Implant is NOT advised in which of the following conditions due to high chances of failure:	Reduced height of the bone	6	3.7	162 (100)
		Uncontrolled Diabetes	31	19.2	
		Old age or poor health	33	20.3	
		All of the above	92	56.8	
12	When can an implant be placed?	Immediately after extraction	1	0.6	162 (100)
		After healing of extraction site	77	47.5	
		Both	49	30.3	
		Don't know	35	21.7	
13	For how many years can an implant last, if proper hygiene is maintained?	Less than 10 years	4	2.5	162 (100)
		10 to 20 years	33	20.4	
		21 to 25 years	51	31.4	
		More than 25 years	29	17.9	
		Don't know	45	27.8	

**Table 3:** Attitude related questions’ responses of study participants. (N=162)

Sr. No.	Questions	Responses	Number (N)	Percentage (%)	Total N (%)
1	What is your main source of information about replacement of lost teeth?	Dentist	118	72.8	162 (100)
		Advertisement	1	0.6	
		Family and friends	29	17.9	
		Social media or Internet	10	6.2	
		Any other	4	2.5	
2	Do you think that teeth play a major role in maintaining a positive personality and self-image?	Strongly agree	101	62.4	162 (100)
		Agree	37	22.9	
		Neutral	21	12.9	
		Disagree	3	1.9	
		Strongly disagree	0	0	
3	Do you think that loss of teeth reduces the quality of life?	Strongly agree	75	46.3	162 (100)
		Agree	53	32.7	
		Neutral	29	17.9	
		Disagree	4	2.5	
		Strongly disagree	1	0.6	
4	Do you think there is need of replacement when tooth/teeth are lost?	Strongly agree	70	43.2	162 (100)
		Agree	65	40.1	
		Neutral	25	15.5	
		Disagree	2	1.2	
		Strongly disagree	0	0	
5	Do you think artificial teeth are equivalent to natural teeth in appearance and function?	Strongly agree	28	17.3	162 (100)
		Agree	42	25.9	
		Neutral	62	38.2	
		Disagree	28	17.3	
		Strongly disagree	2	1.2	
6	Do you think replacement of missing teeth is important irrespective of your age?	Strongly agree	40	24.7	162 (100)
		Agree	81	50	
		Neutral	36	22.2	
		Disagree	4	2.5	
		Strongly disagree	1	0.6	
7	Do you think replacing a missing tooth is painful?	Strongly agree	5	3.1	162 (100)
		Agree	68	42.0	
		Neutral	58	35.8	
		Disagree	27	16.7	
		Strongly disagree	4	2.5	
8	What do you think is the most common reason due to which one does not replace lost tooth/teeth?	Financial reasons or high cost	91	56.2	162 (100)
		No time	16	9.9	
		Fear of treatment	31	19.2	
		Waiting until rest of the teeth removed	8	4.9	
		Do not know about treatment option	16	9.8	
9	What do you think is the most common reason due to which one wants to replace missing teeth?	Inability to chew	96	59.3	162 (100)
		Ugly look or aesthetics	43	26.5	
		Improper speech	17	10.5	
		Social impact	6	3.7	
		More than natural teeth	67	41.3	
10	Up to what extent hygiene maintenance is required for a prosthesis or artificial tooth?	Less than natural teeth	32	19.8	162 (100)
		Same as natural teeth	48	29.7	
		Don't know	15	9.3	

**Table 4:** Practice related questions’ responses of study participants (N=162)

Sr. No.	Questions	Responses	Number (N)	Percentage (%)	Total N (%)
1	How often do you visit a dentist?	Every 6 months	14	8.6	162 (100)
		Once a year	44	27.2	
		Only in case of pain or discomfort	95	58.6	
		Never	9	5.5	
2	How many of your teeth are missing?	Single tooth is missing	43	26.5	162 (100)
		Some teeth are missing	92	56.7	
		All teeth are missing	17	10.5	
		None of the above	10	6.2	
3	Which of these problems did you face the most after loss of tooth/teeth?	Difficulty in chewing	94	58	162 (100)
		Change in bite	24	14.8	
		Increase in gap between teeth	23	14.2	
		Decrease in gap between teeth	6	3.8	
		None of the above	15	9.2	
4	After how long did you replace the missing tooth/ teeth?	Less than 6 months	28	17.3	162 (100)
		6 months to 1 year	35	21.6	

		1 year to 5 years	37	22.9	
		More than 5 years	4	2.5	
		Did not replace	58	35.8	
5	Which of the following treatment options do you prefer the most?	Denture	35	21.6	162 (100)
		Bridge	64	39.6	
		Implant	49	30.3	
		No prosthesis	14	8.6	
6	Since when are you wearing the prosthesis?	Less than 1 year ago	23	14.2	162 (100)
		1 to 5 years ago	45	27.8	
		More than 5 years ago	28	17.3	
		None of the above	66	40.7	
7	How often do you visit your dentist for follow up after replacement of missing tooth/teeth?	Once in 3 months	11	6.8	162 (100)
		Once in 6 months	23	14.2	
		Once a year	51	31.4	
		Never	77	47.5	

## Discussion

Dental health has an impact on the general health status [8]. Good oral health is a major resource for social, economic, and personal development of individuals. Missing teeth need to be replaced not only to maintain the masticatory function and esthetics of patients but also to reinstate the psychological impact of missing teeth on patients' general well-being [2]. Various treatment options are available for treating missing teeth such as removable dentures, fixed bridges and implants. Patient's knowledge and awareness about dental prosthesis is one of the key factors in selection of any particular dental prosthesis. There are many ways to determine patient's knowledge and awareness [8]. In this study, a self-designed questionnaire was used for this purpose. The present study aimed to evaluate knowledge, attitude and practice regarding replacement of missing teeth in general population of Pune city.

In our present study, there was higher female participation (57.4%) as compared to male participation (42.6%). In the education category, the highest percentage was of the graduates being 50%. Majority of the participants (77.1%) stated that decayed teeth were the main cause for tooth loss. These findings are similar to a study conducted in the UK<sup>9</sup> which found that 64% of their study population had lost their teeth to caries. The next major reason for loss of teeth as selected by the participants was periodontal disease (64.8%). This was in line with a study conducted by Prabhu *et al.* [10] which showed that periodontal disease was also a causative factor along with dental caries leading to tooth loss. A total of 75.9% participants felt that missing teeth caused difficulty in chewing food, which were similar to findings in a study by Shah N *et al.* where he found out that 60% of his study population had a poor quality of life in their ability to chew food, as they had missing teeth [11].

On being questioned about the need of getting the missing teeth replaced, 83.3% responded in the positive, going in line with a study conducted by Akeel *et al.* [12] wherein he concluded that 82% of the study population wanted to replace their lost teeth. In the present study 75.8% patients had knowledge about removable prosthesis whereas 74.6% patients were aware of fixed bridges. Awareness regarding implants was 64.8% which is high and is similar to the study conducted by Berge *et al.* [13] in Norway which reported awareness about dental implant at 70.1%.

In the present study, majority of the subjects i.e. 56.2% stated that financial constraint or high cost was the prime reason for not getting their missing teeth replaced, which is similar to a study by Tepper *et al.* [14] However, the findings of present study counteracts a study by Jayasinghe *et al.* [15] that found that the main cause for not replacing missing teeth was

because the respondents think that they didn't need the treatment, secondly the financial causes. Other reasons for no replacement, as selected by participants of present study, were fear of treatment (19.2%), lack of time (9.9%), lack of knowledge about treatment options (9.8%) and waiting for other teeth to be removed (4.9%). The majority of the participants reported the main source of information regarding the replacement of missing teeth came directly from the dentist (72.8%) as compared with other sources (27.2%), such as family or friends, social media and internet, etc. This, in fact, positively reflects and emphasizes upon the role of the dentist as the primary provider of dental health care in the present era [2].

Of the subjects interviewed, 22.9% participants had been edentulous for a period greater than one year but less than five years. A total of 21.6% participants had been edentulous for the past 6 to 12 months and 2.5% patients had been partially edentulous for a period greater than five years. This shows a lack of urgency or need to get the missing teeth replaced as soon as possible post exfoliation, hence clearly showing a lack of proper awareness about the sequelae associated with prolonged edentulism [7]. It was also observed that 39.6% patients preferred fixed partial prosthesis to replace their missing teeth and 30.2% of participants preferred implant as a treatment option. A total of 21.6% participants looked favorably upon the removable dentures as a treatment option. A contradictory result was found in a study conducted in Nigeria [16], wherein 92.3% of the study population preferred the removable partial prosthesis. The limitation of the study was small sample size. The study can be done by using a large sample and using different variables on the missing teeth topic.

## Recommendation

Comprehensive awareness programs and strict program implementation is needed so that patients are made aware about the complications of not replacing missing teeth immediately and also about various treatment options. Oral health care providers, media and relatives also have a major role to play.

## Conclusion

The study concluded that the overall knowledge, attitude and practice of study participants regarding replacement of missing teeth were average. Hence, oral health education measures should be taken to improve awareness of the patients.

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