

Research Article

Patients' Awareness about Dental Implants in Eastern Province Region of Saudi Arabia: A Questionnaire Based Study

Basil Mohammed S Al-Nasser, Prashanth Kumar Katta*, Mohammed Ali Al-Musawi, Saleh Mohammed Ali Al-jubran, Abdullah Eissa Abdhadi Alhmoody and Pradeep Kumar NS

Department of Restorative Dental Sciences, College of Dentistry, King Faisal University, Saudi Arabia

Abstract

Introduction: Dental implants are now a practical solution for people who are entirely or partially dentate when it comes to replacing missing teeth. But owing to insufficient many patients do not like implant therapy due to knowledge or information.

Objective: The primary goal of the study was to assess dental patients' knowledge and awareness of dental implants as a treatment option based on their educational background in eastern province, Saudi Arabia.

Materials and methods: A cross-sectional study from October 2022 to January 2023 used standardized self-explanatory questionnaires that were distributed online to patients in eastern province region of Saudi Arabia. The aim was to determine the patients' knowledge and awareness of the use of dental implants for replacing missing teeth. During their routine trips to the dental clinics, patients were given the questionnaires. This study included 500 participants in total. Chi-square test was used to determine the relationship between study subjects' education level and their knowledge of various dental implant-related topics. A p-value of 0.05 or lower was deemed statistically significant. Version 20 of IBM's Statistical Package for Social Sciences (SPSS) software was used to conduct the statistical analysis.

Results: This study results revealed that (90%) of those surveyed had heard of dental implants, of which 336 (67.2%) possessed a college degree, Education and source of knowledge were significantly correlated ($\chi^2 = 122.53$; $p < 0.001$). Dental professionals had provided 224/500; (44.8%) of the participants with information about dental implants, (53%) believed that dental implants would be the choice in restoring the missing space for most of the subjects, The majority of participants, 231/500 (46.2%), responded that dental implants are inserted into the jaw bone, participants responded that financial constraints and aversion to surgery were the main deterrents.

Conclusion: Our research showed that there are widespread knowledge gaps in all areas of education. The public's knowledge and awareness level regarding the usage of dental implants as a tooth replacement alternative need to be raised through educational programs by dental care experts and specialists.

Clinical relevance: By executing various public awareness campaigns and setting up counseling centers inside the patient outpatient ward of private dental clinics and dentistry colleges, dental implants should be made more widely known. To increase knowledge among women and the less educated people, extra effort is required. The public sector should work to reduce the cost of the implants so that everyone can afford them.

Keywords: Age; Educational level; Implant; Material; Source of information

Introduction

Thousands of individuals still experience tooth loss despite improvements in oral health care, mostly as a result of dental caries, periodontal disease, or trauma. still experience tooth loss despite improvements in oral health care, mostly as a result of dental caries, periodontal disease, or trauma. Dentures and bridges were the only treatments available for persons with missing teeth for a long time

[1]. Dental implants, however, have gained popularity as a potential alternative recently. A dental implant is an artificial root that is placed in the mouth to support a full denture, replace a maxillofacial prosthesis, or support a single prosthesis. In order to provide a stable basis for removable replacement teeth or fixed permanent teeth, implants are created to closely resemble natural teeth [2,3]. Through lengthy clinical research, the effectiveness of the implant therapy has been demonstrated. When treating edentulous patients, dental implants were initially employed to enhance stability, retention of the denture, improving the function and standard of life [4,5-8].

Partial or complete dentures are frequently used to repair lost teeth, although sentiments regarding them are not very positive. Titanium implants for intra-oral use have been an option for individuals who are partially or fully edentulous since they were first introduced in the late 1950s. Proven benefits of implant-supported prostheses include enhanced function, phonetics, aesthetics, bone maintenance, and increased masticatory efficiency [9-13]. Numerous research conducted in various nations revealed that there were differences in the amount of knowledge about dental implant therapy [14,15-18].

Citation: Al-Nasser BMS, Katta PK, Al-Musawi MA, Al-jubran SMA, Alhmoody AEA, Pradeep Kumar NS. Patients' Awareness about Dental Implants in Eastern Province Region of Saudi Arabia: A Questionnaire Based Study. J Med Public Health. 2024;5(1):1101.

Copyright: © 2024 Basil Mohammed S Al-Nasser

Publisher Name: Medtext Publications LLC

Manuscript compiled: Mar 30th, 2024

***Corresponding author:** Prashanth Kumar Katta, Department of Restorative Dental Sciences, College of Dentistry, King Faisal University, Al Hasa, Saudi Arabia, Tel: +966-551798173

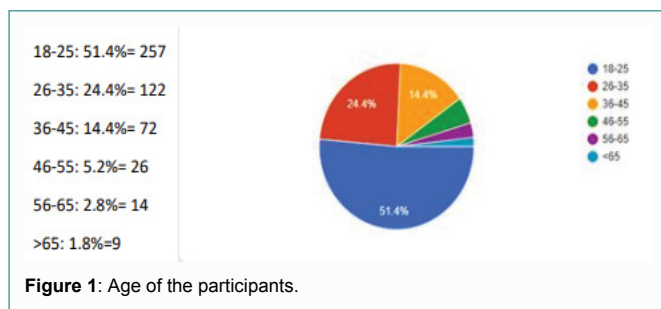
After receiving implant prostheses, studies show that patients' attitudes toward their dental health significantly improved [19,20]. When it comes to the ability and distribution management for the subsequent treatment delivery, in the sense of community health policies, data on public awareness and assessments of oral implants will be very helpful in determining the percentages of the general population who might consider this form of therapy for themselves if necessary [21-24]. This survey aims to determine the public's level of knowledge, information sources, information needs, and expectations about dental implants as a treatment option among people living in eastern province region of Saudi Arabia.

Materials and Methods

A cross-sectional survey was carried out between October 2022 and January 2023 to gauge public understanding and awareness of dental implants as a potential solution for tooth replacement. Face-to-face interviews were used in this study to gauge residents of the eastern province region's awareness of dental implants as a therapy option. It was computed what percentage of respondents were from each age, gender, and educational group. Three authors independently designed the questionnaire, which was then created by combining the questions from each author. The questionnaire's face validity was tested by having a committee of six researchers, including subject-matter experts, evaluate each question on its own and determine whether it measured the things it was meant to measure. In order to target a diverse population, 45 questionnaires were distributed in several Hofuf regions as part of a pilot research to test the questionnaire's reliability.

The questionnaire was initially created in English before being distributed in Arabic. In order to determine whether the questionnaire had been correctly translated, it was given to a sample of 10 bilingual respondents who completed it in both English and Arabic. After that, it was sent to linguists for further editing.

Inclusion criteria: The study only accepted participants who were at least 18 years old and had a basic level of literacy (the capacity to read and write) (Figure 1).



Exclusion criteria: The study eliminated patients who refused to participate and those with professional dental knowledge or expertise. The subjects received the questionnaires and the data was collected throughout their routine dental examinations. Three sections made up the survey's questionnaire. The participant's location, gender, nationality, age, marital status, and level of education were among the sociodemographic variables that were questioned in the first section. The second component of the survey asked four questions about respondents' knowledge of dental implants, including if they had ever heard of them, whether they had ever had implants put in, where they had learned about them, and what option they would have chosen if they were missing teeth. Six questions made up the third section.

They asked respondents to rate their level of awareness regarding who places the implants, their durability, and their awareness of the need to care for dental implant as well as their knowledge of the location of implant placement, the material used in implants, various factors that might discourage them from choosing implants to replace missing teeth if they don't choose dental implants as their first option.

After informing the participants of the study's goals and receiving their informed consent, the participants were given hard copies of the questionnaires that the students had distributed along with pens to complete them. The participants' questionnaire would be collected by the students after they had done filling it out. Students helped participants who needed assistance with reading or writing. After gathering the hard copies, data was entered into an excel sheet.

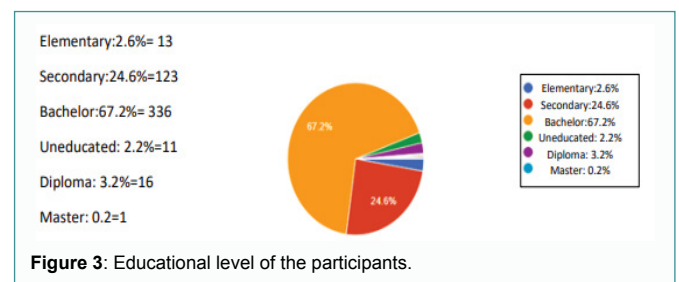
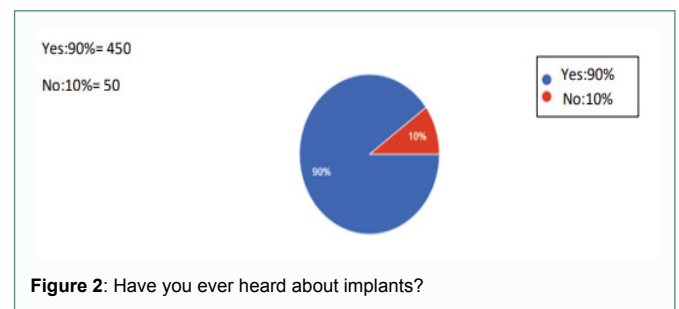
Statistical analysis

IBM's SPSS software, version 20, was used to conduct the statistical study. The frequency and percentage formats were used to present the descriptive analysis of the nominal variables. Chi-square test was used to determine the relationship between study subjects' education level and their knowledge of various dental implant-related topics. A p-value of 0.05 was deemed statistically significant.

Using Cohen's Kappa Index, the face validity of the questionnaires was analyzed. The results showed a Kappa (κ) of >0.8 Content Validity Ratio (CVR), showing good agreement. The study protocol (E-17-27-44) was approved by the institutional review board and adhered to the principles of the Helsinki Declaration.

Results

A chi-square test was conducted to determine the relationship between awareness and dental implants and knowledge (Figure 2). 450 of the 500 individuals (100%) (90%) of those surveyed had heard of dental implants, of which 336 (67.2%) possessed a college degree, and 50 (10%) had never heard of dentistry implants ($p=0.001$; $2=64.18$). 40 (8%) of the 500 individuals (100%) had dental implants. out of which the majority had graduated, that is, 74 (or 5%), while 460 (or 92%) had not placed implant ($\chi^2=54.67$; $p<0.00$) (Figure 3).



Dental professionals had provided 224/500; (44.8%) of the participants with information about dental implants, followed

by friends (240/500; 48%) and others (11/500; 1.6%). Source of information was significantly correlated with education ($2=122.53$; $p<0.001$). The majority of subjects, or 265/500 (53%) believed that dental implants would be the choice in restoring the missing space for most of the subjects, followed by 73/500 (14.6%) fixed partial denture would be the preferred method for replacing the missing space. However, 38/500 (7.6%) of the subjects stated they would not get a replacement tooth ($2=96.90$; $p<0.001$).

The majority of participants, 231/500 (46.2%), responded that dental implants are inserted into the jaw bone, whereas 100/500 (20%) responded that they are positioned on the gingiva, and 155/500 (31%) said they were unsure of the answer. Chi-square analysis showed a strong correlation between the subjects' educational attainment and the installation of dental implants ($2=86.46$; $p<0.001$). 126 (28%), 97 (19.4%), and 119 (23.8%) of the 1471 participants indicated that dental implants are constructed of titanium, ceramic, and porcelain materials, respectively ($2=135.14$; $p<0.001$).

More than half of the subjects i.e., 265/500 (53%), seemed encouraged to take implant therapy as first choice by their interpersonal interactions with people in their social networks (48%). While 73/500 (14.6%) preferred Fixed partial denture. Out of 500 (100%) subjects, 151 (30.2%) subjects were aware that prosthodontists are the most qualified to place dental implants followed by oral surgeon-95 (19%); periodontist-64 (12.8%). Chi-square test showed significant association ($\chi^2=256.61$; $p<0.001$) with education.

Approximately, 1/4th of the subjects i.e., 177 (35.4%) answered that dental implants have a life of more than 20 years followed by 170/500 (34%) said don't know, 104/500 (20.8%), and 49 (9.8%) subjects felt that dental implant stay for 10 to 20 years and 5-10 years respectively. ($\chi^2=82.29$; $p<0.001$). The vast majority of participants, 459/500 (81.8%), agreed that dental implants require the same brushing and flossing as normal teeth. Significant correlation with education was found using the Chi-square test ($p=0.018$, $2=35.41$).

Discussion

An established and widely used treatment option in dentistry is the replacement of lost teeth with implant-supported prosthesis for cosmetic and functional rehabilitation [25,26]. The current survey-based cross-sectional study evaluated how education level affected knowledge of, access to, and awareness of dental implants as a therapeutic option for replacing lost teeth. Table lists the percentages of several motivating variables. The study's findings showed that respondents with greater educational backgrounds had statistically higher levels of awareness about dental implants ($p<0.001$). This could be attributed to the fact that those who have more education and gross monthly family income have access to more specialized oral health treatments and are consequently more worried about their oral health. Additionally, it has been hypothesized that a person's educational background improves their metacognitive awareness, which may help them have more understanding about implants [27,28]. These results agreed with those of numerous other researchers who had published their findings in the literature. Data from the current investigation showed that subject-specific knowledge gaps were widely dispersed across educational levels.

Similar results were also recorded by Deinzer et al. [29], who found that there were widespread deficiencies in all gender, educational, and age groups, with the least educated showing the biggest deficits, followed by the older people and very young. Age and section-

wise score did not statistically significantly correlate. In the current questionnaire-based study, the majority of the participants (92%) had never received dental implants, whereas just 8% had received them (Figure 4). The source of dental implant knowledge had a significant impact on awareness ($p<0.001$). The media, according to 60.2% of the interviewees, was their primary source of information, followed by friends (48%) and dentists (44.8%) (Figure 5). This result was contrary to those of a prior study, whose authors came to the conclusion that the participants' friends and family, followed by dentists, were the primary sources of knowledge [30,31].

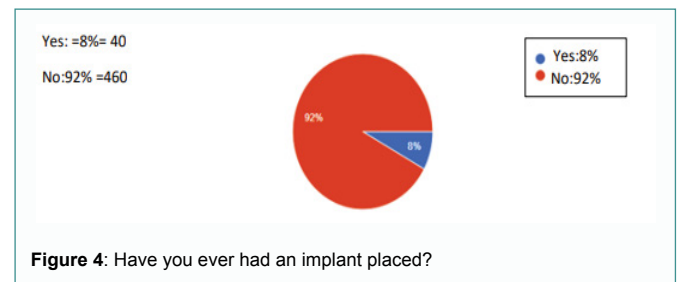


Figure 4: Have you ever had an implant placed?

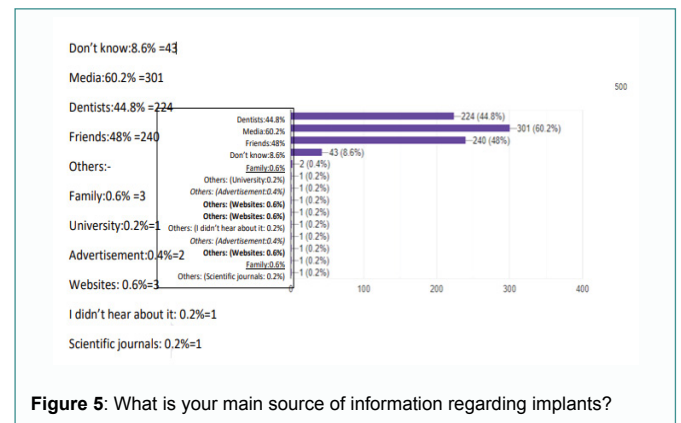


Figure 5: What is your main source of information regarding implants?

In the present investigation, there were significant differences in the patients' awareness of dental implants ($p<0.001$). As a substitute for missing teeth, dental implants were known to 53% of participants, followed by 14.6% and 4.6% of those who responded to the FPD and RPD questions, respectively. In contrast to earlier investigations by Zimmer et al. [13], Tepper et al. [14] and Berge [31], which found implant awareness levels of 77%, 70.1%, and 72%, respectively, the level of awareness was low. This inquiry also indicated that just 4.6% of patients choose Removable Partial Dentures (RPD) as the best option for replacing their missing teeth. Thus, regardless of their clinical status, most individuals did not prefer removable prostheses as a replacement for their missing teeth. The majority of participants understood that fixed prostheses looked and felt more natural in the mouth. According to Zimmer et al. [13] and Tepper et al. [14] these results virtually exactly showed that fixed prostheses are more aesthetically pleasing than removable ones and are also more pleasant to wear in the mouth (Figure 6).

According to the current study, 46.2% of the respondents knew where the dental implant should be placed (Figure 7), which is similar to studies by Tepper et al. [14], Al-Johany et al. [15], and Pommer et al. [32]. Who reported percentages of (39%), (50.1%), and (35%), accordingly. Regarding understanding of the materials used in dental implant fabrication, 45.2% of survey participants were unaware of these materials, compared to 25.6%, 23.8%, and 19.8% of participants

who were aware that dental implants are comprised of titanium, porcelain, and stainless steel, accordingly (Figure 8). 60% to 70% of participants in a study by Deeb et al. [33] knew that dental implants are constructed of titanium and porcelain, respectively. The study's participants were questioned about potential hurdles to considering dental implants as a treatment option, and they responded that financial constraints and aversion to surgery were the main deterrents. The same obstacles were previously mentioned by Kent [34] in his early 1990s systematic review.

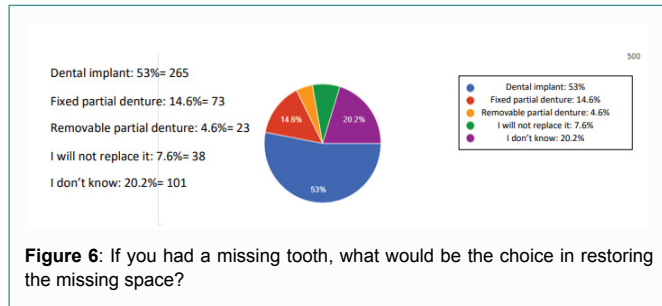


Figure 6: If you had a missing tooth, what would be the choice in restoring the missing space?

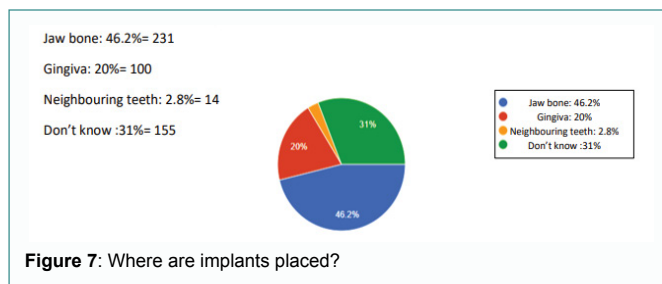


Figure 7: Where are implants placed?

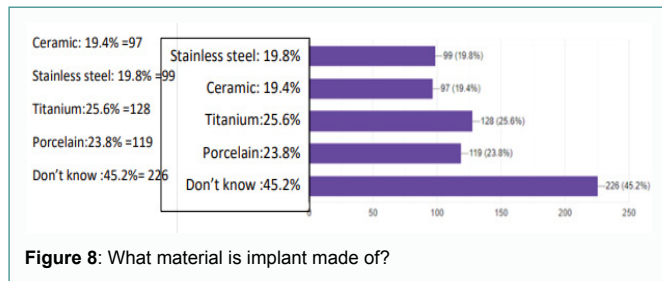


Figure 8: What material is implant made of?

The lengthy recuperation period following surgery, according to the author, may deter some patients from choosing dental implant therapy (Figure 9). Muller et al. [35] claimed that another reason why some patients might choose not to get implant therapy was the requirement for strict mouth cleanliness after the procedure. The outcomes of this study were consistent with earlier research on the populations of Turkey and India [30,36,37]. This demonstrates the need to reduce the price of dental implants that could be done with government funding and monetary support for dental clinics. In this study, only 30.2% of the participants understood that their prosthodontist performed implantology (Figure 10), while 19% claimed that the oral surgeon was responsible for placing the implants, which was comparable to the findings of a study conducted by Satpathy et al. [11].

34% of the subjects, the majority, were unaware of how long dental implants last (Figure 11). The need for subject education develops as a result of the subject's absurdly high expectations [14]. Patients from Japan made up about 28% of those who thought their implants will last forever [20]. Such misunderstandings about the durability of dental implants would, of course, imply inaccurate or incomplete

public knowledge in terms of information disparity [32]. 91.8% of the 500 participants thought dental implants needed the same care when it came to flossing and brushing as natural teeth (Figure 12). Most patients in a topic knowledge survey in Khamam, Andhra Pradesh, believed that no more care was needed, although a small number of patients believed that both natural teeth and implants needed the same amount of care [38].

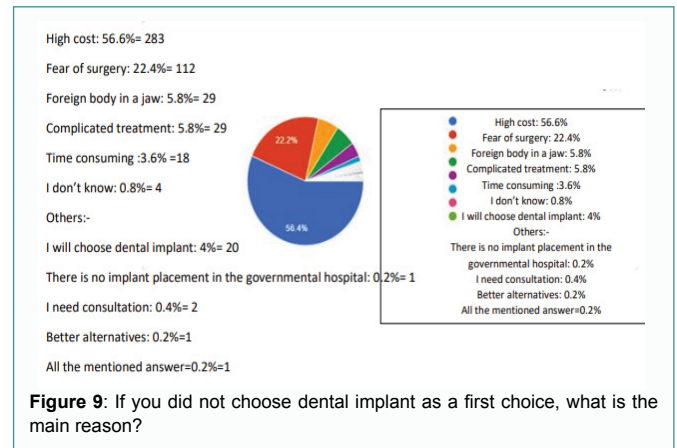


Figure 9: If you did not choose dental implant as a first choice, what is the main reason?

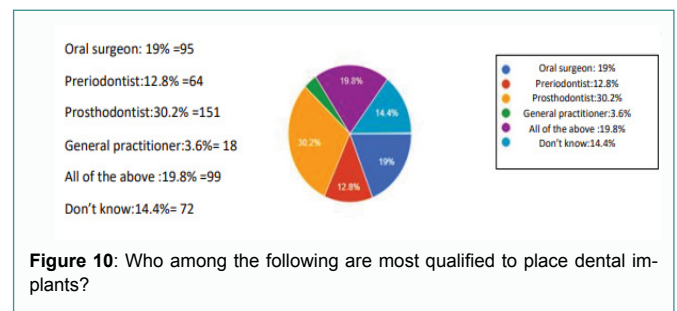


Figure 10: Who among the following are most qualified to place dental implants?

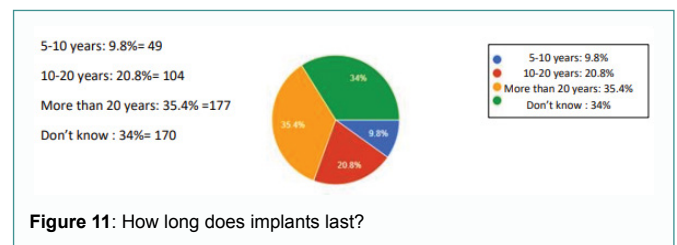


Figure 11: How long does implants last?

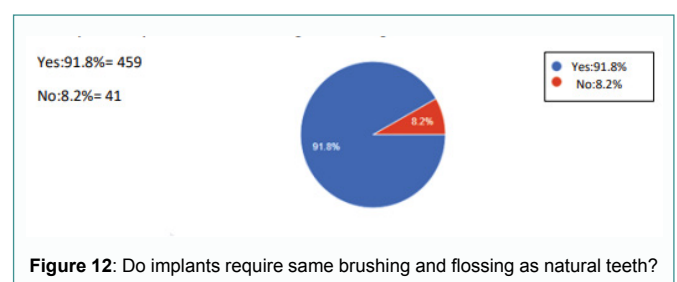


Figure 12: Do implants require same brushing and flossing as natural teeth?

In their study, Tepper et al. [19] showed that about 44% of the participants believed that dental implants required specific oral hygiene. The findings of the current study do shed some light on the subjects' knowledge and awareness of different dental implant treatment modalities that may have an impact on their decision regarding treatment. The mean section scores of information level and subjective and objective information needs showed a statistically significant rise. The majority of the subjects claimed that their dentists

had not told them about this possible treatment. The phobia of surgery and the high expense were mentioned by the subjects as barriers to embracing this method of treatment. The test result's change was consistent with other investigations [11,12,39,40].

Limitations

Only a small sample size, that was accessible in this portion of the region, was used in this study, which was only done for four months at two centers. So, there is a ton of room for future experiments if it is carried out as a multicenter study with a greater number of participants in various parts of the nation. This will help to locate more supporting data for this study. Knowledge gaps were evaluated with regard to personality factors, discomfort, and anxiety that may affect the decision regarding implant treatment. Yet, there was a considerable drop-off in study participants. Our findings do provide some light on a number of subject knowledge-related topics that can affect treatment decision-making. The study's drawbacks, however, are the clinical environment, dropouts, and limited sample size. It is necessary to undertake investigations involving a bigger population in order to validate the findings of this study.

Conclusion

Within the parameters of the study, it was found that there was a considerable educational background-related knowledge gap in practically every area of dental implants. There is a need for educational programs from dental care professionals and specialists to increase public understanding of the usage of dental implants as a tooth replacement alternative.

Funding

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [GRANT 1,875].

Acknowledgement

We thank the Deanship of Scientific Research, King Faisal University, college of dentistry, kingdom of Saudi Arabia, for supporting this project electronic supplementary material.

References

- Brunski JB. *In vivo* bone response to biomechanical loading at the bone/dentalimplant interface. *Adv Dent Res*. 1999;13(1):99-119.
- Adell R, Lekholm U, Rockler BR, Brånemark PI. A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. *Int J Oral Surg*. 1981;10(6):387-416.
- Adell R, Eriksson B, Lekholm U, Brånemark PI, Jemt T. A long-term follow-up study of osseointegrated implants in the treatment of totally edentulous jaws. *Int J Oral Maxillofac Implants*. 1990;5(4):347-59.
- Albrektsson T. A multicenter report on osseointegrated oral implants. *J Prosthet Dent*. 1988;60(1):75-84.
- Albrektsson T, Zarb G, Worthington P, Eriksson AR. The long-term efficacy of currently used dental implants: A review and proposed criteria of success. *Int J Oral Maxillofac Implants*. 1986;1(1):11-25.
- Albrektsson T, Blomberg S, Brånemark A, Carlsson GE. Edentulousness--an oral handicap. Patient reactions to treatment with jawbone-anchored prostheses. *J Oral Rehab*. 1987;14(6):503-11.
- Albrektsson T, Dahl E, Enbom L, Engevall S, Engquist B, Eriksson AR, et al. Osseointegrated oral implants: A Swedish multicenter study of 8139 consecutively inserted Nobelpharma implants. *J Periodontol*. 1988;59(5):287-96.
- Adell R, Lekholm U, Gröndahl K, Brånemark PI, Lindström J, Jacobsson M. Reconstruction of severely resorbed edentulous maxillae using osseointegrated fixtures in immediate autogenous bone grafts. *Int J Oral Maxillofac Implants*. 1990;5(3):233-46.
- Naert I, Koutsikakis G, Duyck J, Quirynen M, Jacobs R, Van Steenberghe D. Biologic outcome of implant-supported restorations in the treatment of partial edentulism: Part 1: A longitudinal clinical evaluation. *Clin Oral Implants Res*. 2002;13(4):381-89.
- Naert I, Koutsikakis G, Quirynen M, Duyck J, Van Steenberghe D, Jacobs R. Biologic outcome of implant-supported restorations in the treatment of partial edentulism: Part 2: A longitudinal radiographic study. *Clin Oral Implants Res*. 2002;13(4):390-5.
- Satpathy A, Porwal A, Bhattacharya A, Sahu PK. 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):01-7.
- 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):305-8.
- Zimmer CM, Zimmer WM, Williams J, Liesener J. Public awareness and acceptance of dental implants. *Int J Oral Maxillofac Implants*. 1992;7(2):228-32.
- Tepper G, Haas R, Mailath G, Teller C, Zechner W, Watzak 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):621-33.
- 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. *Saudi Dent J*. 2010;22(4):183-8.
- Joseph A, Tim B, Jan H, Joan M, Robert M, Stephen M, et al. Behavioral Surveillance Surveys. Guidelines for repeated behavioral surveys in populations at risk of HIV 2000. USAID.
- Salonen MA. Assessment of states of dentures and interest in implant-retained prosthetic treatment in 55-year-old edentulous Finns. *Community Dent Oral Epidemiol*. 1994;22(2):130-5.
- Best HA. Awareness and needs of dental implants by patients in New South Wales. *Aus Prosthodont J*. 1993;7:9-12.
- Tepper G, Haas R, Mailath G, Teller C, Bernhart T, Monov G, et al. Representative marketing-oriented study on implants in the Austrian population. II. Implant acceptance, patient-perceived cost and patient satisfaction. *Clin Oral Implants Res*. 2003;14(5):634-42.
- Akagawa Y, Rachi Y, Matsumoto T, Tsuru H. Attitudes of removable denture patients toward dental implants. *J Prosthet Dent*. 1988;60(3):362-64.
- Smith DE, Zarb GA. Criteria for success of osseointegrated endosseous implants. *J Prosthet Dent*. 1989;62(5):567-72.
- Al-Omiri MK, Abu Hantash RO, Abu Yunis M, Lynch E. Relationship between personality and impacts of implant treatment on daily living. *Clin Implant Dent Relat Res*. 2012;14(Suppl 1):e2-10.
- Baracat LF, Teixeira AM, dos Santos MB, da Cunha VD, Marchini L. Patients' expectations before and evaluation after dental implant therapy. *Clin Implant Dent Relat Res*. 2011;13(2):141-5.
- Shanker RK, Mohamed M, Hegde S, Kumar MSA. Influence of personality traits on gingival health. *J Indian Soc Periodontol*. 2013;17(1):58-62.
- Khalid S, Hamdan A, Haneen M. Patient's satisfaction with dental implants in Riyadh, Saudi Arabia. *Saudi Dental J*. 2007;19(2):91-6.
- De Backer L, Van Keer H, Valcke M. Exploring the potential impact of reciprocal peer tutoring on higher education students' metacognitive knowledge and regulation. *Instr Sci*. 2012;40(3):559-88.
- Palmqvist S, Söderfeldt B, Arnbjerg D. Influences of some background factors on the subjective need for dental implants in a Swedish population. *Acta Odontol Scand*. 1993;51(1):9-14.
- Narby B, Kronström M, Söderfeldt B, Palmqvist S. Changes in attitudes toward desire for implant treatment: A longitudinal study of a middle-aged and older Swedish population. *Int J Prosthodont*. 2008;21(6):481-5.

29. Deinzer R, Micheelis W, Granrath N, Hoffmann T. More to learn about: Periodontitis-related knowledge and its relationship with periodontal health behaviour. *J Clin Periodont.* 2009;36(9):756-64.
30. AL-Dwairi ZN, El Masoud BM, AL-Afifi SA, Borzabadi-Farahani A, Lynch E. Awareness, attitude, and expectations toward dental implants among removable prostheses wearers. *J Prosthodont.* 2014;23(3):192-7.
31. Berge TI. Public awareness, information sources and evaluation of oral implant treatment in Norway. *Clin Oral Implants Res.* 2000;11(5):401-8.
32. Pommer B, Zechner W, Watzak G, Ulm C, Watzek G, Tepper G. 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):223-9.
33. Deeb G, Wheeler B, Jones M, Carrico C, Laskin D, Deeb JG. Public and patient knowledge about dental implants. *J Oral Maxillofac Surg.* 2017;75(7):1387-91.
34. Kent G. Effects of osseointegrated implants on psychological and social wellbeing: A literature review. *J Prosthet Dent.* 1992;68(3):515-8.
35. Müller F, Wahl G, Fuhr K. Age-related satisfaction with complete dentures, desire for improvement and attitudes to implant treatment. *Gerodontology.* 1994;11(1):7-12.
36. Alajlan A, Alhoumaidan A, Ettesh A, Doumani M. Assessing knowledge and attitude of dental patients regarding the use of dental implants: A survey-based research. *Int J Dent.* 2019;2019:5792072.
37. Sakshi, Makkar P, Yadav A, Bajaj P, Sharma K. Knowledge and awareness of dental implants among undergraduate dental students. *IP Ann Prosthodont Restor Dent.* 2018;4(1):6-8.
38. Kumar RC, Pratap KV, Venkateswararao G. Dental implants as an option in replacing missing teeth: A patient awareness survey in Khammam, Andhra Pradesh. *Indian J Dent Sci.* 2011;3(5):33-7.
39. 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. *Saudi Dent J.* 2010;22(4):183-8.
40. Smith DE, Zarb GA. Criteria for success of osseointegrated endosseous implants. *J Prosthet Dent.* 1989;62(5):567-72.