

Knowledge, Attitude, and Awareness Regarding Dental Implants among Young Patients Visiting Al-Farabi Hospital

Sultan Ali Alanazi, Khalid Tawfik A Alduaiji, Abdulmajeed Sultan Al-Enazi, Mohammad Yahya Assiri, Khalid Saad Saleh Almagham, Abdulaziz Khaled Alnwaihel

Al-Farabi Hospital, Riyadh, Saudi Arabia

Abstract

Background: Dental implants are considered to be the best treatment for complete or partial edentulous. This treatment strategy provides more stability and functioning to the patients. Patients widely accepted the dental implants and are satisfied with it. However, the knowledge and awareness about dental implants vary between countries as well as individuals. Aim: To evaluate knowledge, attitude, and awareness about dental implants between young age patients. Methodology: The study included 203 participants from Al-Farabi Hospital. A questionnaire was used to investigate the patients' information and opinions. Analysis of data was performed using SPSS software with ($p < 1$). Results: The majority of participants knew about dental implants and had the desire to know more about it; they also showed that they would choose dental implant treatment. Conclusion: Excellent knowledge, awareness, and attitude was recorded in young patients

Key Words: Dental implants knowledge, Attitude toward dental implant, Survey on dental implant

Introduction

A dental implant is an inserted artificial root to support the complete denture, single tooth replacement or maxillofacial prosthesis [1]. It is the best treatment method for single or multiple missing teeth [2]. Dental implants became a solution for wholly or partially edentulous patients to restore their appearance, health, and functioning including speech, as losing teeth has the psychological and functional effect on person's life [3,4].

Dental implants are associated with improved stability, denture retention, functional efficiency and quality of life [5]. It was reported that patients highly accepted dental implants [5]. In a study, it was found that self-confidence increased in 88% of patients after implant treatment and 98% stated that their oral health had improved [6]. This success and satisfaction of dental implants [7] in turn results in a widespread of dental implants within the dental professional community [8].

In the recent decades, dental implantology has developed in Europe and the USA [9]. In Japan, facilities for dental implant treatment occupy 16.6% of dental clinics, reflecting the increasing popularity of this method [10], while worldwide, each year there are one million implants being placed [11]. Usage of dental implants is increasing in many developing countries [3]. However, the thoughts and knowledge of patients about dental implants varies between individuals [3] and countries [5]. In 1992 in America, public awareness and positive attitude toward dental implants were found [12]. In developing countries, the lack of education, as well as knowledge about dental implants as a dental treatment among a population, represents a significant problem [13]. In India, the majority of patients did not hear about dental implants as a treatment option [11], while in another study only 38% had awareness about dental implants [14].

We should note that this lack in awareness is not sufficiently restricted to the developing countries, but is found that the level of knowledge of dental implant treatment procedures in participants were 29% and 64% in Finland and

Australia respectively [15,16]. In a survey report from Australia, the awareness for dental implants was 72%, however only 4% were well-informed about dental implants [17]. In a study by Al-Johany et al. [5] in Saudi Arabia, they found that the general public did not have knowledge that dental implant was a treatment for their missing teeth. More than half of participants in the study did not know if their dentists used dental implants, but 66.4% were aware of dental implants. Using dental implants to replace lost teeth is considered to be an excellent experience for patients. However, awareness of patients is dispersed [6]. Awareness and knowledge about dental implants to patients should be performed to enable the patient to choose the most appropriate option [18], where the dental implant is an elective treatment strategy [19]. Also, awareness of patients can prevent the formation of the negative image of dentist [17]. So, in this study, we aimed to investigate knowledge, attitude as well as awareness of patients about dental implants.

Materials and Methods

Subjects

This cross-sectional observational study performed on 203 patients visiting Al-Farabi Hospital in the period from 11th April 2017 to 25 the April 2017. A consent form was obtained from each participant in this study.

Patient's Questionnaire

A standard questionnaire of 21 questions was made. The questions are divided into four parts.

Part 1 included: 3 questions of demographic data which involved age, gender, and marital status.

Part 2 included: 6 questions to investigate the level of knowledge about dental implants, which involved different ways of replacing missing teeth, information about dental implants, source of information, duration of dental implants, disadvantages about implants.

Corresponding author: Sultan Ali Alanazi, Al-Farabi Hospital, Riyadh, Saudi Arabia, Tel: +966546633891; E-mail: mr.night3@gmail.com

Part 3 included: 5 questions to assess the attitude of responders toward dental implants that included the interest of knowing more about the dental implants, the source of information, importance of functional outcome of implants, amounts that can be paid over implants, and importance of dentist in treating implants.

Part 4 included: 7 questions in investigating awareness of patients about dental implants, which included oral hygiene for implant-tooth more than normal-tooth, preference replacing normal teeth with implant teeth, need for dentist to provide implants, up-to-date dental implants used by their dentist, effect of implant treatment compared to others, advantages of permanent versus removable dentures, the part of the jaw in which the teeth is anchored.

Data Analysis

Data were statistically described in terms of mean \pm standard deviation (\pm SD), or frequencies (number of cases) and percentages when appropriate. Comparison between the study groups was done using Chi-square (χ^2) test. Exact test was used instead when the expected frequency is less than 5. p values less than 0.05 was considered statistically significant. All statistical calculations were done using computer program IBM SPSS (Statistical Package for the Social Science; IBM Corp, Armonk, NY, USA) release 22 for Microsoft Windows.

Results

This study included 203 participants; 64.5% were male (131), 35.5% were female (72) (Table 1).

Table 1. The total number of participants.

Total number of participants	Male	Female
203	131(64.5%)	72(35.5%)

The participants were the youth with age range (mean \pm SD) 19-36 years (25.8 ± 3.389). Most of the individuals were the widow with a percent of 65.5% (133), followed by less percent of married individuals 30% (61), whereas there were 3.4% (7) single individuals and only 1% (2) divorced (Table 2).

Table 2. The category percentage of patients.

Category	Percentage
Single	3.40%
Married	30%
Widow	65.50%
Divorced	1%

The second part of the questionnaire included six questions to investigate the level of knowledge about dental implants. Question 1 in this part investigates the degree of knowledge about different ways of replacing missing teeth; 47.3% (96 persons) were well informed, 41.4% (84) were moderately informed while 11.3% (23) were not informed at all; regarding

sex, there was a significant difference found (P-value=0.001) (Table 3).

Table 3. Degree of knowledge about replacing the missing tooth.

Degree of knowledge about replacing the missing tooth	Percentage
Well Informed	47.30%
Moderately Informed	41.40%
Not Informed	11.30%

Question 2 was if participants heard about dental implants; a very high percent of participants (90.6%) heard about dental implants whereas 9.4% only did not hear about it, there was a significant difference regarding male and female (P-value=0.001) (Table 4).

Table 4. Degree of knowledge about dental implants.

Degree of knowledge about dental implants	Percentage
Have Knowledge	90.60%
No Knowledge	9.40%

In question 3, the participants who heard about dental implants mentioned their source; most of them heard from the dentists 54.1%, while less percent heard from their friends 30.1%. 6.9% heard from newspapers and 8.9% heard from another source, also there was a significant difference between male and female participants (P-value=0.001) (Table 5).

Table 5. Source of information about dental implants.

Source of information about dental implants	Percentage
Dentists	54.10%
Friends	30.10%
Newspaper	6.90%
Other Source	8.90%

In question 4, 33% thought that implant last for up to 10 years, whereas 24.14% and 23.65% thought that implants last for five years and up to 20 years respectively. 19.21% thought that implant last for a lifetime, and there was no significant difference regarding male and female (P-value=0.056). In question 5, many of responders thought that implant supported denture disadvantage was of high cost (45.8%), while 29.1% thought that long treatment time was the disadvantage and 25.1% thought that its disadvantage was the need for surgery (Table 6). There was no significant difference regarding sex groups (male and female) (P-value=0.186).

Table 6. Disadvantages of implants according to patients.

Disadvantages of implants according to patients	Percentage
High Cost	45.80%
Long time treatment	29.10%

Need for surgery	25.10%
------------------	--------

In question 6, we asked about estimation of participants as a functional life of an implant; the options were <10 years, 10-15 years 21-25 years and >25 years. The percentages of answers were 48.8%, 25.3%, 36.2% and 39.5% respectively, and there was no significant difference between male and female (P-value=0.07).

Part 3 of the questionnaire included five questions to evaluate attitude toward dental implants of the responders. Comparison between male and female answers is shown in *Table 7*. The first question investigated the desire of participants to know more about implants; a high percent (87.7%) of participants desired to know more about dental implants whereas 12.3% did not want that, there was significance between male and female (P-value=0.006).

Table 7. Percentage of desire to know about the implants by the patients.

Desire to know about the implants by the patients	Percentage
YES	87.70%
NO	12.30%

In question 2, most of the participants (77.3%) preferred to know more about implants from the dentist, 6.9% preferred newspaper whereas 4.4 preferred friends to be the source of information, while 11.4 preferred other sources. There was a significant difference between males and females (P-value=0.000).

Regarding question 3, the highest percent (40.9%) of participants thought that the functional outcome of the implant was important, while 32.5% thought it was very important whereas lowest percentages 16.3% and 10.3% were recorded for answers not very important and had no idea respectively. A significant difference was found (P-value=0.01) between males and females. In question 4, we investigated attitude of participants toward paying for the implant, an equal percent of

Table 9. Description of questionnaire.

Q. Number	Male %	Female %	P-value
1) would you like to know more about implant			
Yes	68.50%	31.50%	0.006
No	36%	64%	
2) Where from would you like to get more information about implants			
Dentist	70.70%	29.30%	0
Friends	77.80%	22.20%	
Newspaper	42.90%	57.10%	
others	30.40%	69.60%	
3) How important for you is the functional outcome of implant supported prosthesis			
Not very important	48.50%	51.50%	0.01
Important	68.70%	31.30%	

35.5% was found for paying 1000S.R and 3000S.R for implants, while lower percentages 18.2% and 10.8% were found for paying 6000 S.R and 10,000S.R respectively for implants. A significant was found regarding sex (P-value=0.02).

Regarding question 5, 45.3% thought that dental implant need a specialist while lower percent 37.4% thought that the dentist who performs dental implant was more qualified than others who did not perform the process; the least percent 17.3% did not know about this matter and there was no significance difference regarding sex (P-value= 0.4).

Part 4 of the questionnaire was designed to investigate awareness of participants about dental implants, and it included seven questions. In question 1, most of the participants 66% thought that oral hygiene for caring of the implant is more than that of normal teeth, while 7.4% thought that both need similar oral hygiene. 11.8% thought that oral hygiene was less in case of the caring implant and 14.8% had no idea (*Table 8*). There was no significant difference found regarding sex.

Table 8. Percentage of importance of oral hygiene.

Importance of oral hygiene	Percentage
More to implants than normal teeth	66%
Less to implants than normal teeth	11.80%
Both implant and normal teeth	7.40%
No idea	14.80%

Regarding question 2, 77.3% of participants would like to use the implant for missing teeth while 22.7% did not prefer that, there was no significance found regarding sex. In question 3, most of the individuals 63.1% preferred the specialist dentist to perform implants, while 25.1% did not give an answer and 11.8% preferred their dentists to provide the dental implants, there was a significant difference regarding sex (P-value=0.002) (*Table 9*).

Very important	74.20%	25.80%	
No idea	42.90%	57.10%	
4) Up to which amount (S.R) are you prepared to pay as additional payment for implants			
1000SR	56.90%	43.10%	0.02
3000SR	77.80%	22.20%	
6000SR	62.20%	37.80%	
10,000SR	50%	50%	
5) Do you think that the dentist who provides implant treatment is better qualified than his/her colleagues who do not			
Yes	67.10%	32.90%	0.4
Need specialist	66.30%	33.70%	
Do not know	54.30%	45.70%	

Discussion

Nowadays, dental implants are accepted to be the prosthetic treatment of wholly or partially edentulous patients [5]. In this study, we assessed knowledge about dental implant treatment between youth in Saudi Arabia. We investigated the age, sex, and marital status; we evaluated the percentages of the answers of participants to assess their knowledge.

In the present study, a high percentage of participants (90.6%) heard about the dental implant, while in an Indian investigation, only 23.24% of urban population heard about dental implant [11]. In another Indian study, it was reported that 33% only of the participants had heard of dental implants [20]. In general, Turkish population, it was found that a vast majority of individuals were unaware of the dental implant [7]. Our results reflect the excellent knowledge of the participants.

Individuals can be provided with information about dental implant by several ways including media [5], dentists and friends. It was reported from the United States that 77% got their information from the press with little contribution from their dentists [12]. Also, a study in Japan revealed that dentists did not provide more than 20% of the information about dental implants to patients [21]. The opposite was found in our study, where 54.1% of participants get their knowledge from their dentists, while lower percentages of participants 6.9%, 8.9% was found to get their information from newspaper and other sources respectively. Also, most of our participants (77.3%) preferred to get more information from the dentist, and this shows that the dentists have a significant role in awareness of patients as patients trust them.

In a study by Tomruk et al. [7], they revealed that the source of information of the persons was mainly from a dentist, and some from media, friends, and family. In the current study, 30.1% got their information from their friends followed by 6.9% by a newspaper. In a report by Tepper et al. [22,23], they found that dentist was the source of information of 68% of participants, followed by printed media 23% and finally friends 22%.

87.7% of the individuals in this study wanted to know more about dental implant treatment, and the majority preferred to get information from the dentists. The similar was reported by

Tepper et al. [22,23], where 31% were interested in getting more information about dental implants and 75% wanted to obtain the information from their dentists. However, our percentages were higher.

Also, the majority (63%) of individuals in the current study thought that the dentists used up to date techniques in dental implants this showed the excellent thought of patients and their trust toward their dentists. In a study that was performed on Austrian general public, it was found that their source of information about implant knowledge was their dentist whereas lower percentage got information from media. However, their experience has improved [24].

The disadvantage of dental implants was the high cost (45.8%) followed by long treatment time (29.1%) and finally the need for surgery 25.1% in the point of view of our participants. Tepper et al. [22, 23] reported that the high cost was a significant disadvantage of dental implants; this is in agreement with our study. 33 % of individuals in this study thought that implant would last for up to 10 years, while the least percent 19.21% believed that implants would last for the lifetime. Also, a high percent (36.9%) thought that dental implant is functioning for 10-15 years whereas lower percent 18.7% thought that function last for more than 25 years. Our results showed better knowledge about dental implants than those in Tepper et al. [23] study, where 34% thought that the implants lasted for a lifetime and this reflects the misinformation of individuals.

In a study on the general public, it was found that more than 50% of patients thought that implants need the same care as natural teeth and 61% expected an additional payment [25]. In the present study, we found that 66% of participants thought that implants need more oral hygiene than healthy teeth, while only 7.4% thought that caring of implants as the same natural teeth. In an Austrian study [22], it was found that 44% of subjects thought that implants needed special oral hygiene or dental care. In another study [26] patients thought that implants needed more rigorous oral hygiene.

Our participants did not mind to pay additional payments, however 35.5% did not mind paying up to 1000 SR and 35.5% accepted to pay up to 3000SR; only few (10.8%) accepted to pay up to 10,000 SR. The results of a study by

Rustemeyer and Bremerich [25] revealed that 80% thought that the function of an implant-supported over dentures as very important, whereas in the present study 32.5% thought that function outcome of implant supported prosthesis was very important. 40.9% thought that it was important. In the previously mentioned study [25] it was found that 54% thought of great importance to the aesthetics, while in the current study 20.7% only considered esthetic to be an advantage of the implant and the highest percent (47.9%) thought the most advantage was that the implant less annoying in the mouth.

In Austria survey, it was found that awareness of dental implant was 72%, while 4% only were well informed. However, 42% were not informed about dental implant [23]. In the present study, high percentages were found regarded knowledge about the dental implant, where 47.3% and 41.4% of individuals were very well and moderated informed about this strategy, a higher percent (90.6%) heard about the implant.

It was mentioned that the younger public showed better awareness to dental implant strategy, while the old persons demonstrated less knowledge [3]. However, the present study included only young age individuals, so we cannot compare the results regarding age. It was recommended that dental implants should be placed even if patients are still in good health regardless of the age [27] that is why we included young age participants, although they are young, they may need to use the implant. We found that there was a significance between males and females (P -value=0.001) regarding being informed about the dental implant; males had more knowledge than females, while in a previous Saudi study [3], it was found that female individuals were more knowledgeable than males.

The qualified, trained dentist is the one who can practice dental implant treatment [3], most of the participants (37.4%) in this study thought that, while 45.3% thought that this type of treatment needs the specialist. In a Saudi study [3], the majority of participants did not know if their dentist practiced dental implants or not. Also, the majority of our participants preferred the only specialist to perform dental implants; this shows that individuals had awareness about dental implants. More than two-thirds of participants in the present study preferred and chosen to perform implant in case of missing teeth.

Conclusion

To conclude with this survey, we found a very good knowledge, attitude, and awareness of individuals toward dental implants. Most of the participants heard about dental implants, and they were well informed mainly by their dentists. They wanted to know more about dental implants from their dentists, and they cared about the functioning outcome of the implant. Also, most of them showed that they prefer to choose dental implants. However, more knowledge and awareness should be provided to individuals by their dentist as they have some misconceptions, such as the high cost of dental implants. This reason was the most common disadvantage according to participants. Also, we can conclude that dentists play an essential role in the patient's awareness,

so the dentists should be the source of information for patients as patients trust them. In general, males had more knowledge and awareness than females, but this may return to the fact that the number of males was more than the number of females in this study.

References

1. Brunski JB. In vivo bone response to biomechanical loading at the bone/dental implant interface. *Advances in Dental Research*. 1999; **13**: 99-119.
2. Malik A, Afridi J, Ehsan A. Knowledge, perception and choice of dental implants as a treatment option for patients visiting the university college of dentistry, Lahore – Pakistan. *Pakistan Oral and Dental Journal*. 2014; **34**: 560-563.
3. Al Hashim H, Saleh F, AlEssa R, Taher Y, Khalifa M, et al. Knowledge and Awareness of Dental Implants: A Survey Done among Saudi General Public. *Donnish Journal of Dentistry and Oral Hygiene*. 2017; **3**: 19-26.
4. Awooda EM, Eltayeb AS, Hussein SA, Dayelnaiem SI, Abdelhamied MA, et al. Knowledge, Attitude and Acceptance of Dental Implants among Patients Attending Khartoum Dental Teaching Hospital. *IOSR Journal of Dental and Medical Sciences*. 2014; **13**: 19-23.
5. Al-Johany S, Al Zoman HA, Al Juhaini M, Al Refeai M. Dental patients' awareness and knowledge in using dental implants as an option in replacing missing teeth: A survey in Riyadh, Saudi Arabia. *The Saudi Dental Journal*. 2010; **22**: 183-188.
6. Grogono AL, Lancaster DM, Finger IM. Dental implants: a survey of patients' attitudes. *Journal of Prosthetic Dentistry*. 1989; **62**: 573-576.
7. Tomruk CO, Özkurt-Kayahan Z, Şençift K. Patients' knowledge and awareness of dental implants in a Turkish subpopulation. *Journal of Advanced Prosthodontics*. 2014; **6**: 133-137.
8. Berge TI. Public awareness, information sources and evaluation of oral implant treatment in Norway. *Clinical Oral Implants Research*. 2000; **11**: 401-408.
9. CE M. What you don't know can hurt you (and your patients). *Dentistry Today*. 2002; **19**: 70-73.
10. The national health and nutrition examination survey in 2011. Ministry of Health, Labour and Welfare. [In Japanese]
11. Chowdhary R, Mankani N, Chandraker NK. Awareness of dental implants as a treatment choice in urban Indian populations. *The International Journal of Oral and Maxillofacial Implants*. 2010; **25**: 305-308.
12. Zimmer CM, Zimmer WM, Williams J, Liesene J. Public awareness and acceptance of dental implants. *The International Journal of Oral and Maxillofacial Implants*. 1992; **7**: 228-232.
13. Saha A, Dutta S, Vijaya V, Rajnikant N. Awareness among patients regarding Implants as a treatment option for replacement of missing teeth in Chhattisgarh. *Journal of International Oral Health*. 2013; **5**: 48.
14. Kumar CR, K Pratap GV. Dental Implants as An Option in Replacing Missing Teeth: A Patient Awareness Survey in Khammam, Andhra Pradesh. *Indian Journal of Dental Sciences*. 2011; **3**: 33-37.
15. Salonen MA. Assessment of states of dentures and interest in implant-retained prosthetic treatment in 55-year-old edentulous Finns. *Community Dentistry and Oral Epidemiology*. 1994; **22**: 130-135.
16. Best HA. Awareness and needs of dental implants by patients in New South Wales. *Australian Prosthodontic Journal*. 1993; **7**: 9-12.
17. Tapper G, Haas R, Mailath G, Teller C, Zechner W, et al. Representative marketing oriented study on implants in the Austrian population. Level of information, source of information and need for patient information. *Clinical Oral Implants Research*. 2003; **14**: 621-633.

18. Guyatt GH, Cook DJ. Health status, quality of life, and the individual. *The Journal of the American Medical Association*. 1994; **272**: 630-631.

19. Zitzmann NU, Sendi P, Marinello CP. An economic evaluation of implant treatment in edentulous patients: preliminary results. *The International Journal of Prosthodontics*. 2005; **18**: 20-27.

20. Suprakash B, Ahammad A, Yusuf R, Amit T, Raghavendra K, et al. Knowledge and attitude of patients toward dental implants as an option for replacement of missing teeth. *Journal of Contemporary Dental Practice*. 2013; **14**: 115-118.

21. Akagawa Y, Rachi Y, Matsumoto T, Tsuru H. Attitudes of removable denture patients toward dental implants. *Journal of Prosthetic Dentistry*. 1988; **60**: 362-364.

22. Tepper G, Haas R, Mailath G, Teller C, Zechner W, et al. Representative marketing-oriented study on implants in the Austrian population. I. Level of information, sources of information and need for patient information. *Clinical Oral Implants Research*. 2003; **14**: 621-633.

23. Tepper G, Haas R, Mailath G, Teller C, Bernhart T, et al. Representative marketing-oriented study on implants in the Austrian population. II. Implant acceptance, patient-perceived cost and patient satisfaction. *Clinical Oral Implants Research*. 2003; **14**: 634-642.

24. Pommer B, Zechner W, Watzak G, Ulm C, Watzek G, et al. Progress and trends in patients' mindset on dental implants. I: level of information, sources of information and need for patient information. *Clinical Oral Implants Research*. 2011; **22**: 223-229.

25. Rustemeyer J, Bramerich A. Patient's knowledge and expectations regarding dental implants: assessment by questionnaire. *International Journal of Oral and Maxillofacial Surgery*. 2007; **36**: 814-817.

26. Muller F, Wah G, Fuhr K. Age-related satisfaction with complete dentures, desire for improvement and attitudes to implant treatment. *Gerodontology*. 1994; **11**: 7-12.

27. Muller F, Salem K, Barbezat C, Herrmann FR, Schimmel M. Knowledge and attitude of elderly persons towards dental implants. *Gerodontology*. 2012; **29**: 914-923.