

Patient Awareness and Attitude toward Replacing Missing Teeth with Dental Implants

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ABSTRACT

Aims and background: To assess the knowledge level and attitude of the Saudi population toward the use of a dental implant as alternative treatment for replacing missing teeth.

Materials and methods: A questionnaire-based study will be performed on 100 patients, both male and female, ranging in age from 20 to 50 to assess the Saudi population's degree of attitude and expertise on replacing missing teeth with implants. Researchers conducted in-person interviews with respondents using questionnaires that are administered by researchers. A paper and pen version of the questionnaire will be provided.

Results: The awareness of dental implants among the 100 participants increased between the ages of 20 and 30, additionally with high educational levels males and females. Social media and advice are sources of information for both sexes. The primary issue with implants, for both males and females, is their high cost.

Conclusion: Adequate knowledge for patient and attitude toward dental implant as substitute for lost tooth. To ensure accurate scientific data, to ensure accurate scientific data, dentists should take an active role in educating and counseling potential implant patients.

Study's significance: Dental implants are reorganized as a prosthetic treatment for partially and completely edentulous patients. The dentists play important role in this aspect and this can be achieved by conducting educational programmers for patients.

Implications: Awareness of patients toward missing teeth and its sequence requires more emphasis, special efforts are needed to improve the knowledge of dental implants among the less educated population.

Keywords: Awareness, Dental implant, Missing teeth.

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INTRODUCTION

Tissue loss caused by caries, periodontally disease, endodontic failure, maxillofacial trauma, and iatrogenic factors is a prevalent condition. It can be upsetting and painful to lose a tooth, and is considered as a crucial incidence requiring significant adaptation on a social and psychological level. As result of the loss of a significant body component, the World Health Organization categorizes edentulous individuals as having physical impairments.¹

Natural tooth loss frequently causes disability because it impairs basic everyday functions like speaking and eating. It can also cause physically challenging because the embarrassment associated with tooth loss decreases social participation, for instance, by decreasing social involvement due to embarrassment associated with the presence of missing teeth.² Prosthetic dentistry has a significant impact on a patient's life. In terms of both look and usefulness, it improves the patient's comfort by replacing missing teeth utilizing a variety of techniques, it enhances the patient's comfort in terms of both appearance and functionality.³

An artificial root called a prosthetic implant that is inserted through surgery into the jawbone to support a fixed partial denture, single-replacement tooth, or maxillofacial prosthesis. As more patients undergoing treatment with implant-supported prostheses indicated improvements in their assurance, standard of life, and overall well-being, it has become more and more crucial. Self-confidence, psychological advantages, and also preservation of the dental structure surrounding the teeth that need to be replaced.

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Because of this treatment's high success rate and predictability, its therapeutic value is rapidly expanding.⁴

The patient's preference and priority should be taken into consideration when choosing a course of treatment rather than relying solely on a clinical examination or a dentist's consultation. The majority of the time, the ultimate choice is determined by

the patient's financial status, educational levels, awareness, and familiarity with the available treatment options available to them.⁵ Thus, assessing the patient's knowledge about dental implants as a replacement for lost teeth is the purpose of this research.

MATERIALS AND METHODS

Study Design

A study using a questionnaire was conducted on 100 (male and female) patients between the ages 20 and 50 years old to determine the Saudi population's level of knowledge, information sources, and attitudes toward implant-based tooth replacement. Questionnaires were accomplished in dental clinics. The questionnaire consists of 10 questions, was given to randomly selected participants in order to evaluate their degree of dental implant knowledge, their sources of information about these treatments, and their attitudes toward dental implants in comparison to other conventional treatment methods.

This included questions about the awareness on the prevalence of dental implants, the patient awareness about dental implants and how they learnt about it, various questions about awareness of implant and site of implant. The questions were depending on simple answers that each subject could answer easily by choosing any of the options that are given accordingly.

Participant Selection

We also made an effort to assess the participants' age, gender, and educational attainment as sociodemographic factors. Every responder was made aware of the study's purpose. The survey will be given out in paper copy format. The gathered data were tabulated and subjected to statistical analysis.

Inclusion and Exclusion Criteria

Inclusion criteria were as follows: Age group 20-year-old patient or older, not in-patient, and with lack of the previous dental implants experience, and participants who are willing to participate in the study. The study's reported exclusion criteria include patients who are mentally or physically impaired, elderly and uncooperative, younger patients. Individuals unwilling to adhere to the study's guidelines were not allowed to participate and those people who work in dental-related fields (dental assistants, dental hygienists, dental surgeons, dental students, and dental technicians).

Data Collection

The questionnaire was completed in both Arabic and English to accommodate individuals with varying educational backgrounds in terms of reading and comprehension abilities. For a duration of 2 months, this descriptive cross-sectional study assessed patients' attitudes and knowledge regarding dental implants as a potential substitute for lost teeth. The college granted ethical permission for the data collection beforehand, and each participant provided informed consent.

Ethical Consideration

Before conducting the study, an ethical approval was obtained from Buraydah Private Colleges Ethical Committee and Scientific Research Center, the approval number was (005/2022) and a written consent was obtained from all participants. All the participants were informed regarding the objectives and aims of the study.

Table 1: Patient awareness toward replacing missing teeth with dental implant according to age

Characteristics	Male N = 51 (%)	Female N = 49 (%)	Test of significance
20–30 years	15 (29.4)	22 (44.9)	$\chi^2 = 2.57$ $p = 0.109$
30–40 years	23 (45.1)	20 (40.8)	$\chi^2 = 0.187$ $p = 0.665$
40–50 years	9 (17.7)	7 (14.3)	$\chi^2 = 0.210$ $p = 0.647$

χ^2 , Chi-square test

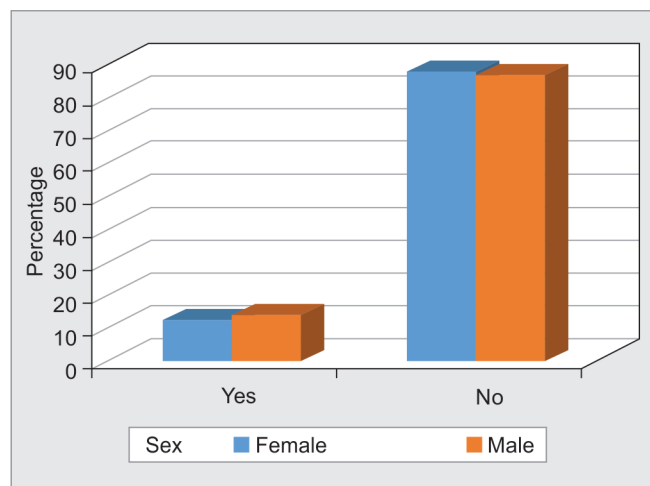


Fig. 1: Dental implant treatment before

Statistical Analysis and Data Interpretation

Version 25 of the SPSS program (SPSS Inc., PASW statistics for Windows) was used to analyze the data. The number and percentage were used to define the qualitative information. The results were assessed for significance at the (≤ 0.05) level. When appropriate, Chi-square and the Fischer exact test were utilized to compare the qualitative data between the groups.

RESULTS

One hundred patients were questioned during the period of the study. Among the 100 subjects, 51% male and 49% female. All participants are varied according to different factor as sex, education level, and age.

In the current study, it was found that there is a relation between patient awareness and age; awareness of dental implant in male group is between the age 30 and 40 years; awareness of dental implant in female group is between the age 20–30. So, according to this study, awareness and knowledge increase in between 20 and 40 (Table 1). Patient attitude toward the implant increases with high educational level (graduated in both male and female) as shown in Figure 1 and Table 2. About 90% of the participants in this study did not have implant before, but 89.8% in female will agree to make implant when missing permanent teeth (Table 3). In male, 66.7 will replace the missing permanent teeth as shown in Figure 2 and Table 4.

The most negative impression about implant is its high cost about 52.9% in female and 44.9% in male. Then the second negative

Table 2: Patient awareness toward replacing missing teeth with dental implant according to educational level

Characteristics	Male N = 51 (%)	Female N = 49 (%)	Test of significance
Read and write	1 (1.9)	0 (0.0)	FET = 0.971 p = 1.0
Student	11 (21.6)	11 (22.5)	$\chi^2 = 0.01$ p = 0.915
Graduated	29 (56.9)	25 (51.0)	$\chi^2 = 0.343$ p = 0.558
Postgraduated	10 (19.6)	13 (26.5)	$\chi^2 = 0.676$ p = 0.411

χ^2 , Chi-square test; FET, Fischer exact test

Table 3: Have you had dental implant treatment before?

	Dental implant treatment before		Test of significance
	Yes	No	
Female	6 (12.2)	43 (87.8)	$\chi^2 = 0.048$ p = 0.825
Male	7 (13.7)	44 (86.3)	

χ^2 , Chi-square test; FET, Fischer exact test

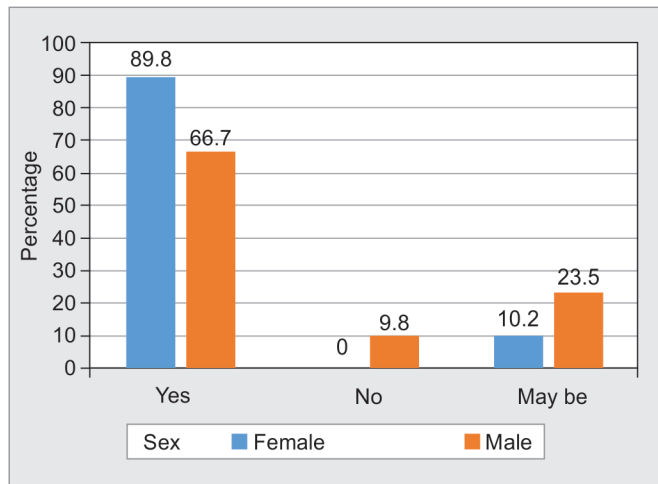


Fig. 2: Implant if you lost permanent tooth

Table 4: Will you have an implant if you lost a permanent tooth?

	Implant if you lost a permanent tooth			Test of significance
	Yes	No	May be	
Female	44 (89.8)	0	5 (10.2)	$\chi^2 = 9.13$ p = 0.01*
Male	34 (66.7)	5 (9.8)	12 (23.5)	

χ^2 , Chi-square test; *statistically significant

impression is fear from surgery (44.9% in female and 25.5% in male) as shown in Figure 3 and Table 5. Among 100 responses, 31.4% in male and 22.4% in female were very well-informed, 19.6% in male and 32.6% in female were moderately well-informed, 21.6% in male and 16.3% in female poorly informed about alternative of replacing missing teeth as illustrated in Figure 4 and Table 6.

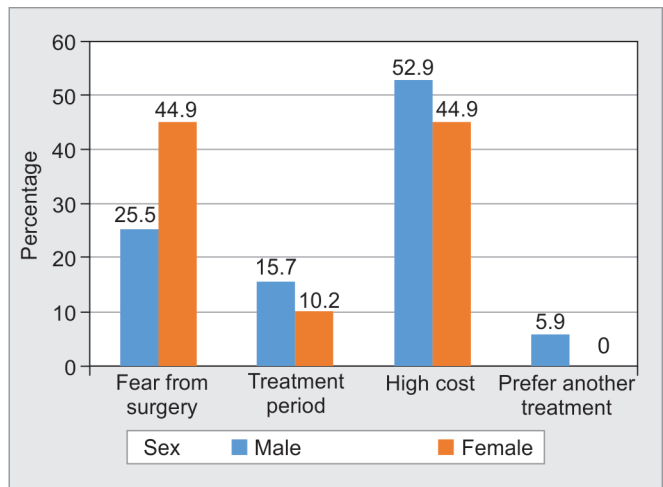


Fig. 3: Negative impression about dental implant

Table 5: The most negative impression about dental implant

	Male N = 51 (%)	Female N = 49 (%)	Test of significance
Fear of surgery	13 (25.5)	22 (44.9)	$\chi^2 = 4.14$ p = 0.04*
Treatment period	8 (15.7)	5 (10.2)	$\chi^2 = 0.664$ p = 0.415
High cost	27 (52.9)	22 (44.9)	$\chi^2 = 0.645$ p = 0.421
Prefer another treatment	3 (5.9)	0 (0.0)	FET = 2.97 p = 0.242

χ^2 , Chi-square test; FET, Fischer exact test; *statistically significant

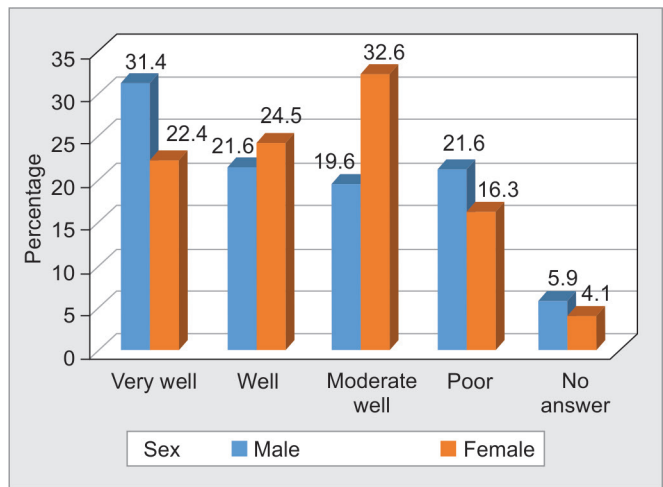


Fig. 4: Information about dental implant

According to this study, the primary source of information is social media in female and advisement in male. Secondary source in female is from family and friends, in male, the secondary source is social media. Dentist is considered the third option in male and female (Fig. 5, Table 7). When we asked about experiences with

Table 6: How well do you objectively feel informed about alternative of replacing missing teeth?

Characteristics	Male N = 51 (%)	Female N = 49 (%)	Test of significance
Very well	16 (31.4)	11 (22.4)	$\chi^2 = 1.01$ $p = 0.315$
Well	11 (21.6)	12 (24.5)	$\chi^2 = 0.120$ $p = 0.728$
Moderate well	10 (19.6)	16 (32.6)	$\chi^2 = 2.21$ $p = 0.137$
Poor	11 (21.6)	8 (16.3)	$\chi^2 = 0.446$ $p = 0.504$
No answer	3 (5.9)	2 (4.1)	FET = 0.171 $p = 0.679$

χ^2 , Chi-square test; FET, Fischer exact test

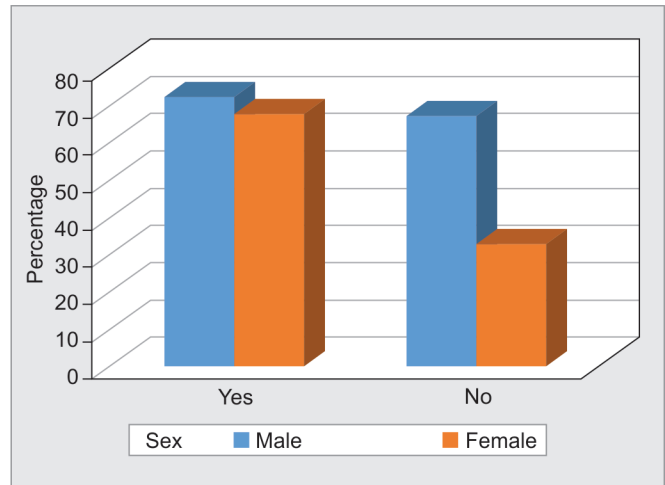


Fig. 6: Experience with implant from friends

Table 8: Have you ever heard about experiences with implants from your friends?

	Experiences with implants from your friends		Test of significance
	Yes	No	
Male	37 (72.6)	14 (67.4)	$\chi^2 = 0.322$ $p = 0.570$
Female	33 (67.4)	16 (32.7)	

χ^2 , Chi-square test

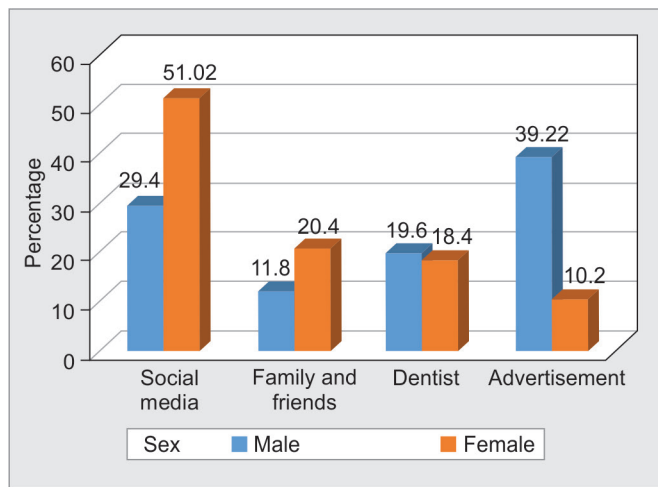


Fig. 5: Source of information

Table 7: Source of information

Characteristics	Male N = 51 (%)	Female N = 49 (%)	Test of significance
Social media	15 (29.41)	25 (51.02)	$\chi^2 = 4.86$ $p = 0.027^*$
Family and friends	6 (11.8)	10 (20.4)	$\chi^2 = 1.39$ $p = 0.238$
Dentist	10 (19.6)	9 (18.4)	$\chi^2 = 0.025$ $p = 0.874$
Advertisement	20 (39.22)	5 (10.2)	$\chi^2 = 11.22$ $p = 0.0008^*$

χ^2 , Chi-square test; FET, Fischer exact test; *statistically significant

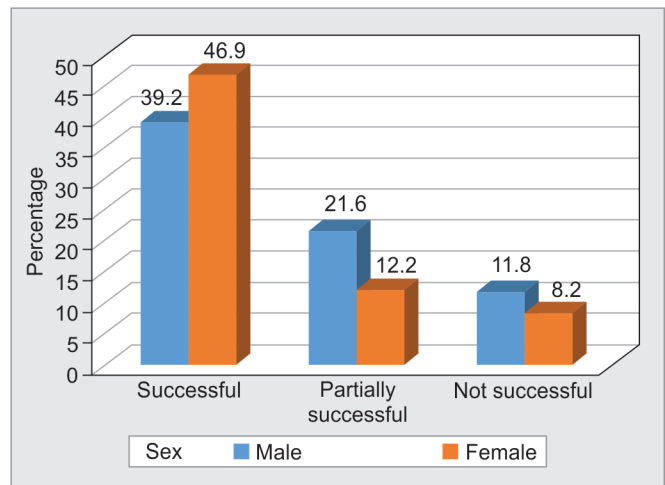


Fig. 7: Successful implant

Table 9: If yes, how successful was the implant?

Characteristics	Male N = 51 (%)	Female N = 49 (%)	Test of significance
Successful	20 (39.2)	23 (46.9)	$\chi^2 = 0.608$ $p = 0.435$
Partially successful	11 (21.6)	6 (12.2)	$\chi^2 = 1.54$ $p = 0.215$
Not successful	6 (11.8)	4 (8.2)	$\chi^2 = 0.360$ $p = 0.548$

χ^2 , Chi-square test

implants from their friends, we found that there is no scientific difference between male and female (Fig. 6 and Table 8). When we ask about how was implant successful? (Fig. 7). About 50% in female and 40% in male think that is totally successful (Table 9).

DISCUSSION

Restoring the function and esthetics of oral health is the primary concern of modern dentistry. Dental caries, gingivitis and

osseous disease can cause tooth loss. In this advancing modern era, if someone loses portion of their body, they have a sense of disability and feel disabled and vulnerable due to that they lack the confidence or ability to carry out specific tasks.⁶ Individuals were impacted not only by tooth loss but also by the functional, social, psychological, and esthetic effects. They can have notable esthetic, functional, social, and psychological effects in addition to losing their teeth, which might limit their social involvement because of embarrassment.⁷

Patients reported that fixed bridges and traditional removable dentures were the most acceptable options between the different treatment techniques for restoring missing teeth.⁸ The needs and expectations of patients were evolving along with the world and the eras. It was proposed in the late 1950s to use titanium dental implants intraorally. Implants are described as the "gold standard" in substituting for the missing teeth.^{6,9} The main advantages of implant treatment are preservation of adjacent tooth and psychological comfort, and other benefits include maintain bone density, enhancing masticatory efficiency, improving phonetics and esthetics, lowering the treatment rates; and it also lowered treatment morbidity.¹⁰

Due to all of these advantages, dental professionals now often approve dental implants. However, there is still a lack of knowledge and acceptability of the implant therapy option among patients worldwide. The current study gives information about patient awareness and attitude toward replacing missing teeth with implant. Majority of the samples who heard about implant were among 30–40 in male and 20–30 female. This was in agreement with the research performed by Kohli S et al.⁵

The findings of the current research showed that male awareness was better than female, which was comparable with the study of Suprakash B et al.¹¹ and Saha A et al.¹² Although, the result of the current study was not the same with the results of study performed by Polychronopoulou and Kawamura,¹³ Kawamura et al.,¹⁴ and Al-Nomay NA and Khalid A.¹⁵ Female escape from implant surgery by refusing the treatment.

According to educational level, it was found that graduated patients are more aware than others. This outcome is comparable with the results of other studies performed by Kohli S et al.,⁵ Suprakash B et al.,¹¹ Kaurani P and Kaurani M,¹⁶ and Hasnain F et al.¹⁷

In this survey, when we ask about who had implant treatment before, they found that about 87.8% in male and 86.3% in female did not receive implant before. About 89.8% in female and 66.7% in male will have an implant if they had lost the permanent tooth; this might be due to the concern of female with esthetic demand.

The most negative impression about dental implant in male (52.9%) is high cost; in female, both fear of surgery and high cost appear to show the same result (44.9%). Treatment period is the last negative impression in both male and female. Also, this result is similar to the results revealed by Mously HA et al.¹⁸ and Kohli S et al.⁵ High costs (80.2%), long period of treatment (41.2%), and surgical requirement (37.9%) were the most important problems of the treatment of implant regarding patients. Similar outcomes were obtained from additional experiments carried out in American and Japanese investigations.

As high costs were the main concern not to choose implant as treatment option, it is vital to highlight the patients about the quality of life. Because the word "surgery" is used, some patients believe that getting an implant involves a serious surgical procedure. The same results were obtained in most of the previous

studies mentioned by Kaurani P and Kaurani M,¹⁶ Al-Johany S et al.,¹⁹ Tepper et al.,²⁰ Kent,²¹ and Zimmer et al.²² About 11 studies overshadow the high cost of implants.

Among 100 responses, 31.4% in male and 22.4% in female were very well-informed regarding many information source about different alternatives for replacement of missing teeth. This result is not consistent with the result conducted by Kohli S et al.,⁵ which reported that most of the responses were moderately well informed.

Several sources, including journals, dentists, the internet, friends, and family, can provide information about dental implants. In this study, Social media was the primary information source. Regarding the information source, our results matched with the study done by Zimmer et al.,²² which showed that media was found to be the main source of information about dental implants. Similarly, Berge²³ and Best²⁴ also observed media as the first source followed by dentists. This result is consistent with a research performed in the United States that showed that media was found to be the primary source.

However, Al-Johany S et al.¹⁹ stated that most of the people become aware about implants by the dental professionals, which agrees with the study of Pommer et al.,⁴ Chowdhary et al.,²⁵ Satpathy et al.,²⁶ Mukatash GN et al.,²⁷ and Kumar RC et al.,²⁸ Al-Johany S et al.,¹⁹ and Arora K et al.²⁹ reported that dentists are the primary source of information.

The study conducted by Abdulrahman Alajlan et al.,³⁰ Mously HA et al.,¹⁸ and Awooda EM et al.³¹ reported that the key source of information was friends (45.5%), and this is consistent with the study done by Awooda EM et al.,³¹ Al-Johany S et al.,¹⁹ and Suwal et al.,³² and they found that friends and family provided the majority of the information concerning implants (38.2, 31.5, and 30.2%, respectively). Most of the results reveal that 50% of male and 40% of female think about implant as fully successful and also 12% in female and 21% in male think that implant is partially successful. This means that the patient had sufficient information about implant.

IMPLICATION

Efforts should be made to reduce the cost of treatment to make it affordable. More awareness about dental implants could be impaired by the implementation of public awareness programs through dental camps or various health programmers. Newspapers, television and other social media can be used to increase the awareness regarding dental implant. Awareness and acknowledge regarding implant treatment may help to reduce any unrealistic expectation about dental implant.

CONCLUSION

Lack of adequate knowledge for patient and attitude toward dental implant as substitute for lost tooth. To ensure accurate scientific data, dentists should take an active role in educating and counseling the potential implant patients. According to study limitation, one of the limitations was small sample of the design. For dentists to possess the necessary knowledge to deliver suitable and practical implant care, dental education must incorporate training in appropriate implantology. To guarantee the correct scientific information, dentists should take active role in engaging in educating and advising potential implant patients.

RECOMMENDATIONS

More studies are recommended with a large sample to assess the level of information about dental implant.

SUMMARY

In the current study, it was found that there is a relation between patient awareness and age; awareness of dental implant in male group is found in the age between 30 and 40 years; awareness of dental implant in female group is found in the age between 20 and 30. Therefore, according to this study, awareness increase in the age between 20 and 40 years. Patient attitude toward the implant is increased with high educational level (graduated in both male and female). The most negative impression about implant is high cost, and the second negative impression is fear of surgery. According to this study, the primary source of information is the social media in female and advisement in male. The secondary source in female is from family and friends; in male, it is social media. Dentist is considered the third option in male and female.

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REFERENCES

- AlQahtani SM. Awareness and acceptance of dental implants as a treatment modality for replacement of missing teeth among patients in Aseer region Kingdom of Saudi Arabia. *Int J Oral Care Res* 2018;6(1):58–64. DOI: 10.5005/jp-journals-10051-0150.
- Allen PF, McMillan AS, Walshaw D. A patient-based assessment of implant-stabilized and conventional complete dentures. *J Prosthet Dent* 2001;85(2):141–147. DOI: 10.1067/mpr.2001.113214.
- Ayasinghe RM, Perera J, Jayasinghe V, et al. Awareness, attitudes, need and demand on replacement of missing teeth among a group of partially dentate patients attending a University Dental Hospital. *BMC Res Notes* 2017;10(1):334. DOI: 10.1186/s13104-017-2655-0.
- Pommer B, Zechner W, Watzak G, et al. Progress and trends in patients' mindset on dental implants. I: level of information, sources of information and need for patient information. *Clin Oral Implants Res* 2011;22(2):223–229. DOI: 10.1111/j.1600-0501.2010.02035.x.
- Kohli S, Bhatia S, Kaur A, et al. Patients awareness and attitude towards dental implants. *Indian J Dent* 2015;6(4):167–171. DOI: 10.4103/0975-962X.168518.
- Qayum B, Qadeer A, Jalil H. Awareness and knowledge about dental implant in patients reporting for dental treatment to Khyber College of Dentistry, Peshawar. *J KJC Dent* 2016;7(01):26–29.
- Kiren J, Dhanraj M, Anand S. Knowledge and awareness of dental implants among adults in urban areas, Chennai. *Ijcar Res* 2017;6(4):3248–3250. DOI: 10.24327/ijcar.2017.3250.0236.
- Amri R, Saker S. Dental implants therapy: A cross-sectional study of patients' knowledge and awareness. *BJMMR* 2017;19(6):1–9.
- Mgbeokwere U, Okoye L, Ekwueme O. A survey of the knowledge of dental implants as a choice in treatment of edentulous jaws among health workers in government dental clinics in Enugu. *Ann Med Health Sci Res* 2011;1(1):91–95. PMID: 23209960.
- Gbadebo OS, Lawal FB, Sulaiman AO, et al. Dental implant as an option for tooth replacement: The awareness of patients at a tertiary hospital in a developing country. *Contemp Clin Dent* 2014;5(3):302–306. DOI: 10.4103/0976-237X.137914.
- Suprakash B, Ahammed AR, Thareja A, et al. Knowledge and attitude of patients toward dental implants as an option for replacement of missing teeth. *J Contemp Dent Pract* 2013;14(1):115–118. DOI: 10.5005/jp-journals-10024-1282.
- Saha A, Dutta S, Vijaya V, et al. Awareness among patients regarding Implants as a treatment option for replacement of missing teeth in Chattisgarh. *J Int Oral Health* 2013;5(5):48–52. PMID: 24324304.
- Polychronopoulou A, Kawamura M. Oral self-care behaviours: Comparing Greek and Japanese dental students. *Eur J Dent Educ* 2005;9(4):164–170. DOI: 10.1111/j.1600-0579.2005.00387.x.
- Kawamura M, Yip HK, Hu DY, et al. A cross-cultural comparison of dental health attitudes and behaviour among freshman dental students in Japan, Hong Kong and West China. *Int Dent J* 2001;51(3):159–163. DOI: 10.1002/j.1875-595x.2001.tb00833.x.
- Al-Nomay NS, Khalid A. Patients' maintenance care towards dental implant as an option for replacement of missing teeth in Riyadh, Saudi Arabia. *J Health Informatics Developing Countries* 2023;17(02):1–16.
- Kaurani P, Kaurani M. Awareness of dental implants as a treatment modality amongst people residing in Jaipur (Rajasthan). *J Clin Diagn Res* 2010;4(6):3622–3626. DOI: 10.7860/JCDR/2010/1017.
- Farid-ul-Hasnain S, Johansson E, Krantz G. What do young adults know about the HIV/AIDS epidemic? Findings from a population based study in Karachi, Pakistan. *BMC Infect Dis* 2009;9(1):1–1. DOI: 10.1186/1471-2334-9-38.
- Mously HA, Badeeb BJ, Bahbishi NA, et al. Knowledge and attitude toward replacing missing teeth with dental implants among the Saudi population. *J Orthod Sci* 2020;9:5. DOI: 10.4103/jos.JOS_74_19.
- Al-Johany S, Al Zoman HA, Al Juhaini M, et al. Dental patients' awareness and knowledge in using dental implants as an option in replacing missing teeth: A survey in Riyadh, Saudi Arabia. *Saudi Dent J* 2010;22(4):183–188. DOI: 10.1016/j.sdentj.2010.07.006.
- Tepper G, Haas R, Mailath G, et al. Representative marketing-oriented study on implants in the Austrian population. I. Level of information, sources of information and need for patient information. *Clin Oral Implants Res* 2003;14(5):621–633. DOI: 10.1034/j.1600-0501.2003.00917.x.
- Kent G. Effects of osseointegrated implants on psychological and social well-being: A literature review. *J Prosthet Dent* 1992;68(3):515–518. DOI: 10.1016/0022-3913(92)90421-6.
- Zimmer CM, Zimmer WM, Williams J, et al. Public awareness and acceptance of dental implants. *Int J Oral Maxillofac Implants* 1992;7(2):228–232. PMID: 1398840.
- Berge TI. Public awareness, information sources and evaluation of oral implant treatment in Norway. *Clin Oral Implants Res* 2000;11(5):401–408. DOI: 10.1034/j.1600-0501.2000.011005401.x.
- Best HA. Awareness and needs of dental implants by patients in New South Wales. *Aust Prosthodont J* 1993;7:9–12. PMID: 8695196.
- Chowdhary R, Mankani N, Chandraker NK. Awareness of dental implants as a treatment choice in urban Indian populations. *Int J Oral Maxillofac Implants* 2010;25(2):305–308. PMID: 20369088.
- Satpathy A, Porwal A, Bhattacharya A, et al. Patient awareness, acceptance and perceived cost of dental implants as a treatment modality for replacement of missing teeth: A survey in Bhubaneswar and Cuttack. *Int J Public Health Dent* 2011;2(1):1–7.
- Mukatash GN, Al-Rousan M, Al-Sakarna B. Needs and demands of prosthetic treatment among two groups of individuals. *Indian J Dent Res* 2010;21(4):564–567. DOI: 10.4103/0970-9290.74221.
- Ravi Kumar C, Pratap KV, Venkateswararao G. Dental implants as an option in replacing missing teeth: A patient awareness survey in Khammam, Andhra Pradesh. *Indian J Dent* 2011;3(5):33.
- Arora K Jr, Kaur N 2nd, Kaur G 3rd, et al. Knowledge, awareness, and attitude in using dental implants as an option in replacing missing teeth among dental patients: Survey-based research in a dental teaching hospital in Derabassi, Punjab. *Cureus* 2022;14(7):27127. DOI: 10.7759/cureus.27127.

30. Alajlan A, Alhoumaidan A, Etesh A, et al. Assessing knowledge and attitude of dental patients regarding the use of dental implants: A survey-based research. *Int J Dent* 2019;2019:5792072. DOI: 10.1155/2019/5792072.
31. Awooda EM, Eltayeb AS, Hussein SA, et al. Knowledge, attitude and acceptance of dental implants among patients attending Khartoum Dental Teaching Hospital. *IOSR-JDMS* 2014;13(11):19–23. DOI: 10.9790/0853-131161923.
32. Suwal P, Basnet BB, Shrestha B, et al. Knowledge, attitude, and awareness regarding dental implants among patients visiting a university hospital and its teaching districts. *J Dent Implants* 2016;6(2):57–61. DOI: 10.4103/jdi.jdi_22_16.