Original research

EXPLORE AND COMPARE THE KNOWLEDGE, ATTITUDE, AND ACCEPTANCE OF DENTAL IMPLANT AS A TREATMENT OPTION AMONG SUB-POPULATION OF SAUDI ARABIA

ABSTRACT

Objective: Implant therapy has gained wide popularity in the recent years. A complete information on implant therapy should be provided to patient by the dentist. The aim of present study is to evaluate the knowledge, attitude, source of information and acceptance of dental implants among the general population in the Southern region of Saudi Arabia.

Materials and Methods: A total of 712 patients were randomly selected from the OPD of dental hospitals across the southern region of Saudi Arabia. The designed questionnaire comprised of 15 open-ended questions. Only Saudi national population was selected for the survey. The questionnaire was divided into demographic data, knowledge, attitude and participant's acceptance towards implant therapy. The collected data were statistically analyzed using the Statistical Package for Social Sciences.

Results: Out of 712 participants, 675 complete the survey. 59.1% were male and 41.9% were females with an average age of 39.6 years old. All variables except for age showed statistically significant difference in the knowledge about implant among the study groups (p<0.05). The knowledge score was directly related to education and professional status of the participants. Majority of the patients (66%) with a history of implant therapy were satisfied with the placed implant. 41% of the participants reported high cost as a limiting factor for selecting an implant treatment.

Conclusions: Population from the southern region of Saudi Arabia has moderate knowledge about dental implant treatment. Dentists were found to be the most important source of information to the patient. The major barrier for not selecting implant treatment was the high cost of the implant therapy.

Keywords: Implant, knowledge, acceptance, attitude, Saudi Arabia.

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INTRODUCTION

The objective of advanced dental practice is to restore the patient to normal function, aesthetics, and phonetics.[1] The increasing use of dental implants is an attempt to fulfill these objectives in dental practice since last few decades.[2] In the recent years dental implants has gained popularity within the dental community and extensively recognized as a prosthetic treatment option of complete or partially edentulous and completely patients.[3] Many longitudinal studies have confirmed the long-term success and survival of dental implant as a prosthetic option, which has increased the prevalence of dental implant treatment exponentially.[4] Most of the patients treated by dental implants have revealed improvement in the quality of lifestyle and confidence.

Studies in recent years have revealed that the acceptance of implant therapy is increasing in both partially edentulous and completely edentulous patients. Nearby et al has conducted a study in Sweden in two parts over the course of ten years. At the time of the first survey in 1989, about 32% of participants stated a desire for implant therapy, which was dramatically increased to 95% in the second survey i.e in 1999.[5,6] A study on patient's attitude after dental implant therapy revealed that the majority of patients were ready to accept implant treatment again if needed and their oral health and self-confidence had increased significantly.[7] Another study conducted among Saudi population showed that about 76% willing to undergo the same treatment again and 79% would recommend it to the others.[8]

Many surveys are available in the literature, to evaluate a patient's awareness of dental implants therapy. The level of awareness and knowledge is varied among several surveys conducted across different countries. A survey conducted by Zimmer et al, in the American population, revealed a high awareness rate and positive attitude towards oral implant treatment. participants for the survey also agreed that esthetic results are better with implant therapy.[9] A survey conducted on 379 participants in Riyadh, Saudi Arabia revealed that 66.4% of the participants were aware of the dental implants as a treatment option.[10] Another study conducted in Malaysian population showed that, among 1013 participants, 772 (76%) were aware of dental implant as a treatment option.[11] A study conducted in Finland showed that, the level of awareness of implant treatment among selected groups was 29%[12], whereas survey from Australia showed a higher level of awareness of about 64%.[13]

Implant therapy is an elective procedure. Complete information on implant therapy and all other treatment options should be provided to the patient so that they can make a decision to choose the most appropriate option.[14] A survey on the Australian population disclosed that dentists are the principal source of information on dental implants to the patients followed by friends and print media and the general practitioners. Also, of those interested in gaining more information regarding implants, a majority of them wanted it from the dentists.[15] In another nationwide survey of the Indian population, it was concluded that information about dental implants was mainly provided by the dental surgeon.[16] Results from the other studies showed that the subject's friends and their relatives were the main sources of information about dental implants, whereas dentists were the secondary source of information.[10,11]

To the best of author's knowledge, there is no existing literature regarding the patient's knowledge, awareness about dental implants in the Southern region of Saudi Arabia. Therefore-the aim and objectives of the present study are to-
1) evaluate the knowledge regarding dental implants among the selected populations-
2) evaluate the sources of information concerning the dental implant as a treatment option-
3) evaluate the level of acceptance of dental implants as a treatment option.

MATERIALS AND METHODS

The present one-point, cross-sectional survey was conducted from 15th October 2016 to 26th February 2017. A total of 712 patients were randomly selected from the outpatient department of various government dental hospitals. A self-explanatory standardized questionnaire

comprising of 15 questions was designed to assess and compare patient's knowledge, acceptance and attitude towards dental implants in the Southern region of Saudi Arabia.

The questionnaire comprised of four main domains: **1)**Demography-age, occupation and educational status of the participants. **2)**Knowledge of the participants towards dental implant treatment. **3)**The attitude of the participants towards implant therapy- **4)**Participant's acceptance of implant therapy. A pilot test was performed on 15 participants to evaluate the efficacy of the questionnaire. The questionnaire was prepared in English as well as Arabic language considering the population in the area. Only Saudi national population was selected for the survey while other nationalities were excluded from participating.

The sample size was calculated depending on the following formula;[12]

$$\frac{\frac{Z^2 \cdot p(1-p)}{e^2}}{1 + \left(\frac{Z^2 \cdot p(1-p)}{e^2 N}\right)}$$

Where:

$Z = Z$ value (1.96 for 95% confidence level)

p = percentage of picking a choice expressed as a decimal (0.5)

This was found to be 50% for the present study which was expressed as 0.50.

e = confidence interval, expressed as decimal (0.05)

N = total population of the region

By using the above formula- the minimum sample size calculated was 384.

The study protocol was presented to the Institutional Ethics Committee (IEC) and ethical clearance was obtained from them. The importance of the study was explained verbally to the participants and written informed consent was obtained before completion of the questionnaire form. The questionnaire did not contain the name of the participants; thus the confidentiality of the participants was maintained. The questionnaires were distributed among the participants during their hospital visits, and the research team members coordinates were around to answer any queries related to the questionnaire.

All the hypotheses were formulated using two-tailed alternatives against each null hypothesis (hypothesis of no difference). The entire data was statistically analyzed using the Statistical Package for Social Sciences (SPSS)-version 21.0- (IBM Corporation, USA) for MS Windows. Chi-square test was executed to compare the descriptive data. P value- <0.05 was taken as statistically significant.

RESULTS

Out of 712 participants, 685 completed the survey with a response rate of (96.20%). Among the 685 responses received, 10 were incomplete and thus excluded from the survey. Therefore 675 complete responses were selected for the final statistical analysis. Table 1 provides a detailed summary about the demographic data of the surveyed individuals. Out of 675 participants, 59.1% were males and 41.9% were females with an average age of 39.6 years old. Majority of the participants (48%) belonged to a young adult category. Figure 1 presents the distribution of overall knowledge of the surveyed participants.

Table 1. Demographic distribution of the participants.

	Frequency (n)	Percentage (%)
Gender		
Male	392	58.1
Female	283	41.9
Age		
Adolescence (10-19)	140	20.7
Young Adult (20-35)	324	48.0
Middle Age Adult(36-49)	189	28.0
Old Age Adult (50-onwards)	22	3.3
Education		
Primary School	42	6.2
Secondary School	284	42.1
Bachelor degree	302	44.7
Master degree	47	7.0
Occupation		
Students	219	32.4
Housewife / Unemployed	137	20.3
School / University Teacher	115	17.0
Professionals	59	8.7
Business	29	4.3
Government Employee	115	17.0
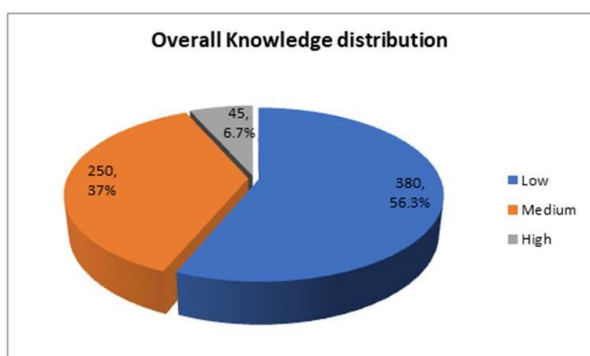
Figure 1. Overall distribution of knowledge among the participants.
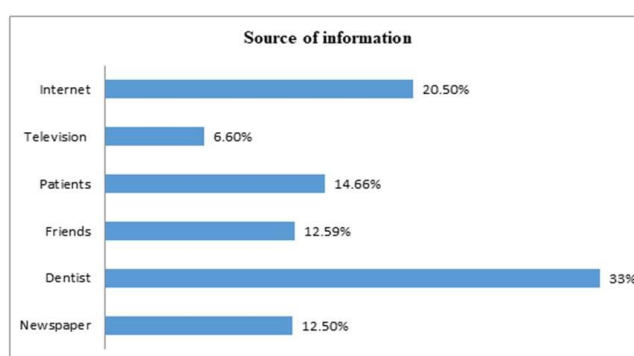
Figure 2. Distribution of source of information related to implant therapy among the participants.

In response to the question about alternatives to replace missing teeth, 94.8% of the participants were aware about one of the modality used for the replacement of missing teeth. Majority of them were aware about removable and fixed partial denture. For the question about advantages of fixed over removable prosthesis, 60.4% of the participants opted that fixed prosthesis has more esthetic outcome and they resembles natural teeth. Out of all participants, 69.33% had heard about the dental implant terminology, and they were aware of it as a treatment option. The dentists were the main source of information about dental implants in 31.5% of the questioned participants- followed by internet in 20.5% and patients in 14.6% (Figure 2).

Table 2 represents a detailed distribution and comparison of knowledge with respect to gender, age, education, and occupation.

Table 2. Distribution and comparison of knowledge category with respect to different variables among the participants

Variable categories			Knowledge category			p Value
			Low	Medium	High	
Gender	Male	% within Gender	56.4%	34.4%	9.2%	0.005*
		% of Total	32.7%	20.0%	5.3%	
	Female	% within Gender	56.2%	40.6%	3.2%	
		% of Total	23.6%	17.0%	1.3%	
Age	Adolescence	% within Age	63.6%	31.4%	5.0%	0.119
		% of Total	13.2%	6.5%	1.0%	
	Young Adult	% within Age	52.5%	41.0%	6.5%	
		% of Total	25.2%	19.7%	3.1%	
	Middle Age Adult	% within Age	55.6%	35.4%	9.0%	
		% of Total	15.6%	9.9%	2.5%	
	Old Age Adult	% within Age	72.7%	27.3%	0.0%	
		% of Total	2.4%	0.9%	0.0%	
Occupation	Students	% within Occupation	55.7%	37.4%	6.8%	0.000*
		% of Total	18.2%	12.2%	2.2%	
	Housewife / Unemployed	% within Occupation	70.4%	27.4%	2.2%	
		% of Total	14.2%	5.5%	0.4%	
	School / University Teacher	% within Occupation	53.9%	42.6%	3.5%	
		% of Total	9.3%	7.3%	0.6%	
	Professionals	% within Occupation	35.6%	40.7%	23.7%	
		% of Total	3.1%	3.8%	2.6%	
	Business	% within Occupation	55.6%	25.9%	18.5%	
		% of Total	2.2%	1.0%	0.7%	
	Government Employee	% within Occupation	53.9%	31.3%	14.8%	
		% of Total	9.3%	5.4%	2.5%	
Education	Primary School	% within Education	81.0%	19.0%	0.0%	0.000*
		% of Total	5.0%	1.2%	0.0%	
	Secondary School	% within Education	64.8%	28.2%	7.0%	
		% of Total	27.3%	11.9%	3.0%	
	Bachelor Degree	% within Education	48.3%	45.4%	6.3%	
		% of Total	21.6%	20.3%	2.8%	
	Master Degree	% within Education	34.0%	53.2%	12.8%	
		% of Total	2.4%	3.7%	0.9%	

*p Value <0.05 =Significant

Knowledge was divided into 3 categories; low, medium and high- depending on the percentage of correct response to the questions. Knowledge was considered as high, medium or poor, if the correct response selected by respondents were more than 70%, between 50-70% and less than 50%- respectively. All the variables except for age showed- statistically significant difference in the knowledge about implant among the study participants (p<0.05). When asked about the previous exposure to implant therapy, 19.6% of the participants provided a positive response. Out of 123 participants who have received implant therapy in the past, 66% were satisfied, 26% were partially satisfied and 8% were unsatisfied with the results of therapy (Figure-3). Figure 4 shows the detailed distribution of the perception among the participants towards dental implant therapy.
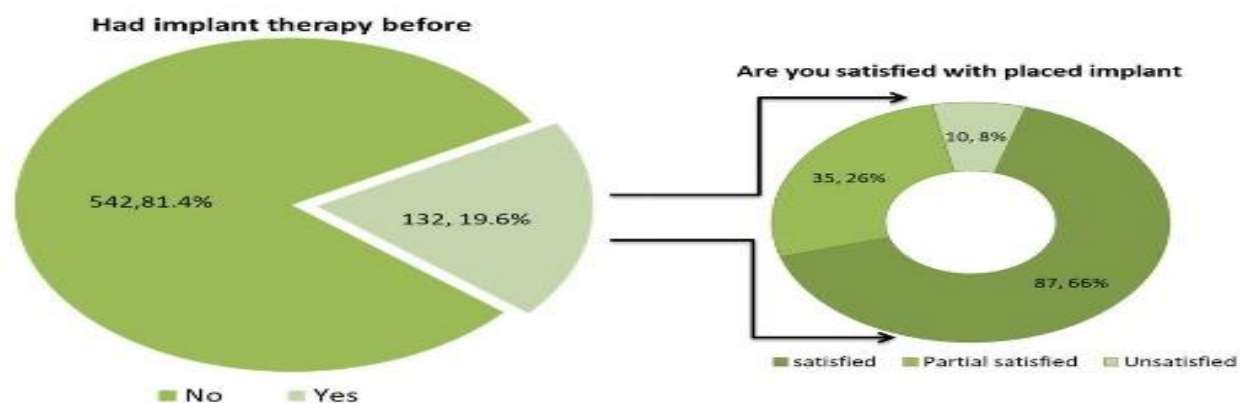
Figure 3. Acceptance and satisfaction related to implant therapy among participants.
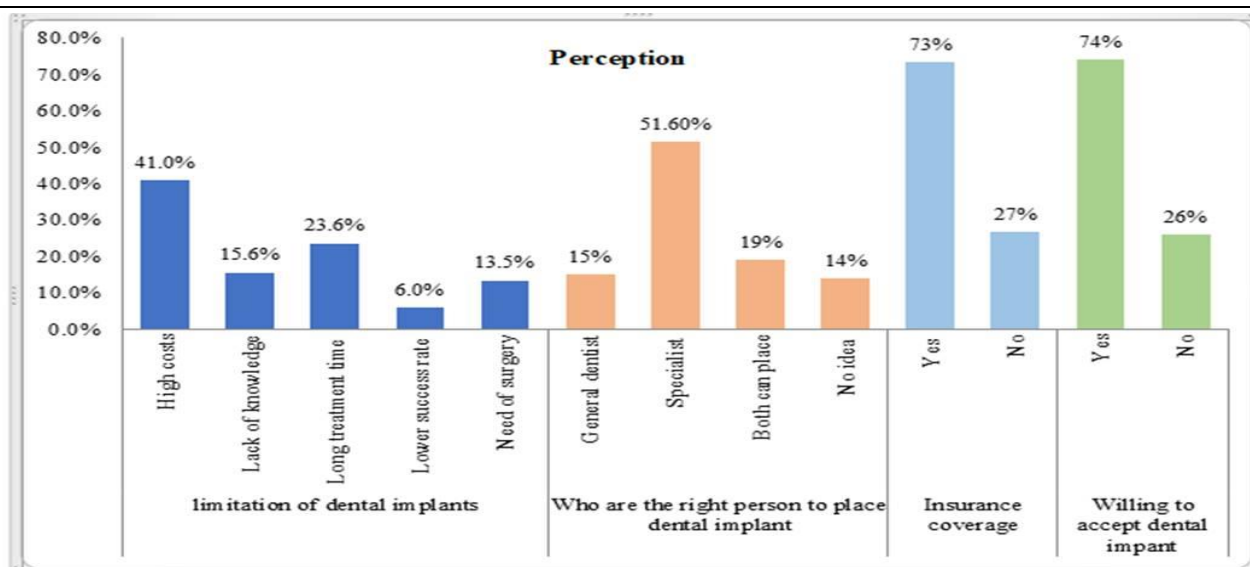
Figure 4. Distribution of participants' perception regarding dental implant therapy.

DISCUSSION

In the recent years dental practice has changed enormously due to the incorporation of dental implant as a treatment option. Dental implant is becoming a popular treatment modality in the general population with a long-term of success and higher patient satisfaction. In the last few years- a dental implant is gaining popularity and acceptance in the Southern region of Saudi Arabia. To the best of author's knowledge, this is the first survey conducted in the Southern region of Saudi Arabia to evaluate the knowledge, perception, and acceptance of dental implant.

In the present study, 69.33% of the participants were aware of the dental implant as a treatment modality. This findings is in accordance with the other studies conducted by Shivani *et al.*[11]- Tepper *et al.* [17], and Sulieman *et al.*[10], which reported awareness about 76.2%, 72%, and 66.4%- respectively. A study conducted by Ceyda *et al.*[18], in the Turkish population had contradicting results, with an awareness of only 45%. Most of the patients from the study group felt that fixed prosthesis is better and appears more natural than a removable prosthesis. These findings are in consistent with the study done by Tepper *et al.*[17], and Ceyda *et al.*[18] In the present survey- the major source of information dentists (33%)- followed by internet (20.5%) and patients (14.66%). The present information sources resemble those reported by Ceyda *et al.*[18], and Pommer *et al.*[15] However, Zimmer *et al.*[9], reported news media and Sulieman *et al.*[10],

reported friends and their relatives as the main source of information.

The knowledge of the participants was evaluated by asking six questions with a score range of 0-6. Knowledge was considered as high if correct answers were more than 70 %, medium if between 50-70% and poor if less than 50%. The results of the survey showed that the difference in the knowledge between gender was statistically significant (p<0.005), males reported higher knowledge score than females. While considering age as a variable, there was no statistically significant difference among the different age group (p>0.119), but young age adults showed better knowledge score compared to other age groups. This can be related to the fact that the younger generation has more interest in dental implant treatment. A significant difference was reported related to the knowledge of implant in educational and occupational groups (p<0.05). The knowledge score was higher in the professionals and highly educated participants. Similar results were observed in the study conducted by Ceyda *et al.*[18], and Chowdhary *et al.*[16], in which they found that high level of education coupled with a reasonably higher income have a positive influence on the knowledge.

This survey showed that about 19.6% of the patients have had implant therapy in the past. There was a significant difference in gender where, 12.6% of the male and 7% of the female patients have received implant therapy for

replacement of their missing teeth. Young adults and high educational group participants (10.2%) received significantly more implant therapy as related to the other comparable groups. Out of 132 participants who received dental implants, 66% were satisfied, 26% were partially satisfied and 8% were unsatisfied with the therapy. A similar result was observed in studies conducted by Moghadam *et al.*[19], and Al- Radha *et al.*[20], which showed 85-96% and 86% satisfaction rate-respectively.

In response to a question about the limitation to receive implant therapy, the high cost of the implant was opted by the majority (41%) of the participants, followed by long treatment time (15.6%) and lack of knowledge (13.5%). A study conducted by Ceyda *et al.*[18], in Turkish population concluded high coast of the treatment as the strongest argument factor for not choosing implant therapy. A study by Sulieman *et al.*[10], found fear as a major barrier against implant therapy. When participants were asked about the right person to place a dental implant, the majority (51.6%) of them believed that it should be done by specialists. Among the entire respondent, 73% believed that dental implant treatment should be covered under insurance. A study conducted by Chowdhary *et al.*[16], found in their study that, 96% of the participants were in favor of insurance of dental implant. Male patients favor of insurance coverage for the dental implant more compared to the female patients. Almost three fourth of the studied populations were willing to accept dental implant as a treatment option in the future. In addition patients with young age and high education group showed more interest in receiving the implant therapy in the future

CONCLUSIONS

Within the limits of the present study, it can be established that population from the Southern region of Saudi Arabia has medium/moderate knowledge about the dental implant treatment. Dentists were found to be the most important source of information to the patients, thus indicating the importance of dentists in spreading the information and give counseling to the patients regarding dental implant treatment. The high charge for implant treatment is one of major

barriers for not choosing dental implant therapy. To overcome this barrier, dental implant should be covered under the insurance company so that the majority of the population may get benefit out of this advanced treatment option. Spreading awareness in the general population regarding dental implants can help in abolishing any negative perception of the treatment that may have been due to inadequate knowledge and information.

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