

# Assessment of Level of Expectation and Awareness towards Dental Implants among Complete Denture Patients and Partial Denture Prosthesis Wearers

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## ABSTRACT

### Background

Among many options to replace missing teeth, dental implant is widely popular but willingness to have implant treatment and its success depends on patients' knowledge and expectations as well as the care, skill, and judgment of clinicians.

### Objective

The main objective of this study was to assess awareness, expectation and source of information about dental implant among complete and removable partial denture wearers and to find association between them.

### Method

A questionnaire consisting of 6 close-ended questions was used to assess the level of knowledge and awareness among patients visiting Dental Outpatient Department of Dhulikhel Hospital regarding dental implants as a treatment option for replacing missing teeth. Chi-square test was used to study the association between demographic variables and awareness about implantation. Statistical software SPSS 20.0 was used for data analysis.

### Result

Our results revealed significant difference in age ( $p=0.001$ ), education level ( $p=0.03$ ) and occupation ( $p=0.004$ ) in awareness of dental implant and no significant difference in gender ( $p=0.567$ ), compared between complete and removable partial denture wearers. Due to lack of awareness, lower educational status and advanced age the patients responded that they "did not know" in answer to almost all the questions.

### Conclusion

The awareness level of dental implant was low among complete and removable denture patients and this was associated with a low level of education and lack of accurate information about dental implants.

## KEY WORDS

Awareness, Complete denture, Dental implant, Expectation, Partial dentures

## INTRODUCTION

In edentulous patients, the main complications due to loss of teeth are masticatory deficiency, speech problems and esthetics.<sup>1,2</sup> Among many options for replacing the missing teeth, dental implant is a popular method but acceptance to implant treatment but the success of the implant depends on patient knowledge and expectations, care, skill, and judgment of clinicians. This is possible from the information provided by different means like friends, family, and media in some countries, while in others, dentists were found to be the main source of information.<sup>1,3-7</sup>

Multiple sources of information have been previously reported. For example, in the UK, Austria and Jordan, patient information regarding dental implant treatment is often obtained from family and friends, when patients need additional information dentists are referred.<sup>8</sup> In contrast, dentists seem to be the main source of implant information in places like Hong Kong.<sup>9</sup> Another popular source of patients' information is written leaflets, which may not always include comprehensive content.<sup>10</sup> Recently, the internet and social media are also increasingly contributing to patients' knowledge.<sup>11</sup> The lack of reliable information and high cost of implant therapy has led to unrealistic expectations.<sup>1,12,13</sup> When providing information on implant treatment alternative therapies must be provided to guide the patient.<sup>14</sup> Patients should be informed about possible risks and complications and their expectations should be identified.<sup>15</sup>

This kind of research has not been carried out in Nepal, therefore this study was undertaken to access the awareness about dental implant among the complete and removable partial denture wearer patients.

## METHODS

The type of study used for this research is Exploratory. Patients visiting the Dental Outpatient Department (DOPD) of Dhulikhel Hospital, Kathmandu University who required replacement of few or all missing teeth within the age group 20 and above years were selected for the study. The total numbers of patients involved in the study were 300 and the duration of study was 3 months (June 2018 to September 2018). Sample size was calculated to be 300, using formula,  $n = Z^2 p(1-p)/d^2$ , Where Z=static constant corresponding to level of confidence, p=expected prevalence and d=precision or margin of error. Based on the average annual turn out of patients in Prosthodontic department of Dhulikhel hospital and considering prevalence of 50% with 5% margin of error, at 95% confidence interval and Z=1.96. Convenience sampling method was used for selection of patients. A questionnaire was developed, and the study purposes were explained, interviewed and questions were filled personally. Data about age, gender, education, occupation, knowledge and awareness of dental implants, level and sources of information regarding dental implants,

as well as expectation towards its treatment were recorded for each patient. Therefore, the data were only primary, and no secondary data were included. The study was conducted after receiving approval from the Institutional Review Committee (IRC). Patients who had given their informed consent were only included in this study.

Inclusion criteria: Patients were partially or completely edentulous. Patients whose age was 20 years or above were selected. Exclusion criteria: Patient with only third molar missing was excluded. The collected data were analyzed using the statistical package for social sciences (SPSS 20.0). The chi-square test was used to compare the level of awareness between removable partial and complete denture wearer groups.

## RESULTS

Total number of patients enrolled in this study was 300. Out of which 148 (49.33%) were males and 152 (50.67%) were females. Coincidentally, number of male and female partial denture wearers were equal. Majority of female patients wearing removable partial dentures were 129. There was no statistical association of gender with partial and complete denture wearers ( $p=0.567$ , table 1). According to denture status more removable partial denture wearers were between 41-60 years compared to complete denture wearers where most were between 61 years and above. Age was significantly associated with complete and partial removable denture wearers ( $p=0.001$ , table 1). Almost half of the respondents were illiterate, while one-third had completed secondary education. There was statistical association between education and complete and partial denture wearers ( $p=0.03$ , table 1). As for occupation 148 partial denture wearers were unemployed whereas 33 in complete denture wearers were unemployed. Occupation shows the association with the complete and partial denture wearers ( $p=0.004$ , table 1).

Almost two-third of the respondents hadn't heard about dental implants with no significant difference between complete and partial denture wearers ( $p=0.964$ , table 2). Among those who had heard about it, dentists were the primary source of information in partial denture wearers 43 and 2 complete denture wearers. No significant difference existed between complete and removable partial denture wearers ( $p=0.03$ , table 2). There were no respondents that had heard about the implants from the media.

Nearly 79.1% in partial denture wearer and 92.9% in complete denture wearer said that they would like to have teeth replaced with fixed prosthesis. Statistical significance was seen between complete and partial denture wearers ( $p=0.001$ , table 2). The choice for implants was a meager 15 in partial denture wearer and 1 in complete denture wearer which was statistically insignificant when compared with both partial and complete denture wearer ( $p=0.056$ , table 2). Astonishingly, more than 2/3<sup>rd</sup> of the respondents

**Table 1.** The different socio-demographic characteristics of the study population

Age (years)	Partial edentulous group (n = 258) N (%)	Complete edentulous group (n = 42) N (%)	P-value
<b>Mean age</b>	<b>46.28 ± 12.92</b>	<b>66.59 ± 6.10</b>	
20-40	89 (34.5)	0 (0.0)	0.001
41-60	130 (50.4)	9 (21.4)	
>61	39 (15.1)	33 (78.6)	
<b>Gender</b>			
Male	129 (50.0)	19 (45.2)	0.567
Female	129 (50.0)	23 (54.8)	
<b>Education</b>			
Illiterate	121 (46.9)	28 (66.7)	0.03
Primary	94 (36.4)	7 (16.7)	
Secondary	43 (16.7)	7 (16.7)	
<b>Occupation</b>			
Employed	91 (35.3)	4 (9.5)	0.004
Retired	19 (7.4)	5 (11.9)	
Unemployed	148 (57.4)	33 (78.6)	

answered “I do not know” when they were asked about why were they willing to have implants which was statistically insignificant (p=0.068, table 2) compared between removable and complete denture wearers.

When asked about reasons willing to have dental implant 72.5% in removable partial denture and 92.9% in complete denture patients had no idea about it which was statistically insignificant when compared between removable and complete denture wearers(p= 0.487, table 2). Esthetic and function were the main cause for replacing missing teeth for patients who knew little about dental implant which was statistically significant (p=0.015 and 0.024 respectively, table 2) when compared between removable and complete denture wearers.

To assess the level of general knowledge about dental implants, the patients were asked where implants were anchored. There were 34 patients wearing removable partial denture and 1 patient wearing complete denture replied as “in the jawbone,” which was statistically significant (p= 0.035, table 2). Similarly, there were 10 patients wearing removable denture thought “in the gums,” and none of the patients wearing complete denture were aware of it, which was statistically not significant (p=0.127, table 2). Out of total 258 patients, 82.9% in removable and out of 42 patients, 97.6% in complete denture wearer patients did not have any idea where dental implants would be placed which was statistically not significant when compared between both complete and partial denture (p=0.949, table 2).

Majority of patient had no idea about hygiene and care. As much as 82.2% wearing removable partial denture and 97.6% wearing complete denture, when asked if they

**Table 2.** The frequency and percentage of the response of the research participants in each of the questions based on the questionnaire that was administered

Variables (Questions)	Partial edentulous group (n = 258) N (%)	Complete edentulous group (n = 42) N (%)	P-value
<b>How did you hear about dental implants ?</b>			
a. From relatives and friends	13 (5.0)	0 (0.0)	0.012
b. From internet	9 (3.0)	1 (2.4)	0.73
c. From dentists	43 (16.7)	2 (4.8)	0.03
d. From media	0	0 (0.0)	0.452
e. Not heard	184 (71.3)	39 (92.9)	0.964
<b>Like to have teeth replaced</b>			
a. With removable appliance	26 (10.1)	2 (4.8)	0.026
b. With fixed prosthesis	204 (79.1)	39 (92.9)	0.001
c. With implant	15 (5.8)	1 (2.4)	0.056
d. Not replaced at all	13 (5.0)	0 (0.0)	0.068
<b>Reasons willing to have implant</b>			
a. Esthetics	14 (5.4)	1 (2.4)	0.015
b. Function	41 (15.9)	2 (4.8)	
c. Avoidance of damaging adjacent teeth	16 (6.2)	0 (0.0)	0.024
d. I don't know	187 (72.5)	39 (92.9)	0.012
<b>Place of anchoring the implant</b>			
a. In the gum	10 (3.9)	0 (0.0)	0.487
b. In the jawbone	34 (13.2)	1 (2.4)	0.127
c. In/on neighboring teeth	0 (0.0)	0 (0.0)	
d. Do not know	214 (82.9)	41 (97.6)	0.035
<b>Ideal hygiene and care of implant</b>			
a. Cleaned like natural teeth	18 (7.0)	0 (0.0)	0.389
b. More care than natural teeth	28 (10.9)	1 (2.4)	0.949
c. Do not know	212 (82.2)	41 (97.6)	0.532
<b>Disadvantages of dental implant</b>			
a. High cost	40 (15.5)	2 (4.8)	0.015
b. Surgery	12 (4.7)	1 (2.4)	0.034
c. Takes long until fully functional	2 (0.8)	0 (0.0)	0.001
d. Do not know	204 (79.0)	39 (92.9)	0.73

would take care of implant more than natural teeth or like natural teeth, 18 wearing removable partial denture responded as it should be taken care like natural teeth were as none of the complete denture wearers had similar response. However, 28 patients wearing partial denture and 1 patient wearing complete denture responded that it should be taken care more than that of natural teeth. There was no statistically significant difference between partial and complete denture wearers (p=0.532, table 2).

Furthermore, 40 partial denture wearers who knew about dental implant said implant cost was too high as compared to 2 complete denture wearers. This was statistically significant ( $p=0.015$ , table 2). Due to fear of surgery, 12 partial denture wearers and 1 complete denture patient did not want to place implant. This was statistically significant ( $p=0.034$ , table 2). All most two third of the participants said they did not know, which was statistically not significant ( $p=0.73$ , table 2).

## DISCUSSION

Dental implant helps to increase the quality of life by incorporating with the prosthesis.<sup>16</sup> But the acceptance of implant prosthesis and success depends on patient's knowledge and maintenance of the implant.<sup>3-5</sup> Thus study was done to see the patient's awareness towards dental implant in Nepalese subjects. In our study, we found highly significant association between age of the patient and awareness ( $p=0.001$ ). This signifies that as the age of patients increase, the level of awareness about implant is found to have decreased. Our study is similar to the results of study done in Switzerland, which shows the frequency of annual dental visits diminishes with age, which may be related to a shift in priorities but also to limited financial resources in the elderly population.<sup>17-19</sup>

This study shows that gender had no significant differences with complete and partial denture wearers ( $p=0.567$ ). Awareness towards dental implant is not significantly different among the female or male wearing partial or complete dentures. This finding agrees with another study done in Indian population.<sup>20</sup> Contradictory to it another study done in Dutch population have proved that women display better communication skills and have more opportunity to absorb new knowledge.<sup>21</sup>

Most of the study participants belonged to a lower educational status, mostly in complete denture wearers (66.7%) than removable partial denture wearers (46.9%), who were typically the least informed about advances in treatment options. Perhaps due to the lower educational status of participants and in complete denture wearers due to their age. Elderly patients often weigh decisions against their remaining life expectancy and consider it not worthwhile to invest time, effort and money on sophisticated dental treatments.<sup>22</sup> Also low subjective awareness in this study can be attributed to the lower educational level of this region. This study is also in congruence with other Indian studies which showed the level of awareness at 32%, 29% and 16% respectively.<sup>13,23,24</sup>

The rate of unemployment is higher both in removable partial denture and complete denture wearers. It is statistically significant ( $p=0.004$ ) as the lack of employment hinders their chance of regular dental checkups, due to financial reasons, which may cause poor prognosis of teeth. The cause of unemployment may be attributed

to the fact that the population on which the study was conducted have lower educational level and most of them were unskilled workers educated only to primary level or no education et al.<sup>25</sup>

The main source of information about dental implants was from dentists, followed by relatives and friends and most of them were unaware of dental implant. There were studies that suggests that dentists were the main source of information especially those who practice implant dentistry.<sup>26-28</sup> Our study is in agreement with the above studies and shows significant association with regards to dentists being the main source of information ( $p=0.03$ ) about dental implant. The contribution of media and the internet to participants' information was not significant ( $p=0.73$  and  $p=0.452$  respectively) as compared between removable partial denture and complete denture wearers. As per our study, people were unaware of the dental implant through internet and media this could be due to limited internet access and lower educational status.<sup>3,5</sup> Contradictory to it some studies in the literature suggested that the internet.<sup>29</sup> Recently social media, may provide misleading notions about the appearance and the longevity of dental implant restorations.<sup>9,11</sup>

Most patients preferred their missing teeth replaced by fixed partial denture followed by removable partial denture and only few wanted dental implant as a replacement. Our study also shows patients preference to fixed partial denture was significant ( $p=0.001$ ) compared between complete and removable partial denture wearers. This result show that fixed prosthesis is better than removable and less annoying in the mouth.<sup>6,17</sup> This result was also in congruence with the finding reported by Al Johany where only 3.3% of the participants chose fixed prosthesis as the best treatment.<sup>30</sup> The reasons for patient's acceptance of the fixed prosthesis can be fixed prosthesis, can maintain esthetic proportion of the teeth, less costlier than the implants.<sup>25</sup> But the disadvantages of fixed prosthesis should be considered and explained to the patients.

As high as 72.5% and 82.9% wearing complete and removable partial dentures respectively did not have any idea about the reasons willing to have implant. In our study it was statistically insignificant in both patients wearing complete and removable partial dentures ( $p=0.487$ ). The results agree with other studies done and unanswered response were considered as knowledge deficit.<sup>19</sup> This might have influenced the results of our study as it may not reflect the true knowledge of the respondents. Our study showed that esthetic, function was statistically significant both wearing complete and removable dentures ( $p=0.015$  and  $0.024$ , respectively). As American patients reported that implant-supported rehabilitations were esthetically and more appealing than removable and rated this as a major advantage of implant dentistry.<sup>18</sup> A study showed that the replacement of missing teeth becomes more important so as to restore the individual to form, function

and esthetics for life.<sup>31</sup>

Furthermore, 82.9% wearing removable partial denture and 97.6% wearing complete dentures were unaware of where dental implant was going to be placed. It is statistically insignificant ( $p=0.949$ ) as their awareness level was very low. Studies reported that variables such as urban residence, higher professional qualifications, and age above 50 years were positively correlated with awareness about the correct site for implants.<sup>7,8</sup> Placing implant in the gum, in/on neighboring teeth many patients reported they do not know, they were statistically insignificant ( $p=0.127$  and  $p=0.389$  respectively), as due to lack of knowledge and awareness.<sup>30</sup> Placement in the jaw bone were statistically significant ( $p= 0.035$ ) as patients who had little knowledge about implant knew about this.<sup>12</sup>

The total 28 patients wearing removable partial denture reported that it should be taken more care than natural teeth as these patients were wearing removable partial dentures and were young (age group between 41-60) and had little more knowledge about dental implant. Berge reported that an age between 45 and 80 and education at the college level were the most powerful predictors of awareness.<sup>3</sup> Patients wearing removable partial denture (18 in number) felt equal importance should be given for both natural teeth and implants. This is shown in other studies as well.<sup>25,32</sup> Most participants in removable partial denture (82.2%) and in complete denture wearers (97.6%) were unaware of implant aftercare.<sup>24,29</sup> Awareness about implant aftercare showed no statistical association ( $p=0.532$ ) between removable partial denture wearer and complete denture wearer.

When patients were asked about the factors that may prevent them from choosing implants, the responses were highcost, which was statistically significant ( $p=0.015$ ). These finding agree with other study as patients wearing complete dentures were old and were seeking for less expensive treatment as mostly elderly patients often weigh decisions against their remaining life expectancy and consider it not worthwhile to invest time, and money on sophisticated dental treatments.<sup>26</sup> But also contradict the results of a German study, where most patients were prepared for an additional payment, with underestimation of implant costs.<sup>1</sup> Some patients, especially those wearing

removable partial dentures (12 patients) and complete denture wearers (1 patient) think that the implant is a major surgical procedure because of the use of the word surgery which is statistically significant ( $p=0.034$ ) compared between removable and complete denture wearers. These results agree with the results of most of the studies.<sup>32,33</sup> The perceived awareness about the disadvantage of dental implant was statistically insignificant ( $p=0.73$ ) among removable and complete denture wearers. This finding is supported by another similar study which shows that most people were unaware of disadvantage of dental implant due to poor knowledge about it.<sup>20</sup>

In this study, the literature is restricted to English language publications. Most of the patients were unaware of dental implants it may be because patients were more from rural area then urban area. The study period was not long enough to make reliable conclusions. Due to time constraint, only 300 patients could be included in the study. Therefore, it is recommended that the future studies with greater number of sample and must be carried out for a longer duration.

## CONCLUSION

This study shows age, education and occupation of patients are factors affecting their awareness of dental implant where as gender was not the factor affecting the awareness. The research also showed that majority of the participants were not aware of dental implant as an option in replacing missing teeth, its placement on jaw, its care and its disadvantages. Among few who had heard about implants, dentists were the main source of information which was followed by relatives and friends. Hence, there is a need to enhance the awareness of patient about dental implants. It could be achieved by implementing various public awareness campaigns and establishing counseling centers in the government as well as private dental colleges and private dental clinics. The government should work towards minimizing the cost of the implants so that they can be made affordable to all.

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