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Assessment of Awareness of Dental Implants among NSS Volunteers of Bhubaneswar City: A Questionnaire Cross-Sectional Survey

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***Abstract*---** Loss of teeth affects both an individual's appearance and functioning, with a negative impact on psychological and social wellbeing. Implant-supported prosthesis has proven advantages like increased masticatory efficiency, maintenance of the bone, improved function, phonetics, aesthetics, etc. There is a variation in the level of awareness about dental implant treatment among people. As NSS volunteers are mostly involved in creating awareness about several aspects among the population, there is a requirement of assessment

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of their knowledge about dental implants to improve the efforts to be taken to upgrade their awareness about the same. The aim of this study was to assess the awareness of dental implants among NSS volunteers of Bhubaneswar city, Odisha State, India using a questionnaire survey. A questionnaire survey was conducted among 1500 NSS volunteers of Bhubaneswar city, Odisha State, India through a printed questionnaire comprising of 12 close-ended questions to evaluatethe awareness of dental implant treatment between Dec-Jan 2019-20.Statistical analysis was done using SPSS 23 software. Among 1500 subjects, a total of 587(39.1%) population was aware of dental implant treatment, 1270 (84.7%) believed that high cost and lack of knowledge was a limitation for implant treatment, 1189 (79.3%) felt that dental implants had better longevity. Subjects lacked knowledge about insurance coverage (65.7%), aesthetic value (72%), and hygiene (63.9%) about dental implants. This study reveals that there is a lack of awareness of dental implants andimplant-basedtreatment in the population, especially in those with a low socioeconomic status. However, a significantportion of the population wanted to have more information on dental implants. Conduction of more dental implant-orientedawareness programs for NSS volunteers is essential.

***Keywords*---**Dental Implants, NSS, Implant-supported restorations.

Introduction

Implant dentistry has become increasingly important in oral reconstruction since the intra-oral use of titanium implants was suggested in the late 1950s. Advantages of implant-supported restorations include psychological benefits and tooth structure conservation adjacent to the teeth to be replaced. Dental implants are surgically placed within the jaw bone to act as a support for single tooth replacement or as fixed or partial prosthesis and maxillofacial prosthesis. Their success is dependent on the integration of implants with surrounding osseous tissues. The need to replace lost teeth with natural successors has encouraged rapid research and advancement in the field of dental implants.[1] Currently, dental implants are widely accepted as a prosthetic treatment of completely or partially edentulous patients. They are associated with improved denture retention, stability, functional efficiency, and quality of life. As implant therapy is an elective procedure in most of cases, complete information on implant treatment and alternative therapies must be provided to guide the patient in the choice of the most appropriate option.[2] However, little information is available to the patients regarding the procedure and its success. This problem is more magnified in developing nations where there is a lack of education and awareness amongst people about dental implants as a dental treatment modality. Patients are often confused with the information provided by the media, which may not be as accurate as evidence based data provided by more suitable sources of information. Hence, it is necessary to provide patients with accurate information on the cost, longevity, and possible risk involved in implant treatment. Several studies have been conducted on a paper-basedsurvey in different parts of the

world withregards to awareness of dental implants as atreatment option. Pommer et al (2011)[3] reported 79% of the Austrian population expresseda desire for implant treatment. A surveyfrom Sweden in 1999, reported a histrionicrise in interest in implant treatment to 95%over a period of 10 years[4-6]. Zimmer et al (1992)[7] demonstrated a high awareness rateas well as a general positive attitude towardsoral implant therapy. National Service Scheme popularly known as NSS, the scheme was launched in Gandhi Centenary year, 1969 and aimed at developing students' personalities through community service. The overall objective of the National Service is Educational. This objective is attained through the service to the community. Health Awareness is one of the objectives of NSS activities. NSS has been designed to promote the social goals of higher education. NSS has its own identity; it can be used for the betterment of the society by proper implementation at higher education to create social responsibility for the students. As dental implant treatment has become popular by the day and has multiple benefits for dental health, basic information and awareness on implant health to people can be provided through NSS.[8] Thus, it is essential to conduct a survey to determine patients' perceived level of awareness, sources of information, and their acceptance and satisfaction with implant treatment by analyzing feedback. This study aimed to assess the awareness of dental implants among NSS volunteers of Bhubaneswar City, Odisha.

Materials and Methods

A cross-sectional study was done to assess the level of awareness of dental implants among NSS volunteers of Bhubaneswar city, Odisha, India. The survey was conducted through a printed questionnaire comprising of 12 close-ended questions from Dec-Jan 2019-20. The questionnaire included questions related to the awareness of dental implants of the participants and their knowledge about implant treatment. Sample size determination was done using G power software (version 3.0) to achieve a power of 80% and a level of significance of 5%. A total of 1500 subjects were included in the study. The study was carried out after obtaining approval from the Research Ethics Committee of KIDS, Bhubaneswar. (KIDS/RES/028/2021) In the conduct of this survey, the guidelines of ethical consideration were strictly adhered to and participants filled out the questionnaire after signing informed consent. The inclusion criteria were: respondents who gave their written consent to participate in the study and who were between 18 and 35 yrs of age. Exclusion criteria were subjects who refused to give informed consent. The final questionnaire consisted of 12 questions to assess the following aspects:

- Level of information about dental implants as an option in replacing missing teeth.
- Level of acceptance of dental implants as a treatment option compared to other conventional treatment modalities.
- The level of knowledge for the participants

The questionnaire was divided into 3 domains: knowledge, attitude, and practice for further analysis.

Statistical analysis and results

The data collected included age, gender, education, missing teeth, option of tooth replacement, awareness of dental implants, and attitudestoward implant treatment. For data analysis, each positive response wasgiven a score '1' and each negative response was assigned as a score of '0'. Individual scores were summed up to yield a total score. The quantitativedata was entered onto computer for analysis using Statistical Package forSocial Science (SPSS) Version 23 for Windows. Descriptive analysis wasundertaken to present an overview of the findings from this population.The Student's t-test and ANOVA test were used to test the significance level ($p<0.05$). A total of 1500 subjects participated in the study. Descriptive statistics were calculated for the continuous variables and presented in terms of Frequency-percentage and Mean, SD. Inferential statistics were calculated using Chi-square statistics and One way ANOVA statistics. Correlation between the domains was calculated using Pearson's correlation coefficient statistics. Table 1 & Figure 1 depict the level of information about dental implants as an option in replacing missing teeth. A total of 587 (39.1%)population was aware of dental implant treatment, 1270 (84.7%) believed that high cost and lack of knowledge was a limitation for implant treatment. 514 (34.3%) subjects thought insurance coverage was needed. 766 (51.1%) subjects thought dental implants could be considered for immune-compromised individuals. A statistically significant difference was noted ($p<0.0001$) except for the belief in immuno-compromised individuals. Table 2 &Figure 2 show the level of acceptance of dental implants as a treatment option compared to other conventional treatment modalities. 882 (58.8%) of the population accepted that replacement of tooth with implant was better. There were 918 (61.2%) who were willing to undergo implant treatment. There were 1189 (79.3%) who stated that dental implants had better longevity. There were 420 (28.0%) who felt that dental implants had better aesthetic values. A statistically significant difference was noted ($p<0.0001$) between the responses of the participants. Table 3 states the awareness about dental implants and states that 1164 (77.6%)of them heard about dental implants. There were 542 (36.1%) of the study participants who required the same hygiene. There were 937 (62.5%) who required information about dental implants. There were 746 (49.7%) who were aware of the material implants. A statistically significant difference was noted ($p<0.0001$) except for the material implant. Table 4 speaks about the level of knowledge for the participants and it was seen that there were (917) 61.1% subjects with adequate knowledge. There were (583) 38.9% who had inadequate knowledge scores. The difference was statistically significant ($p<0.0001$). Domain-wise correlation was done and tabulated in Table 5. A statistically significant correlation was seen between the knowledge domain and attitude domain. Attitude domain was correlated to knowledge and practice. Practice domain was correlated to attitude domain.

Table 1
Level of information about dental implants as an option in replacing missing teeth

Question	Options	Frequency	Percentage	Chi-Square	P Value
Aware of dental implant treatment	Yes	587	39.1	70.851	<0.0001*
	No	913	60.9		

Higher cost and lack of knowledge are the limitations of implantology	Yes	1270	84.7	721.06 7	<0.0001*
	No	230	15.3		
Insurance coverage is needed	Yes	514	34.3	148.52 3	<0.0001*
	No	986	65.7		
Dental implants in immune-compromised people	Yes	766	51.1	0.683	0.409
	No	734	48.9		

*statistically significant

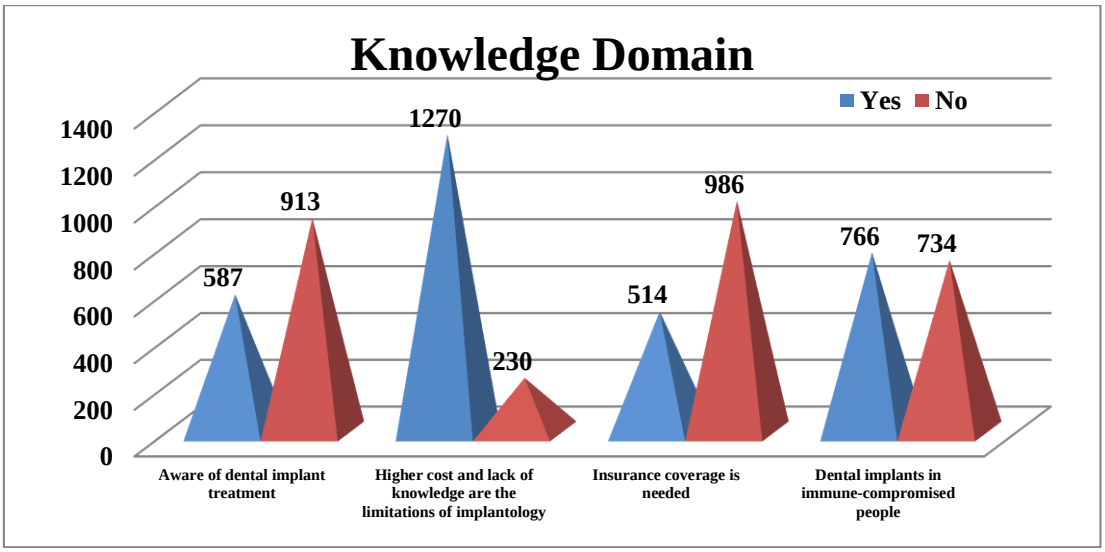

Figure 1. Graphical representation of the Level of information

Table 2
Level of acceptance of dental implants as a treatment option compared to other conventional treatment modalities

Question	Options	Frequency	Percentage	Chi-Square	P Value
Replacement of tooth with implant is a better	Yes	882	58.8	46.464	<0.0001*
	No	618	41.2		
Willing to undergo an implant treatment	Yes	918	61.2	75.264	<0.0001*
	No	582	38.8		
Dental implants have better longevity	Yes	1189	79.3	513.92 3	<0.0001*
	No	311	20.7		
Dental implants have a better esthetic value	Yes	420	28.0	290.40 0	<0.0001*
	No	1080	72.0		

*statistically significant

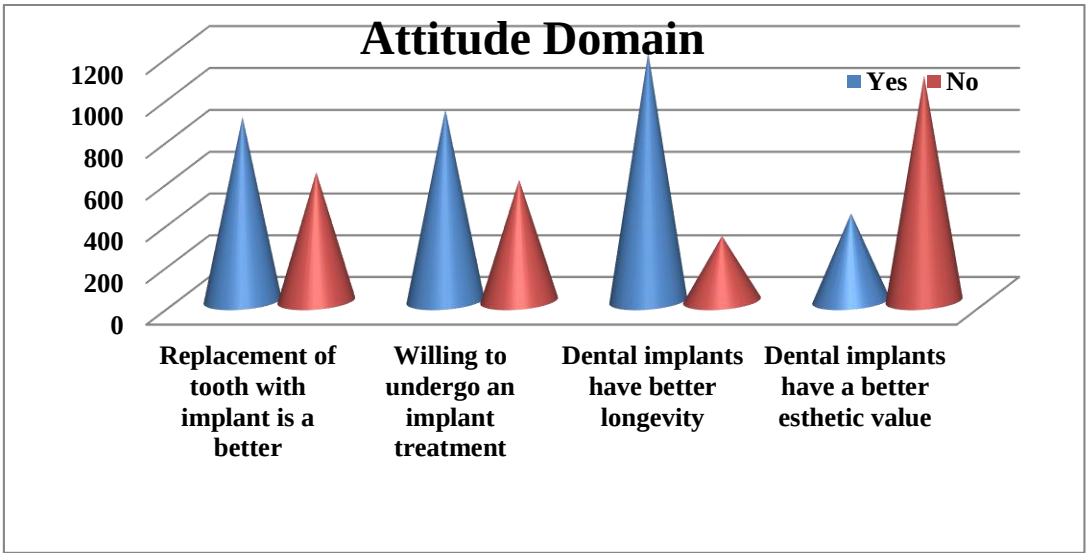

Figure 2. Graphical representation of attitude domain

Table 3
Awareness about dental implants

Question	Options	Frequency	Percentage	Chi-Square	P Value
Heard of dental implants	Yes	1164	77.6	457.056	<0.0001*
	No	336	22.4		
Dental implants require the same hygiene	Yes	542	36.1	115.371	<0.0001*
	No	958	63.9		
More information about dental implant	Yes	937	62.5	93.251	<0.0001*
	No	563	37.5		
Aware of the material implant	Yes	746	49.7	0.043	0.836
	No	754	50.3		

*statistically significant

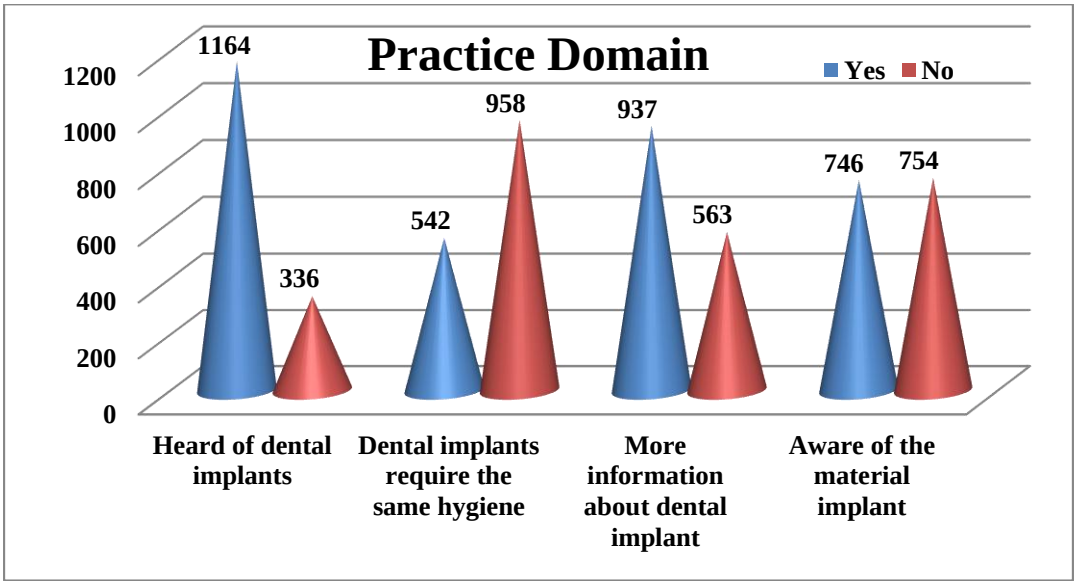

Figure 3. Graphical representation of the practice domain

Table 4
The level of knowledge for the participants

			95% Confidence interval of the Difference			
	Frequency	Percentage	Lower	Upper	t	P value
Adequate	917	61.1	0.5866	0.6360	48.557	<0.0001*
Inadequate	583	38.9				

*statistically significant

Table 5
Correlation of the knowledge, attitude, and practice domain

		Knowledge_ domain	attitude_ domain	practice_ domain
Knowledge_domain	Pearson Correlation	1	.151**	.036
	P Value		<0.0001	0.161
attitude_domain	Pearson Correlation	.151**	1	.061*
	P Value	<0.0001		0.018
practice_domain	Pearson Correlation	.036	.061*	1
	P Value	0.161	0.018	

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Discussion

Dental implants are widely accepted as a prosthetic treatment of completely or partially edentulous patients. They are associated with improved denture retention, stability, functional efficiency, and quality of life. However, little information is available to the patients regarding the procedure and its success. This problem is more magnified in developing nations where there is a lack of education and awareness amongst people about dental implants as a dental treatment modality. As dental implant treatment hasgained popularity by the day and has multiple benefits for dental health, basic information and awareness on implant health to people can be provided through NSS volunteers. Hence, the present study was conducted to assessthe awareness of dental implants among NSS volunteers of Bhubaneswar City, Odisha using a questionnaire survey. A total of 1500 subjects participated in our study and were assessed on the aspects: level of information about dental implants as an option in replacing missing teeth, level of acceptance of dental implants as a treatment option compared to other conventional treatment modalities, the level of knowledge for the participants. The questionnaire was divided into 3 domains: knowledge, attitude, and practice for statistical analysis. In the present study, a statistically significant correlation was seen between the knowledge domain and attitude domain. Attitude domain was correlated to knowledge and practice. Practice domain was correlated to attitude domain. Hosadurga et al (2015)[9] conducted a two stage study in which the first phase comprised 106 subjects whose attitude, knowledge, and awareness toward dental implant treatment were assessed. The second phase was conducted after educating these subjects about implants using interactive audiovisual aids. It was seen that knowledge deficits regarding dental implants were widely distributed before providing information. Mously et al (2020)[10] in their analysis on 905 study participants demonstrated that 56% of subjects had low knowledge level regarding dental implants, while 44.4% possessed sound knowledge level on dental implants; which is in accordance with the present study as a total of only 587 (39.1%) population was aware of dental implant treatment. Gbadebo et al (2014)[11] reported that 28.9% were aware of the same. This might be due to low socioeconomic status and low education level among the study population. However,the findings are quite low in contrast to earlier surveys conducted on thistopic by Zimmer et al (1992)[7] in American citizens (77%), Müller F et al (2012)[12] inthe Swiss population (70.7%), Berge et al (2000)[13] in Norwegian population(70.1%), Tepper et al (2003)[14] in Australian population (72%), Johany et al (2010)[15]in Saudi Arabian population (66.4%), and Suwal et al (2016)[16] in Eastern Nepal (52.6%). Kohli et al (2014)[17] in their study, found thatfrom a total of 1013 responses,772 were aware of dental implant treatment which is in contrast with the findings of the present study. Among the 81% of the respondents who knew dental implants can be used toreplace missing teeth, 19.5% opted not to receive dental implant treatment. About 81.8% of the respondents expressed that dental implant treatment was unaffordable, which is in accordance with the present study (84.7%). They also found that 81% of the subjects believed that dental insurance coverage was needed in the country for dental implant treatment as the cost of the treatment is high, whereas 19% did not support insurance coverage which is in contrast with the present study (34.3%). Gharpure et al (2016)[18] found that 32.30% of the participants were aware of dental implants as an option to replace missing teeth. Dentists were themain

source of information on implants, followed by the internet. 46.8% of the participants wanted additional information on dental implants. Among those aware of implants, 62.85% of the participants regarded the high cost of the treatment as the biggest disadvantage; this is in accordance with the present study. Mayya et al (2018)[19] in their questionnaire based study reported that only 17.8% population had awareness of dental implants as the choice of treatment. Of these, 69.8% obtained knowledge through friends and family, while 28.1% obtained it from dentists. The results from the present study were found to be relatively better. The limitation of the present study is that it should be conducted using a large geographical area as well as the other states of India to assess furthermore and validate knowledge and awareness about the dental implant treatment among NSS volunteers in India.

Conclusion

According to the findings of the present study, most of the subjects were well-aware of the dental implants but lacked knowledge as a treatment option. Subjects were willing to undergo the treatment, if required, due to the longevity of dental implants. They lacked knowledge and awareness about the option of insurance coverage that can be availed for dental implant treatment and the requirement of additional hygiene. The knowledge of better aesthetic value concerning dental implants was also found to be deficient among the NSS volunteers. The subjects responded well for gaining more information and knowledge about dental implants. Hence, conduction of more awareness programs oriented towards dental implant treatment is essential to educate the NSS volunteers for the sake of improvement of dental health in the Indian population.

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