

Cross-Sectional Study

Awareness of Dental Students Regarding Implant Placement for Missing Permanent Teeth: A Cross-Sectional Analysis

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ABSTRACT

This study aimed to assess dental students' understanding and perspectives on the use of immediate implant placement as a solution for replacing missing teeth. A cross-sectional survey was conducted with 300 dental surgeons (150 male and 150 female), aged between 20 and 55 years, to assess their awareness and knowledge regarding immediate implant placement for tooth replacement. Participants were provided with a clear explanation of the study's objectives, and written informed consent was obtained. The study utilized a simple random sampling method to select participants. A structured, self-administered questionnaire was created to gather the data, which were subsequently analyzed using both descriptive and analytical statistical methods. The results showed that 63% of respondents (189 individuals) were familiar with dental implants as a treatment option for missing teeth. 65% of participants agreed that implants generally have a longer lifespan than other forms of dental replacement. Regarding the potential for implant failure, 73% acknowledged this possibility. Furthermore, 89% of respondents believed that dental implant treatments should be included in insurance coverage in the country. Overall, the study showed that dental professionals possess a solid understanding of tooth replacement options, with dental implants viewed as a viable solution. These findings highlight the need for enhanced education and increased awareness about implants in the dental curriculum to ensure better preparedness among future dentists.

Keywords: Saudi Arabia, Dental implants, Dentistry, Knowledge, Missing teeth

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Introduction

Dental implants have emerged as a groundbreaking advancement in modern dentistry, effectively replacing dentures and offering additional benefits to patients. Today, dental implants are widely recognized as a reliable prosthetic solution for both fully and partially edentulous individuals [1]. Providing comprehensive information on implant options and alternatives is essential in guiding patients toward the most appropriate treatment choice [2]. A dental implant is

typically a surgically placed alloplastic material into the remaining alveolar bone, serving primarily as a foundation for prosthetic restoration [3]. The preservation of natural teeth (with minimal or no removal of surrounding tooth structure), additional support, and the reduced risk of recurrent caries or complications at the margins of the restoration have contributed to the growing popularity of dental implants in prosthodontic treatments [4]. Advances in biomaterials and clinical techniques have further enhanced the effectiveness of dental implants, making

them an increasingly accepted treatment option. Dental augmentation procedures have also gained wider acceptance and satisfaction among patients [5, 6], offering a more efficient solution compared to traditional fixed bridges, which involve the use of adjacent teeth and alveolar bone [7]. Several studies have confirmed that patients generally favor dental implants [8, 9]. Researchers [10] observed an increase in patient awareness about implants, while studies in Finland and Australia reported varying levels of awareness, with Finnish patients at 29% and Australian patients at 64% [11]. One of the key challenges for dental health professionals is imparting accurate dental health knowledge and promoting good oral hygiene practices within society [12]. This can be achieved through research, organized discussions, educational programs, and lectures. Dentists need to have a solid understanding of the diagnostic and therapeutic options for implant care, as well as the ability to assess risk levels and make early referrals when necessary [13]. Therefore, this study aims to evaluate dental students' knowledge and attitudes toward immediate implant placement as a treatment method for replacing missing teeth.

Materials and Methods

A cross-sectional survey was conducted involving 300 dental surgeons (150 male and 150 female) aged between 20 and 55 years to assess their knowledge and attitudes regarding immediate implant placement as a treatment for missing teeth. Written informed consent was obtained from all participants after providing them with an explanation of the study's purpose. The study utilized a simple random sampling technique, with data collection taking place from May 1, 2022, to September 30, 2022. Ethical approval for the research was granted by the Scientific Research Committee of King Khalid University, College of Dentistry (IRB/REG/2022-2023/49). The questionnaire was distributed through online Google Forms to dental surgeons practicing in the Abha region of Saudi Arabia. The survey included two sections: the first gathered demographic information, including age, gender, years of experience, and educational level, while the second contained ten questions with a 'yes' or 'no' response format and a multiple-choice section. The reliability and validity of the questionnaire were thoroughly tested before distribution.

A structured, self-administered questionnaire was developed and pre-tested with a convenience sample of twenty dental surgeons. These participants were interviewed to gather feedback on the questionnaire's overall acceptability, including its length and clarity of language. Based on their suggestions, necessary revisions were made to improve the questions. Content validity was also evaluated before the research commenced. Descriptive and analytical statistical analyses were performed using SPSS 18 (IBM Corporation, Armonk, NY, USA) to examine the key variables.

Results and Discussion

A total of 300 dental students, general dentists, and specialists (150 males and 150 females) participated in the survey. The age distribution of the respondents was as follows: 88% were between 20 and 30 years old, 7% were between 31 and 40 years, 5% were between 41 and 50 years, and none were older than 50 years (**Tables 1 and 2**). **Table 1** shows the breakdown of participants according to their educational level. Of the respondents, 189 (63%) were familiar with dental implants as an option for replacing missing teeth, and 65% agreed that dental implants tend to last longer than other forms of dental replacements. **Table 2** presents the mean knowledge scores related to dental implants. Regarding implant failure, 73% of participants acknowledged its possibility. A significant 86% of respondents agreed that dental implants provide a solution for missing teeth. Furthermore, 85% of participants believed that implants are placed on the same day as tooth extraction. **Table 3** outlines the correlation between the respondents' knowledge of dental implants and their educational background. A notable association was found between knowledge levels and the specialty of the participants. The respondents' views on immediate implant placement for missing teeth are summarized in **Table 4**. When asked whether insurance coverage should be available for dental implant treatments in the country, 89% of participants agreed. **Figure 1** illustrates the reasons given by those who were unwilling to receive dental implants. A majority of participants suggested that dental implant knowledge should be enhanced among dental professionals.

Table 1. Distribution of the study sample according to age, gender, and level of education.

Gender	N (n = 300)	%
Male	150	50%

Female	150	50%
Age		
20-30 years	264	88%
30-40 years	21	7%
40-50 years	15	5%
> 50 years	0	0%
Educational level		
Undergraduate student	186	62%
General Dentist	93	31%
Specialist	21	7%

N = Number; % = Percentage.

Table 2. Distribution of mean knowledge score about dental implant.

Age	Mean ($\pm$ SD)	P
20-30 years	0.65 (0.48)	< 0.001*
30-40 years	0.57 (0.50)	
40-50 years	0.45 (0.50)	
> 50 years	0.26 (0.44)	

*F test (one-way analysis of variance), SD = Standard deviation

Table 3. Relationship between the knowledge of dental implants and the Educational level of the respondents

Educational Level	Knowledge of implant dentistry		P
	Poor	Good	
Undergraduate student	88 (47%)	98 (53%)	< 0.001
General Dentist	37 (40%)	56 (60%)	
Specialist	5 (24%)	16 (76%)	

The use of dental implants is becoming increasingly common in contemporary dental practice, thanks to advancements in techniques that have simplified procedures and reduced treatment times. Innovations such as immediate augmentations and flap surgeries have contributed to this trend [14]. In contrast, our study found that the proportion of practitioners with strong knowledge of dental implants was lower than the findings reported by Narby *et al.* [15]. This difference may suggest that more recent developments, like the immediate implant protocol, are not typically covered in undergraduate education. Dental implants can be used as part of fixed or removable prosthetic treatments. Our study revealed that only about half of the respondents shared this understanding, while the other half either believed implants were limited to fixed prosthetics or were unsure [16]. This lack of awareness may stem from the fact that dental implants are not frequently practiced by the respondents. In our study, 63% of participants (189 individuals) were familiar with dental implants as a viable option for replacing missing teeth, and 65% agreed that dental implants generally outlast other dental replacements. Dental implants are increasingly considered the standard of care for replacing missing teeth in many

cases, often regarded as more favorable than other prosthetic options due to their ability to accommodate both regional and systemic factors of the patient. Many individuals are now more informed about the advantages of dental implants, recognizing their ability to replace single or multiple teeth and support maxillofacial prostheses [17]. The findings from our study also indicated that social media ranks as the third most common source of information for participants, a trend supported by other research [10]. This can be attributed to the rising use of social media platforms in the region, which provide a continuous stream of information. Interestingly, this pattern mirrors results from Western countries, where dental professionals are the primary source of information, in contrast to studies from developing countries where online resources are more prevalent [18, 19].

When participants were asked about factors that might discourage them from opting for dental implants, the most common responses were lengthy treatment times, high costs, and fear of surgery. Many patients perceive implants as a complex surgical procedure, largely due to the term “surgery” itself [4]. In a study by Al-Johany *et al.* [20], 49.5% of respondents believed implant failure was linked to poor oral hygiene, while 19.9%

attributed it to the dentist's substandard treatment. In our study, 279 (93%) participants expressed interest in obtaining more information about dental implants. This highlights the significance of patient education on implants, a finding also supported by Tomruk *et al.* [21], where 68.3% of respondents wanted more information, and 76.9% sought advice from a dental professional. However, this study does have some limitations. One such limitation is the relatively small

sample size, which was confined to a single country in the Persian Gulf region, and the reliance on a quantitative questionnaire approach. These factors limit the generalizability of the results to other sociodemographic contexts and regions. Future studies should aim to address these limitations by using a more diverse sample and incorporating qualitative research methods to gain more in-depth insights.

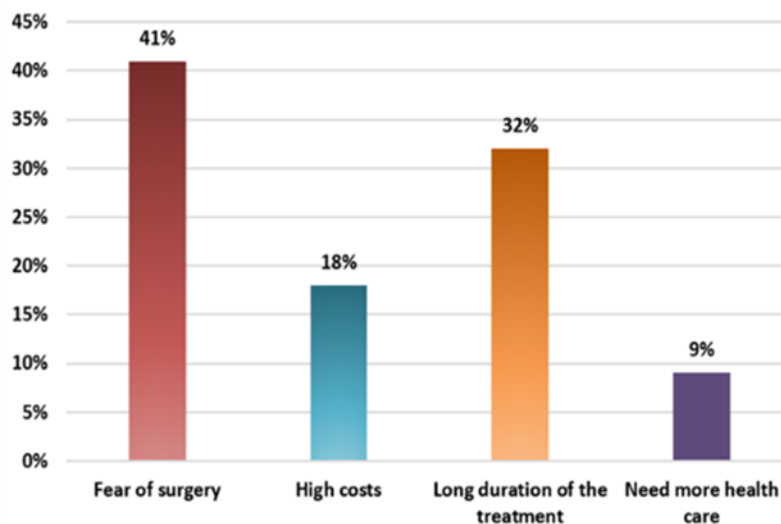


Figure 1. Knowledge of dentists toward immediate implant placement for missing teeth

Table 4. Knowledge of dentists toward immediate implant placement for missing teeth

Questionnaire	Total (n = 300)	%
Q1. Do you recognize dental implants as a viable option for replacing lost teeth?		
Yes	189	63%
No	111	37%
Q2. Do you believe that dental implants have a longer lifespan compared to other tooth replacement options?		
Yes	195	65%
No	69	23%
May be	36	12%
Q3. Do you think there is a chance of implant failure?		
Yes	219	73%
No	66	22%
May be	15	5%
Q4. Dental implants provide a solution for replacing missing teeth		
Yes	258	86%
No	36	12%
May be	6	2%
Q5. Immediate implants are inserted on the same day as the tooth extraction		
Yes	255	85%
No	45	15%
Q6. A key consideration in immediate implant placement is		
Socket preservation	126	42%
Soft tissue management	93	31%
Less traumatic extraction	81	27%
Q7. In your opinion, is insurance coverage necessary for dental implant treatment in our country?		
Yes	267	89%
No	33	11%

Q8. If you choose not to opt for dental implants, please provide your reasons		
Fear of surgery	123	41%
High costs	54	18%
The long duration of the treatment	96	32%
Need more health care	27	9%
Q9. The sources of information about dental implantology accessed by the respondents		
Implant courses	69	23%
Educational films	45	15%
CDE courses	81	27%
Conferences	30	10%
Journal article	21	7%
Undergraduate training	33	11%
Textbooks	21	7%
Q10. Are you interested in learning more about dental implants?		
Yes	279	93%
No	21	7%

n = Number; % = Percentage.

Conclusion

This study demonstrated that there is a sufficient understanding among dentists regarding various methods for replacing missing teeth, with dental implants recognized as a viable option. It highlights the importance of enhancing dental education, particularly in undergraduate programs, to further increase awareness and knowledge about implants. It is also recommended to involve dental professionals and specialists more actively in discussions about dental implants and their advantages, as they are considered reliable and credible sources of information.

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Conflict of Interest: None

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