

# Dental implant as an option for tooth replacement: The awareness of patients at a tertiary hospital in a developing country

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## Abstract

**Aim:** A survey was set out to evaluate the knowledge of patients about tooth replacement as a whole, and assess their awareness of implant-retained prosthesis as an option of tooth replacement. **Materials and Methods:** Information on sociodemographic characteristics, knowledge about implant-retained tooth as an option for missing tooth replacement, cost implication, source of information and knowledge about other options of tooth replacement were obtained from patients attending the dental clinics of the University College Hospital, Ibadan, using structured self-administered questionnaires. Data were analyzed using SPSS version 20. **Result:** A total of 220 patients aged 18-84 years with a mean age of 37.6 ( $\pm 16.5$ ) years participated in the study, with a male to female ratio of 1:1.1. The majority (92.5%) knew that missing teeth can be replaced, while a significantly lower proportion (28.9%) knew about dental implants as an option ( $P < 0.01$ ). Dentists were the major source of information on dental implants (68%). Only 21 (36.8%) of those who had heard about dental implant had knowledge about the cost ( $P < 0.000$ ). **Conclusion:** A low level of awareness about dental implant as tooth replacement option exist in this environment, although most of the study participants were aware that missing teeth can be replaced.

**Keywords:** Awareness, dental implant, tooth replacement

## Introduction

The face is widely regarded as a symbol of “self” and a smile as a window into one’s personality.<sup>[1]</sup> In this, the teeth play important roles in the maintenance of a positive self-image,<sup>[2]</sup> and loss of teeth may result in significant disabilities that can profoundly disrupt social activities. Tooth loss may be traumatic and upsetting, and it is regarded as a serious life event that requires significant social and psychological readjustment.<sup>[3,4]</sup> The nonacceptance of edentulousness and the individual’s feelings about dentures, which have been the traditional way of replacing missing teeth, are important for the acceptance of new dentures.<sup>[5]</sup> Traditionally, missing teeth are replaced by removable partial dentures, fixed partial dentures (bridges) and complete dentures in cases

of complete edentulousness. The need to replace lost teeth with a near-natural successor has encouraged rapid research and advancement in the field of dental implants, especially in advanced economies.

Dental implant is an artificial root that is surgically inserted into the jawbone to support a single tooth replacement (crown), fixed partial or complete denture or maxillofacial prosthesis.<sup>[6]</sup> It is an ideal option for people with good oral health who have lost a tooth or teeth due to injuries, periodontal diseases, failure of endodontics, etc. It is also used for the treatment of edentulousness and is associated with improved denture retention, stability and functional efficiency and, thus, improving the quality of life of the patient.<sup>[6]</sup>

Currently, dental implants are widely accepted as a prosthetic treatment of completely or partially edentulous patients, and studies<sup>[7]</sup> have shown significant improvement in patients’ attitudes toward their dental health after treatment with implant prostheses. Unfortunately, the same cannot be said of developing countries with poorer access to dental care, where different authors<sup>[8-11]</sup> have reported wide variability in the acceptance of this newer option of tooth replacement. In our setting, a resource-challenged environment, conservative dentistry is relatively young and there is dearth of information regarding patients’ knowledge of tooth replacement as a whole and the use of implant-retained prostheses as an option of replacement of missing tooth. With recent improvement in socioeconomic infrastructures in this environment and expansion of the middle class, access to oral health care is better. Hence, in order to identify goals in the promotion of oral health and improvement of the overall quality of

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life of patients with tooth loss, the study was conducted to evaluate the knowledge of patients about tooth replacement as a whole and assess their awareness of implant-retained prosthesis as an option for tooth replacement.

## Materials and Methods

A descriptive cross-sectional study of patients attending the Dental Centre of the University College Hospital, Ibadan, Nigeria was conducted over a period of 6 months. The University College Hospital, Ibadan, is a major referral tertiary hospital in the South-Western part of the country. In the conduct of this survey, the guidelines of ethical consideration were strictly adhered to and participants filled the questionnaire after signing informed consent. Information was obtained with the use of structured, self-administered questionnaires given to patients aged 18 years or older, who consented to participate in the study at the dental clinics during the study period between September 2012 and February 2013.

Data collected included the sociodemographic characteristics of the study participants, knowledge about implant-retained tooth replacement as an option of replacement, the cost, source of information and knowledge about other options of tooth replacement as a whole. Data were entered into an IBM computer and analyzed using SPSS version 20. Descriptive statistics were employed and results were presented as percentages and proportions. Tests of association between variables were conducted using chi square statistics, with the level of statistical significance set at  $P < 0.05$ .

## Results

A total of 220 participants took part in the study and 199 (90.5%) properly filled questionnaires were analyzed.

### Demographic characteristics

The ages of the study participants ranged from 18 to 84 years, with a mean of 37.6 ( $\pm 16.5$ ) years and a male to female ratio of 1:1.1. One hundred and two participants were married, 86 were single, 10 were widowed and one was divorced. Majority of the participants (141, 70.9%) had tertiary education, while only eight (4.0%) had no formal education [Table 1].

### Awareness about tooth replacement

The majority of the participants (184, 92.5%) were aware of the possibility of replacing lost teeth. A total of 102 (51.3%) participants knew of different ways to replace missing teeth, while 94 (47.2%) had no idea of such methods. The awareness of the different possible options of tooth replacement as perceived by the participants is shown in Table 2. A significantly higher proportion of those who were aware of the possibility of replacing missing teeth knew that removable partial dentures were an option ( $P < 0.000$ ).

Also, a significantly higher proportion of those that were aware of the possibility of replacement did not know about implant as a replacement option for missing teeth compared with removable partial dentures ( $P < 0.01$ ) [Table 3].

### Knowledge about dental implant as a tooth replacement option

One hundred and forty (71.1%) participants had not heard of dental implant while only 57 (28.9%) of them had heard about it as an option for replacing missing teeth. Of those who had heard about this option, 22 (38.6%) believed that they had received reasonable amount of information on the option, 26 (45.6%) perceived that the information received had been inadequate and nine (15.8%) were unsure of the quantity and quality of information they had on it.

Only 21 of those participants who have heard about implant and claimed it was well explained could explain what they understood by dental implants, of whom 15 (71.4%) gave the correct information about the implant-retained dental prosthesis.

The majority (68%) of the participants got informed about implant-retained prosthesis through the dentist, 23% got it

**Table 1: Demographic characteristics**

Demographics	No.	%
Gender		
Male	93	46.7
Female	106	53.3
Marital status		
Single	102	51.3
Married	86	43.2
Widowed	10	5.0
Divorced	1	0.5
Educational level		
Tertiary	141	70.9
Teacher training	14	7.1
Secondary	27	13.6
Primary	9	4.5
No formal education	8	4.0

**Table 2: Knowledge on ways of replacing missing teeth**

Replacement options	Yes (%)	No (%)	I don't know (%)	Total
RPD	100 (50.3)	98 (49.2)	1 (0.5)	199
Bridge	36 (18.1)	162 (81.4)	1 (0.5)	199
Implant	45 (22.6)	153 (76.9)	1 (0.5)	199
Leave alone for posterior teeth (shortened dental arch)	17 (8.5)	181 (91)	1 (0.5)	199

RPD: Removable partial denture

through the media while 6% of the participants got to know through the Internet [Figure 1].

While 45 (22.6%) participants would like to have implant-retained prosthesis as an option for replacement of missing teeth, 24 (13.3%) said they would not want it, while the majority, 112 (61.9%), were not sure if they would like to have it or not.

Of the 78 participants who gave reasons why they would not like to have their missing tooth/teeth replaced with dental implant-retained prosthesis, majority (46.2%) claimed that they would not consider it because they do not have any idea about what it is, while seven (9.0%) thought it was expensive [Figure 2].

One hundred and fifty-four (84.6%) of the participants would like to be educated on dental implant as an option for

replacement of missing teeth, while just nine (4.9%) did not want to know about it and 19 (10.4%) cared less about the education on dental implant.

One hundred and ten (61.8%) of the participants claimed they would consider implant-retained prosthesis as an option for tooth/teeth replacement if they had good knowledge about it. While 15 (8.4%) would not consider it, 53 (29.8%) of the participants are not sure of considering it even if it is well explained to them.

A statistically significant relationship was found when education on implant and if participant would consider implant is well explained ( $P = 0.000$ ).

### Knowledge about cost of implant

Among the 57 participants who have heard about implant, only 21 (36.8%) have the knowledge about the cost implication, of which 15 (71.4%) have the right information on cost implication and the remaining six (28.6%) have wrong information on the cost.

The study also showed a statistically significant relationship between those who have heard about implant-retained prosthesis and their knowledge of cost implication ( $P = 0.000$ ).

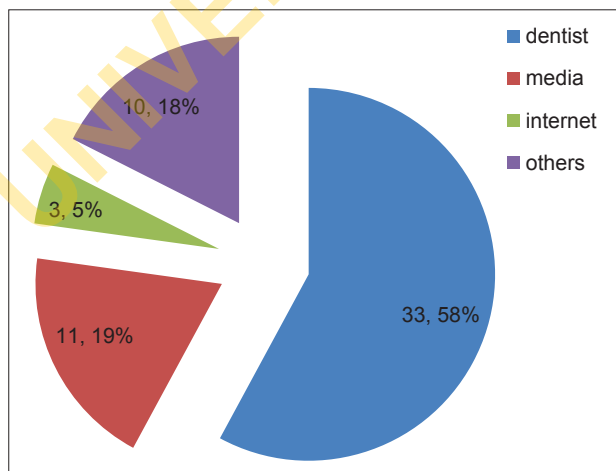
### Discussion

The present study showed a high rate of awareness of replacement of missing teeth in this environment, with 92.5% of the participants being aware that missing teeth can be replaced. Furthermore, the option of removable partial dentures for teeth replacement was the most recognized by the participants. This may be because removable partial dentures have been the most widely available and traditional way of replacement in this country; it is relatively cheap and affordable for most socioeconomic classes in resource-poor settings and has been found to be satisfactory to patients in terms of appearance, retention and stability.<sup>[12,13]</sup>

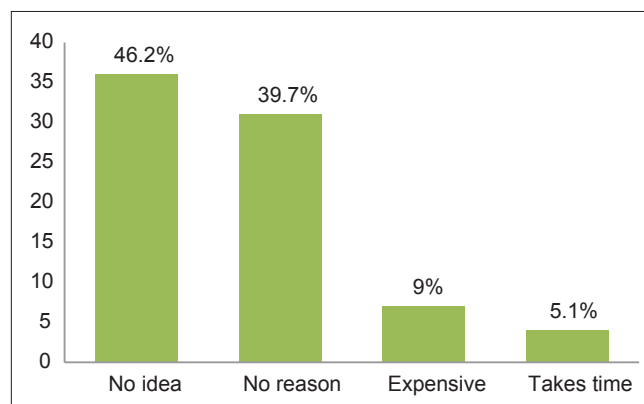
**Table 3: Awareness of tooth replacement and knowledge about options of replacement**

Tooth replacement options	Awareness (%)		P value
	Yes	No	
Removable partial denture			0.000*
Yes	54.3	45.6	
No	0.0	100.0	
Implant			0.010*
Yes	31.3	63.7	
No	0.0	100.0	
Bridge			0.058
Yes	19.6	80.4	
No	0.0	100	
Shortened dental arch concept			0.218
Yes	9.2	90.8	
No	0.0	100	

\* $P < 0.05$



**Figure 1: Source of information on dental implant**



**Figure 2: Reasons for not considering dental implant**

While 28.9% of the participants have heard about dental implant, only 22.6% of them were aware that it is an option of replacement of missing teeth. There was a significant relationship ( $P = 0.01$ ) when those who have heard of dental implant were compared with those who were aware of possible replacement of missing teeth, with a higher proportion of those who have knowledge of replacement of missing teeth showing low knowledge about dental implant as an option of tooth replacement.

The level of awareness of implant as an option for replacement of missing teeth recorded in this study is higher than what was recorded by Kumar *et al.*,<sup>[8]</sup> who had an awareness of 4.83%. This may be due to the fact that the present study was conducted in a tertiary hospital situated in an urban environment, with the majority of the participants (84.8%) having at least secondary school education as against the population studied by Kumar *et al.*,<sup>[8]</sup> who were people of lower socioeconomic and education levels of the area (Khammam, Andhra Pradesh in India) and were also unskilled workers educated only to the secondary level or lower.

However, the level of awareness recorded in this study is lower when compared with that reported by Al Johanny *et al.*,<sup>[10]</sup> Zimmer *et al.*,<sup>[11]</sup> Tepper *et al.*,<sup>[14]</sup> Berge<sup>[15]</sup> and Best,<sup>[16]</sup> who recorded the level of awareness in their different studies to be from 66.4% to as high as 77%. This may be due to the relatively low level of practice of implant dentistry in this environment and sensitization of patients by dentists toward the use of implant-retained prosthesis as option of tooth replacement.

Dentists were the major source of information (68%) to those who have heard about dental implants followed by the media, Internet and other sources such as friends. This is similar to the study by Kumar *et al.*,<sup>[8]</sup> which recorded the dentist as being the main source of information (38.25%). However, this result is contrary to some other studies<sup>[10,11,14,15]</sup> that have media and Internet as the major source of information on dental implant. This could be due to the fact that majority of the people in this environment depend on professionals such as dentists, on their source of information and the fact that accessibility to the Internet is relatively expensive and still limited to those of middle and high socioeconomic classes.

However, of the 21 participants who had this option of tooth replacement explained to them by dentists, 15 (71.4%) had the right information while six (28.6%) were either wrongly informed or did not understand what was explained about this option of tooth replacement. Although this misconception about dental implant has been recorded in a study,<sup>[15]</sup> it was more through information from the Internet and media.

Of the majority of the participants who claimed that they were not sure if they would like to have dental implants as

an option to replace missing teeth, the major reason given by 46.2% of these participants was the fact that they do not have any idea about it, while 39.7% had no particular reason. High cost of implant as perceived by seven (9%) of the participants was another reason given for not considering dental implants. This further buttresses the need for adequate education, as was confirmed in this study by the response of the participants to education on dental implants, with majority of the participants claiming that they would appreciate it if they could be better informed about the advantages and disadvantages that might make them consider it as a better option. This finding is similar to the studies by Kumar *et al.*,<sup>[8]</sup> Satpathy *et al.*,<sup>[9]</sup> and Al Johany,<sup>[10]</sup> who also recorded a higher percentage of their participants requesting to have more knowledge on dental implants. A statistically significant relationship was also found when education on implant and consideration of dental implant for use by participant was compared ( $P = 0.000$ ). Thus, if the procedure of implant-retained prosthesis is well explained to patients, they will consider having it as an option of replacing missing teeth.

There was misconception and low level of knowledge about the cost implication of dental implants among the 57 participants who have heard about it, with just 21 (36.8%) claiming that they know the cost, of whom 15 (71.4%) were rightly informed. This low awareness and misconception about the cost is similar to that reported by Rustemeyer and Bremerich<sup>[17]</sup> and Tepper.<sup>[18]</sup> There was also a significant relationship about the knowledge of cost implication when those who have heard about the implant prosthesis were compared with their knowledge of the cost implication ( $P = 0.000$ ). Thus, there is need for patients' adequate information vis a vis the cost, advantages, disadvantages and possible complications of dental implant prostheses as a better option for teeth replacement.

## Conclusion

The study has shown that there is a low level of awareness about dental implant in this environment even though people are aware of the possibility of tooth replacement. Adequate awareness and rich, right and detailed information are the necessary tools that project dental implant-retained prostheses as the best option for the tooth and lost maxillofacial tissue replacement. The dentist as a professional has the major role to play in this regard, and this can be fulfilled by implementing patient education programmes and counseling centers on dental implant use, advantages and possible complications in order to prepare a patient's mind.

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