

AWARENESS OF DENTAL IMPLANTS AMONG DENTAL PATIENTS IN NIGERIA

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ABSTRACT

The aim of this study was to determine the level of awareness of dental implant in Nigerian patients and their willingness to choose dental implant as a tooth replacement option

A survey was conducted among patients presenting for dental treatment in 3 teaching hospitals and private dental clinics in 3 urban cities of Nigeria using a self-administered questionnaire. A total of 294 out of 325 questionnaires were returned completely filled.

39.8% of the respondents have knowledge of dental implants as tooth replacement option. 35% and 26.5% are willing to choose implant for replacement of missing anterior and posterior teeth respectively. Patients with high level of education are significantly better informed on implants as a method of tooth replacement. The major source of information is the dentist (41.5%) followed by friends (17.7%).

The level of awareness of dental implants was low despite the high level of education of the respondents. Willingness to choose implant as tooth replacement option was low due to high cost of dental implants and the need for surgery.

INTRODUCTION

The need to replace lost teeth with natural looking successors has encouraged rapid research and advancement in the field of dental implant¹. Removable dentures have limited retention and stability especially in the lower arch free end

saddle². Dental implants greatly improve denture retention, stability, functional efficiency and quality of life³. The successful use of implant in the treatment of edentulous and partially edentulous arches has been confirmed in various clinical studies⁴.

KEYWORDS: dental implant, patient awareness, tooth replacement.

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In developing nations there is lack of education and awareness amongst people about dental implants as a treatment modality for replacement of missing teeth⁵. Information on dental implant treatment and alternative therapies must be provided by the dentists to guide patient choice of teeth replacement options.

A survey was conducted in Lagos, Ibadan and Benin City to assess the awareness of dental implants as a tooth replacement option, source of information and their willingness to choose dental implants as a tooth replacement option. Lagos, Ibadan and Benin City are among the most populous urban cities in Nigeria. Dental

implants treatments are available to the patients in private and teaching dental hospitals in these three cities.

Therefore the aim of this study is to assess patients' awareness and willingness to choose dental implant as a treatment for replacing missing teeth.

MATERIALS AND METHODS

A survey was carried out on all consecutive patients attending outpatient dental clinic of the three federal teaching hospitals (University of Benin Teaching Hospital, Lagos University Teaching Hospital and University College Hospital Ibadan) and private dental clinics in Benin City, Ibadan and Lagos, Nigeria.

The sample size N was determined using Araoye⁵ (2003) formula. $\{N = \frac{Z^2 pq}{d^2}\}$ $Z = 1.96$ standard normal deviate corresponding to 95% confidence level, $q = 1 - p$, $d = 0.05$ error margin $p = 9.7\%$ (level of awareness of dental implants among health workers in a previous study in Enugu⁶), a minimum sample size of 135 was determined. The survey was conducted over a period of 6 months (January to June 2013). A self-administered questionnaire based on a previous study¹ (figure 1) was used to collect information on awareness and willingness to choose dental implants as treatment option. The questionnaire recorded demographic data and responses to questions about source of information and knowledge of dental implants. The purpose of the survey was explained to the respondents and informed consent was obtained. The study was approved by the ethical committee of Lagos University Teaching Hospital.

Data was analyzed with Statistical software SPSS version 16.0. Descriptive statistics were obtained and frequency distribution means and standard deviation were calculated using Student's t test at $p < 0.05$

RESULTS

A total of 294 out of 325 questionnaires were returned completely filled giving a 90.5% response rate. The study population comprised of 140 males and 154 females with a mean age of 39.6 years. The demographic data is shown in table 1. 39.8% of the respondents had knowledge of dental implants as tooth replacement option. 35% and 26.5% were willing to choose implant for replacement of missing anterior and posterior teeth respectively. Patients with high level of education were significantly better informed on implants as a method of tooth replacement. The major source of information was the dentist (41.5%) followed by friends (17.7%). 35% of the respondents felt they were not at all informed about dental implants while 14.6% felt they were well informed about dental implants (table 2).

In table 3 subjects with higher educational level had more knowledge of implant as an option for tooth replacement ($p = 0.008$).

In table 4 the major choice of tooth replacement for anterior teeth was implant while that for posterior teeth was dentures ($p = 0.001$).

In table 5 the major reason for choosing implants for replacing anterior and posterior teeth was because it is fixed and permanent replacement ($p = 0.083$).

Majority of subjects got information about dental implant from dentists (Table 6). Majority felt that the advantages of dental implants were the natural look and natural feeling (Table 6). High cost and need for surgery were seen as the main

Table 1 Demographic data

| Sex | n | % |
|------------|----------|----------|
| Male | 140 | 47.6 |
| Female | 154 | 52.4 |

| Age | | |
|------------|-----|------|
| 21-30 | 112 | 38.1 |
| 31-40 | 54 | 18.4 |
| 41-50 | 51 | 17.4 |
| 51-60 | 35 | 11.9 |
| >60 | 42 | 14.2 |

| Level of Education | | |
|---------------------------|-----|------|
| No formal | 4 | 1.4 |
| Primary | 13 | 4.4 |
| Secondary | 38 | 12.9 |
| Tertiary | 239 | 81.3 |

Table 2: Level of information on dental implants by level of education and age as reported by patients

| | Not at all informed | | Moderately informed | | Well informed | |
|------------------|----------------------------|-------------|----------------------------|-----------|----------------------|-------------|
| | n | % | n | % | n | % |
| Education | | | | | | |
| No formal | 3 | 2.6 | 1 | 0.7 | 0 | 0 |
| Primary | 10 | 8.9 | 2 | 1.4 | 1 | 2.3 |
| Secondary | 19 | 16.8 | 10 | 7.3 | 9 | 21.0 |
| Tertiary | 81 | 71.7 | 125 | 90.6 | 33 | 76.7 |
| Total | 113 | 38.4 | 138 | 47 | 43 | 14.6 |

X²=20 p=0.002

Age

| | | | | | | |
|---------------|------------|-------------|------------|-----------|-----------|-------------|
| 18-30 | 35 | 31 | 61 | 44.2 | 16 | 37.2 |
| 31-40 | 16 | 14.2 | 30 | 21.7 | 8 | 18.6 |
| 41-50 | 23 | 11 | 21 | 15.2 | 7 | 16.3 |
| 51-60 | 18 | 16 | 11 | 8.0 | 6 | 14.0 |
| >60 | 21 | 18.6 | 15 | 10.9 | 6 | 14.0 |
| 1Total | 113 | 38.4 | 138 | 47 | 43 | 14.6 |

X²=10.9 p=0.207

Table 3: Knowledge of type of teeth replacement by level of education.

| Education | None | | Primary | | Secondary | | Tertiary | | Total |
|-----------|------|-----|---------|-----|-----------|------|----------|------|-------|
| | n | % | n | % | n | % | n | % | |
| Denture | 3 | 1.5 | 10 | 4.9 | 20 | 9.8 | 172 | 83.9 | 205 |
| Bridge | 0 | 0 | 0 | 0 | 6 | 6.7 | 84 | 93.3 | 90 |
| Implant | 0 | 0 | 0 | 0 | 7 | 6.0 | 110 | 94 | 117 |
| None | 1 | 1.6 | 3 | 4.9 | 13 | 21.3 | 44 | 72 | 61 |

X²=27.7 p=0.008

Table 4: Choice of tooth replacement for anterior and posterior teeth.

| Tooth Replacement | Anterior teeth | | Posterior teeth | |
|-------------------|----------------|------|-----------------|------|
| | n | % | n | % |
| Denture | 102 | 34.7 | 82 | 27.9 |
| Bridge | 65 | 22.1 | 62 | 21.1 |
| Implant | 103 | 35.0 | 78 | 26.5 |
| None | 19 | 6.5 | 72 | 24.5 |
| Don't know | 5 | 1.7 | 0 | 0 |
| Total | 294 | 100 | 294 | 100 |

x² =41.57 p <0.0001

Table 5: Reasons for choosing implants for replacing anterior and posterior teeth.

| Reason | Anterior teeth | | Posterior teeth | |
|--|----------------|-------|-----------------|------|
| | n=103 | % | n=78 | % |
| Looks more natural | 44 | 42.7 | 20 | 25.6 |
| Less discomfort | 24 | 23.3 | 23 | 29.5 |
| Do not want teeth trimmed | 16 | 15.5 | 11 | 14.1 |
| Long treatment time | 0 | 0 | 4 | 5.1 |
| I want a fixed and- permanent replacement | 47 | 45.63 | 37 | 47.4 |
| Other reasons | 2 | 1.9 | 2 | 2.6 |

$\chi^2 = 9.742$ $p = 0.083$

Table 6: Patient's response to questions regarding source of information, awareness and knowledge of dental implants as a tooth replacement option.

| Source of information | n=294 | (%) |
|-----------------------|-------|------|
| Dentist | 122 | 41.5 |
| Friends | 52 | 17.7 |
| Books/magazine | 23 | 7.8 |
| Internet | 33 | 11.2 |
| Other sources | 21 | 7.1 |
| No information | 28 | 9.5 |

View on advantage of Implants

| | | |
|--|-----|------|
| Looks and feel natural | 133 | 45.2 |
| Fixed not removable | 74 | 25.2 |
| It is comfortable | 52 | 17.7 |
| No need to use other teeth- as support. | 43 | 14.6 |

View on disadvantage of implant

| | | |
|---------------------|-----|------|
| High cost | 159 | 54.1 |
| Need for surgery | 73 | 24.8 |
| Long treatment time | 47 | 16 |
| I don't know | 35 | 11.9 |
| Others | 9 | 3.1 |

Figure 1: Questionnaire on awareness of dental implant as a tooth replacement option.

1. Age (years)
 18-30
 31-40
 41-50
 51-60
 61 and above
2. Sex Female Male
3. Level of education None Primary
 Secondary Tertiary
4. Do you think missing teeth should be replaced
t
 Yes, Always
 Yes, if the gap is visible
 No
5. Which of the following type of tooth replacement do you know
 Removable denture
 Fixed bridge
 Dental implant
 All of the above
 None of the above
6. If you have missing front teeth, which type of tooth replacement would you like to use
 Removable denture
 Fixed bridge
 Dental implant
 None
7. What is the reason for your choice of tooth replacement in question 6?
 Less expensive
 Looks more natural
 Do not want the discomfort of removable denture
 Do not want my other teeth trimmed and used as support for the replacement tooth
 Long treatment time
 I want a fixed and permanent replacement
 Other reasons please specify-----
8. If you have missing side teeth (molars/premolars), which type of tooth replacement would you like to use
 Removable denture
 Fixed bridge
 Dental implant
 None
9. What is the reason for your choice of tooth replacement in question 8?
 Less expensive
 Looks more natural
 Do not want the discomfort of removable denture
 Do not want my other teeth trimmed and used as support for the replacement tooth
 Long treatment time
 I want a fixed and permanent replacement
 Other reasons please specify-----

10. How well informed do you feel about dental implants
 Very well
 Moderately well
 Not at all
11. Where did you get information about dental implant
 Dentist
 Friends
 Books/magazine
 Internet
 Other sources, please specify-----
12. What do you think are the advantages of dental implants
 Looks and feel more natural
 It is fixed and not removable
 It is comfortable
 No need to use other teeth as support
13. What do you think are the disadvantages of dental implants
 High cost
 Need for surgery
 Long treatment time
 Others, please specify-----
14. Do you think dental implants need special care and cleaning
 No they are cleaned like natural teeth
 No, they need less care
 Yes, they need more care than natural teeth
 I don't know
15. How long do you think dental implants last
 Up to 5 years Up to 20 years Up to 10 years For a life time
 don't know

disadvantages of dental implants (table 6). 68.7% of the respondents did not have any idea about the life span of dental implant while 17.7 % thinks that dental implant last a last time.

DISCUSSION

In this study 39.8% of the respondents were aware of dental implants as a tooth replacement option, most of whom were in the age 18- 30 years group. This is similar to studies done in urban populations in India where 38% and

41.1%^{7,8} had knowledge of dental implants as tooth replacement. A much lower 15.91% was reported by another study done in a rural area in India¹. Other studies^{9,10,11} conducted in Europe reported 77%,70.1% and 72% level of awareness of dental implants respectively. From the evidence in the findings of our study and previous studies done in both urban and rural areas it shows that awareness of dental implants is generally low in developing nations⁶.

In our study the level of knowledge about dental implant was directly proportional to the level of education. Those with higher level of education had more knowledge of dental implants. This conforms to previous studies^{1,7,8,18}. Higher educational level can be considered as a factor that affects the awareness of dental implant among patients.

The choice of implant as tooth replacement option was higher for anterior tooth replacement and for posterior teeth replacement dentures were more preferred. Previous studies^{1,9,11,13} reported that patients were not content with removable prosthesis. This differed slightly from our study. Patients preferred dental implant for anterior teeth while most still were contented with dentures for posterior teeth. Location of teeth whether anterior or posterior have been reported to affect individual subjective need of replacement^{14,15}. The reason for this could be as a result of the need to have a more natural look of anterior teeth because of aesthetics. This can explain why majority of our subjects' reason for opting for dental implants was for natural look and feel.

Majority (41.5%) of the population studied got their information from the dentists. This is similar to earlier studies done in India^{7,8} but was in contrast to previous studies^{11,16,17}. This suggests that there is little or no information in Nigerian media about dental implants. The dental professionals as a whole need to create awareness of dental implants by putting information on the television and print media.

High cost of implants was perceived as the major disadvantage of dental implants. This finding is similar to that reported in a previous study⁸ where cost was the major limiting factor to treatment. In this study respondents with tertiary education reported a significantly higher level of awareness and information about dental implants. This suggests that high educational level exposes an Individual to sources of information on dental implants such as the internet, friends, books and the dental professional.

Majority (68.7%) of our subjects had no idea of how long a dental implant can last. This is a contrast to an earlier study where 60% of patients expected the life span to be within 5 years and 12.72% expecting it to last for a life time.¹ Another study done in Japan reported that 28% of patients expected that it would last for a life time¹⁸. Dental implants replacing teeth are expected to last a lifetime if dental hygiene is maintained and regular dental checkup is done.

CONCLUSION

The level of awareness of dental implants was low despite the high level of education in majority of the respondents. Willingness to choose implant for replacement of missing anterior and posterior teeth was low due to the high cost and the need for surgery.

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