

## Self-Perceived Oral Health and Awareness on Replacement of Missing Teeth among Patients at a Public University

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### Abstract

Self-Perceived Oral Health and Awareness on Replacement of Missing Teeth among Patients at a Public University.

Loss of teeth significantly impairs the oral function and aesthetics, but not all patients seek Prosthodontic treatment to replace the missing teeth. A study was conducted to assess the self-perceived oral health and awareness in replacement of missing teeth among dental attendees in an academic institution. Pre-tested self-administered questionnaires were distributed by convenience sampling from September to October 2019, which consists of sociodemographic, assessment of knowledge and awareness towards replacement of missing teeth and also their self-perceived oral health. Descriptive statistics correlation tests were used to analyze the findings. A total of 203 adults participated in the study aged 18 to 79 years (mean: 42.46,  $\pm 15.521$ ), with 83% (n=167) had experience missing teeth and 74% (n=123) did not receive any treatment for replacement of the missing teeth. Most patients who did not replace their missing teeth had low felt need for treatment due to lack of awareness and knowledge. Respondents' knowledge on replacement of missing teeth was associated with their level of education ( $p < 0.05$ ). Self-perceived oral health was found to be related to experience of missing teeth and level of education ( $p < 0.05$ ). Therefore, awareness and dental education on Prosthodontic treatment must be emphasized to change the publics' perception and attitude towards replacement of missing teeth.

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### Introduction

Tooth loss is one of the major oral health problems among adults in Malaysia. This can be due to caries, periodontal disease, trauma, infection and also extraction for orthodontic treatments. From a study conducted in 2010, only 76.9% of 35 to 44 years old and 23.9% of 60 to 70 years old individuals in Malaysia have at least 20 functional remaining teeth<sup>1</sup>. It was also shown that the mean number of remaining teeth among Malaysian adult population was 24.5 and this remains constant in studies conducted in year 2000 and 2010<sup>1</sup>.

Missing teeth will lead to impaired oral function in mastication, speech and aesthetics. People who experience tooth loss will exert psychological effects such as difficulty in accepting tooth loss, low confidence level, inability to accept changes in facial shape and limitation of food choice<sup>2</sup>. Therefore, people with tooth loss requires prosthodontic treatment to replace the missing teeth, with the aim to restore function as well as aesthetics by means of removable dentures, implants, bridge or overdentures. The treatment choices and needs among patients are influenced by their level of education and awareness towards treatment modalities to replace the missing teeth<sup>3</sup>.

In order for the treatment to be considered successful, acceptance of the prosthesis plays an important role, and some researchers have highlighted that the acceptability of these options depend on the patient's education, economy, cultural background, age and knowledge in the prosthodontic treatment<sup>4</sup>.

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This study has been conducted to assess the knowledge and awareness in replacement of missing teeth among dental attendees of an academic institution. The aims of the study are to determine the factors that prevent people from seeking treatment in replacement of missing teeth, to assess their awareness and also to identify the self-perceived oral health and the experience of missing teeth among respondents.

## Materials and methods

### Ethics approval and participant recruitment

Ethics approval was obtained and approved by the Ethics Committee of the Faculty of Medicine and Health Sciences and Faculty of Dentistry, Universiti Sains Islam Malaysia (USIM). This descriptive cross-sectional study was conducted using self-administered questionnaires among patients attending the Dental Polyclinic, Universiti Sains Islam Malaysia (USIM) from July to September 2019. Sample selection was through convenient sampling method among patients aged 17 years old and above and willing to participate in the study. Subjects with dental background, unable to comprehend in Malay language and physically challenged and mentally disabled are excluded from the study.

Participants were briefed about the study and written consent was obtained from the patients. A self-administered survey was distributed among the patients. Sample size was calculated based on the total population of 14527, with a 5% level of significance and an 80% study power.

### Questionnaire survey

The survey consisted of three parts; sociodemographic, awareness and self-perceived oral health by using the Global Self-Rating of Oral Health (GSROH). Participants completed a set of questionnaires on age, gender, race, educational status, status of employment, household monthly income, experience of dental treatment and tooth loss as well as various questions for assessment of awareness in replacement of missing teeth which include assessment of knowledge and attitude towards treatment. A single-item rating, GSROH was used evaluate the self-perceived oral health. Prior to the survey, the questionnaire was pretested in 20 adults with matching criteria to

determine the clarity of the questions.

### Data analysis

The data were determined by evaluating the descriptive statistics frequency and percentage for categorical variables. Further analysis using chi-square test and correlation test was also determined. All the data analysis was performed using statistical software, SPSS Statistic Version 21.0.

## Results

A total of 203 participants responded to the questionnaires which consists of 115 (57%) males and 88 (43%) females. The mean age was 42.46 ( $\pm 15.521$ ). Majority of the respondents had at least secondary education (32%) and 65 percent was in B40 income group with monthly household income of less than MYR3000. Socio-demographic status of the respondents is tabulated in Table 1.

Sociodemographic	n (%)		
<b>Age</b>			
18 - 19	16 (8)		
20 - 29	34 (17)		
30 - 39	39 (19)		
40 - 49	49 (24)	[mean	42.46
50 - 59	31(15)	( $\pm 15.52$ )]	
60 - 69	25 (12)		
70 and above	9 (4)		
<b>Gender</b> N=203			
Male	88 (43)		
Female	115 (57)		
<b>Income</b> N=203			
<MYR1500	90 (44)		
MYR1500 - RM3000	41 (20)		
MYR3000 - RM5000	35 (17)		
> MYR5000	27(13)		
Pension scheme	10 (5)		
<b>Level of education</b> N=203			
No formal education	3 (1)		
Primary school	9 (4)		
Secondary school	64 (32)		
Diploma	55 (27)		
Degree	59 (30)		
Post-degree	13 (6)		

**Table 1.** Socio-demographic of 203 respondents.

In assessment of the knowledge and awareness on replacement of missing teeth, 79% (n=160) were aware that missing teeth needs to

be replaced. When asked about the effects of missing teeth, 48 percent knew that the appearance and smile will be impaired, 39 percent knew it will cause problem in speech and also chewing (67%). Only a very small percentage (2%) think that missing teeth will not give any problem (Table 2).

	Yes n (%)	No n (%)	Not sure n (%)
Does missing teeth need to be replaced?	160 (79)	26 (13)	17 (8)
<b>Do you know the effect of missing teeth?</b>			
Appearance and smile	98 (48)	105 (52)	
Problem in speech	79 (39)	124 (61)	
Function-problem in chewing	135 (67)	68 (33)	
No problem will occur	4 (2)	199 (98)	

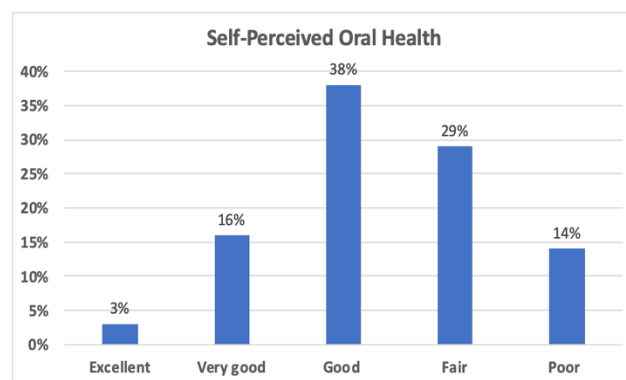
**Table 2.** The knowledge and awareness of replacement of missing teeth.

The knowledge on treatment modalities was comparably good as 49 percent (n=100) of the respondents were aware about dental implants, bridge (30%) and dentures. A total of 52 percent (n=106) of the respondents received information regarding treatment modalities to replace missing teeth from family members and friends compared to dental personnel (42%, n=85) (Table 3).

Knowledge of patients towards treatment modalities	n (%)	
<b>Treatment modalities</b>		
Removable complete dentures	93(46)	
Removable partial dentures	89(44)	[mean 85.75 (±17.11)]
Dental bridges	61(30)	
Dental Implants	100 (49)	
<b>Source of Information</b>		
Mass media	16(8)	
Social media	40(20)	
Reading from internet	49(24)	[mean 59.2 (±36.04)]
Friends and families	106(52)	
Dental personnel	85(42)	

**Table 3.** Knowledge on treatment modalities and the source of information.

When the respondents were asked to rate their oral health status, 57% perceived their oral health as good, very good and excellent with mean score 3.34 (±1.01), as presented in Figure 1. In terms of their experience on spending money in dental treatment, on a total of 66.5 percent of the respondents have used their own money for dental treatment (Table 4).



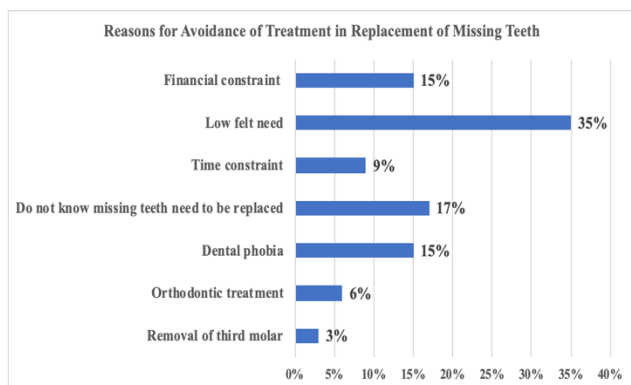
**Figure 1.** Self-perceived oral health using GSROH scale with mean 3.34(±1.01), n=203.

In assessment of the awareness on the advantages and ill-effects of the prostheses, the respondents were asked on the equivalency of dental prostheses to the natural teeth. Only 30 percent of the respondents think that the dental prostheses were similar to natural teeth in terms of function and aesthetics. However, a total of 85 percent of the respondents were not sure and did not know that the dental prostheses can cause any problems (Table 4).

	Yes n (%)	No n (%)	Not sure n (%)
Have you ever used out-of-pocket money for dental treatment	135 (66.5)	61(30)	7 (3)
<b>Equivalence prostheses to natural teeth</b>			
Function & aesthetics	60 (30)	72 (35)	71 (35)
Possibility of prostheses causing problems	30 (15)	63 (31)	110 (54)

**Table 4.** The awareness on prostheses in comparison to natural teeth and the experience of spending pocket money for dental treatment.

Most respondents (n=167, 83%) had experienced missing teeth, however only 26 percent out of 167 of them had replaced their missing teeth. Among the respondents who had experience of missing teeth, 131 of them agreed that missing teeth need to be replaced. However, only 26% (n=44) of them replaced their missing teeth, showing that low attitude of the respondents towards replacement of missing teeth are low. The main reasons of not replacing the missing teeth was low felt need for the replacement (35%), do not know that missing teeth need to be replaced (17%), financial constraint (15%) and dental phobia (15%). These results are shown in Figure 2.



**Figure 2.** Reasons for avoiding of treatment for replacement of missing teeth (n=203).

Knowledge is also found to be associated with the level of education ( $p < 0.05$ ). However, the respondents' knowledge was found not to be related to their self-perceived oral health, attitude nor their experience of missing teeth (Table 5). A weak correlation was found between self-perceived oral health and the experience of missing teeth ( $r = 0.151$ ,  $p < 0.05$ ). The respondents' level of education is found to be fairly related to their self-perceived oral health ( $r = -0.277$ ,  $p < 0.05$ ).

	n (%)	p value	
Level of education		0.008	$p < 0.05^*$
Self-perceived oral health		0.387	$p > 0.05$
<b>Experience of missing teeth</b>		0.087	$p > 0.05$
Yes	168 (82)		
No	36 (18)		
<b>Attitude towards replacement of missing teeth.</b>		0.387	$p > 0.05$
Yes	160 (79)		
No	26 (13)		
Do Not Know	17 (8)		

**Table 5.** Association between knowledge and the level of education, self-perceived oral health, experience of missing teeth and attitude towards replacement of missing teeth.

## Discussion

The respondents from this study were patients attending an urban public university dental polyclinic located near city centre. In this polyclinic, dental treatment charges are comparably low and procedures conducted by the students are given free of charge. The availability of free/low cost dental treatment in the polyclinic might have influenced the results of this study as most respondents were from the B40 group (bottom 40% of Malaysian household

income group). This is important to note as individuals with better financial resources have better access to dental care and greater expectation towards dental treatment<sup>5</sup>.

Awareness plays an important role in changing the attitude towards replacement of missing teeth. A study by Mursid S., *et al* (2017) has shown that awareness is significantly related to demand for prosthodontic treatment, with higher awareness among female population<sup>6</sup>. Eventhough majority of the respondents were aware that missing teeth need to be replaced as it will cause various problems, however not all of them replaced their missing teeth. This is concurrent with a study which showed low positive attitude of less than 50%, in replacement of missing teeth<sup>7</sup> and Malaysian adults with tooth loss did not prefer to replace their missing teeth<sup>1</sup>.

Looking at the reasons of avoidance of treatment, low felt need appears to be the main reason of not replacing the missing teeth, concurrent with several other studies conducted worldwide<sup>8-10</sup>. Other reasons include financial constraints and did not know that missing teeth need to be replaced. Education and income has been shown to be the main factors affecting access of adult patients to oral healthcare<sup>5,11</sup>.

Regarding the equivalence of prostheses to the natural dentition in terms of function and aesthetics, the majority of the respondents did not agree and not sure about the equivalency. This question indirectly represented the expectation of the patients<sup>5</sup>, and our findings showed that the expectation of our respondents towards dental prostheses in replacement of missing teeth were low. Only a very low percentage of the respondents knew that artificial teeth/prostheses will create problems, showing that the respondents had positive perception towards dental prostheses. Both findings might be related to the socioeconomic status and the knowledge of our respondents in replacing the missing teeth.

The Global Self-Rating of Oral Health (GSROH) questionnaire was used in this study to assess the self-perception of the respondents. This is the simplest method to assess self-perception of the oral health related quality of life (OHRQoL) of the respondents as it is based the response of the respondents' oral health to a single question only<sup>12-13</sup>. More than half of the respondents perceived their oral health as very good, good and fair. This finding is concurrent

with other studies conducted previously<sup>14-16</sup>. The severity of tooth loss is also directly related to the OHRQoL of the patients<sup>17</sup>. However, it is interesting to note that eventhough majority of the respondents have had experience of missing teeth, but the majority of them still perceive their oral health as very good, good and fair. This might be due to the sufficient adaptive capacity among the respondents to adapt with the changes. It is the oral health goals of the World Health Organization, suggesting that the functional dentition of at least 20 natural teeth is needed for the people to still able enjoying tooth-related quality of life.

Self-perception is very subjective and based on personal interpretation on the information collected during the dental experience and it might change from time to time. A study conducted by on the patients' perception of benefits and risks of complete dentures among patients showed positive perception and it was not influenced by educational level, previous dentures and marital status<sup>18</sup>. Patients expectation was found to be higher than the dental professionals among the denture wearers and did not associated with gender and age but the patients' perception on the denture benefits is higher than expectations<sup>19</sup>. Therefore, dental education needs to be emphasized in order to manage the patients' expectation and perception to the dental treatment. It is important for the patients to understand the nature and ill-effect of the prostheses for the treatment to be successful.

Most of the respondents received information on the treatment for replacement of missing teeth from their relatives and friends compared to dental personnel, internet and social media. It is interesting to note this finding, as the data was collected in an urban area in a modern era where the respondents have various sources to get the information digitally. It is also surprising to note that dental bridge appears to be the least known treatment modalities for replacement of missing teeth compared to dentures and dental implants. A study also showed that there was no significant difference in dental awareness among the dentate and partially dentate respondents<sup>20</sup>. These findings indicate that there is an urgent need for the dental healthcare professionals, educators and government to educate all publics, regardless of their location, on dental-related issues, especially in this case, missing teeth and the treatment for replacement of missing teeth.

### Limitation and recommendation

In this study, sample size was considered small to represent the whole population and intra-oral examination was not performed. For future study, it is recommended to perform an intraoral examination to assess any factors that might affect the results, such as the number of teeth present, location of missing teeth and occluding pairs of the remaining teeth.

### Conclusions

The needs for oral health campaigns and educational intervention programs are relatively high even among the urban dental attendees. Special educational sessions need to be planned in order to educate the public regarding the importance of teeth and the ill effect of not replacing missing teeth. Prevention and curative oral care must be aimed as solutions to change attitudes and spread dental awareness among the public.

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### Declaration of Interest

The authors report no conflict of interest.

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