



RESEARCH ARTICLE

Dental Implant Expectations among Partially and Completely Edentulous Patients

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ABSTRACT

Purpose: To assess edentulous patient awareness, expectations, and source of information about dental implants (DIs).

Materials and methods: Edentulous patients' knowledge and awareness in using DIs, as an option in replacing missing teeth, either in implant-supported fixed prosthesis or implant-supported overdenture, were evaluated through a standardized self-explanatory questionnaire distributed in three places: King Saud Hospital, AL Harkan Private Dental Clinics (in Unaizah), and College of Dentistry, Qassim University. The questionnaires were either handed to the patients during their regular dental visits or asked by the dentist. A total of 178 subjects were included in this survey.

Results: About 93.3% of participants were aware of DIs, with statistically significant difference between the study groups ($p = 0.012$). The participants' friends and relatives were the main source of information (49.40%), followed by dentists (33.70%). Approximately 41.60% were moderately informed about DIs. Over one-third of patients expected an implant to require more care than natural teeth (39.80%). About 65.3, 73.6, and 80% of single missing, partially, and completely edentulous patients respectively, preferred to have their teeth replaced with DIs. Improvement in function was the predominant reason for completely edentulous patients (57.9%) to consider DIs, while 37.6 and 41.4% of single missing and partially edentulous patients were considered DIs to avoid adjacent teeth damaging. Fear of surgical risks was the major factor in preventing patients from choosing DIs (13.5%), followed by high cost (9.6%) and unknown side effects (6.2%).

Conclusion: There was a high awareness about DIs among removable denture patients; however, this awareness was associated with a low level of accurate information.

Recommendations: There is a need to provide more accurate information about DIs to the patients by the dentists.

Keywords: Dental implants, Edentulous patients, Information sources, Patient's awareness, Prosthodontics.

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INTRODUCTION

Today, modern implant dentistry appeals to a wider population, but the knowledge and expectations of patients are important for the success of implants.¹ Dental implants (DIs) are widely accepted for prosthetic treatment of completely or partially edentulous patients.²⁻⁵ Implant-supported prostheses have shown advantages, such as increased masticatory efficiency, maintenance of bone, improved function, phonetics, and esthetics.^{6,7} However, information about DI patients' expectations is limited.⁸ Most published studies have reported on satisfaction with treatment outcomes.⁹⁻¹² Awareness about implant treatment procedures among a selected group of patients varies; it was found to be 29% in Finland, 64% in Australia, 72% in Austria, 23.24% of urban Indian populations, 77% in the United States, 66.4% in Saudi Arabia, and 9.7% among health workers in Nigeria.¹³⁻¹⁷

In Rustemeyer and Bremerich¹ study, which aimed to evaluate the level of patient knowledge regarding DI, 58% of 315 patients questioned thought that implants require the same care as natural teeth, 80% held the function of an implant-supported overdenture as very important, and 54% attached great importance to the esthetics. The expectations that patients have for an implant-supported set are high in contrast to their willingness to make additional payments.

Baracat et al¹⁶ compared patients' expectations before implant treatment with their satisfaction regarding function and esthetics after DI therapy. Fifty volunteers answered a questionnaire about influencing variables and underwent an initial examination followed by implant therapy. Their expectations regarding esthetics and function were verified on a visual analog scale (VAS) before treatment. The VAS was also used for posttreatment completion rating. They found that patients' posttreatment completion ratings significantly exceeded their initial expectations.

In another study, Al-Johany et al¹⁷ assessed the level, sources, and need for information about DIs among a selected sample of dental patients in Riyadh, Saudi

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Arabia, through a standardized self-explanatory questionnaire. The results of this survey showed that 66.4% of 379 subjects knew about DIs mainly from their friends and relatives, followed by the dentists. The high cost was the major factor in preventing patients from choosing implants in 86.5% of the cases, while the long treatment time and fear of surgery were the factors in 71 and 68.6% of the subjects respectively.

Müller et al¹⁸ evaluated the potential barriers for accepting an implant treatment in elderly patients. The sample comprised 92 persons, 61 women, and 31 men. The results showed that 27 participants had never heard of DIs, and another 13 participants could not describe them. The strongest apprehensions against implants were cost, lack of perceived necessity, and old age. However, providing further information and promoting oral health, in general, might increase the acceptance of DIs in the elderly population.

Al-Dwairi et al¹⁹ assessed removable denture patient awareness, expectations, and sources of information about DIs. The study showed that 96% of participants (300 patients) [150 removable partial denture (RPD) wearers and 150 complete denture (CD) wearers] were aware of DIs, with no difference between CD and RPD wearers. The participants' friends and relatives were the main sources of information, followed by dentists. Improvement in function was the predominant reason (55.7%) for patients considering DIs. Fear of unknown side effects was the major factor in preventing patients from choosing DIs (11.7%), followed by high cost (9.7%) and surgical risk (8.7%). Approximately 89% had no information or were poorly informed about DIs. Over two-thirds of patients did not know about the care of DIs, causes of DI failure, or DI duration of service. Only 24.7% knew that DIs would be anchored to the jawbone; however, 27.3 and 56.7% of CD wearers and RPD wearers respectively, preferred to have their teeth replaced with DIs.

The aim of this study was to assess the patient expectation, and sources of information about DIs among edentulous patients in addition to evaluate the level of patient knowledge about DIs among a selected sample of dental patients.

MATERIALS AND METHODS

A standardized questionnaire with 15 multiple-choice questions was developed in order to generate an accessible patient profile including personal data, education, and state of the oral cavity (single missing, partially or completely edentulous). The questionnaire included 12 special questions about implants to gauge the patients' knowledge about the DI, oral hygiene considerations, durability, and the esthetic and functional importance of an implant. Furthermore, the questionnaire included patient preference

to replace the missing teeth either with fixed or removable prosthesis or implant and the reasons for whether they prefer DI or not. The other three questions were specified for the completely edentulous patients to evaluate patients' expectations regarding implant-supported overdenture and implant-supported fixed bridge and the reasons in case they prefer implant-supported overdenture. This information was fundamental to evaluate the state of patient knowledge and expectations before detailed consultations and clarifying conversations were held.

Two hundred questionnaires were distributed to female and male patients attending Dental Clinics, Qassim University, King Saud Hospital, and Al Harkan Private Dental Clinics after taking acceptance from the ethics committee in the college (EN/1/2015) over a period of 4 months. Hard copy papers and electronic methods were used to conduct the questionnaires among the patients. A patient was excluded from the study under any of the following circumstances: the answers to the 12 special questions were incomplete, if there are contrast answers, or if the age was below the determined range; 89% of the respondents were included in the study; these 178 patients were 126 women and 52 men (mean age 20–65 years), consisting of 19 completely edentulous patients, 58 partially edentulous patients, and 101 patients with single or multiple separated missing teeth.

The collected data were analyzed by using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL) software, and statistical analyses were performed with Chi-square test to compare the descriptive data.

RESULTS

Demographic Data

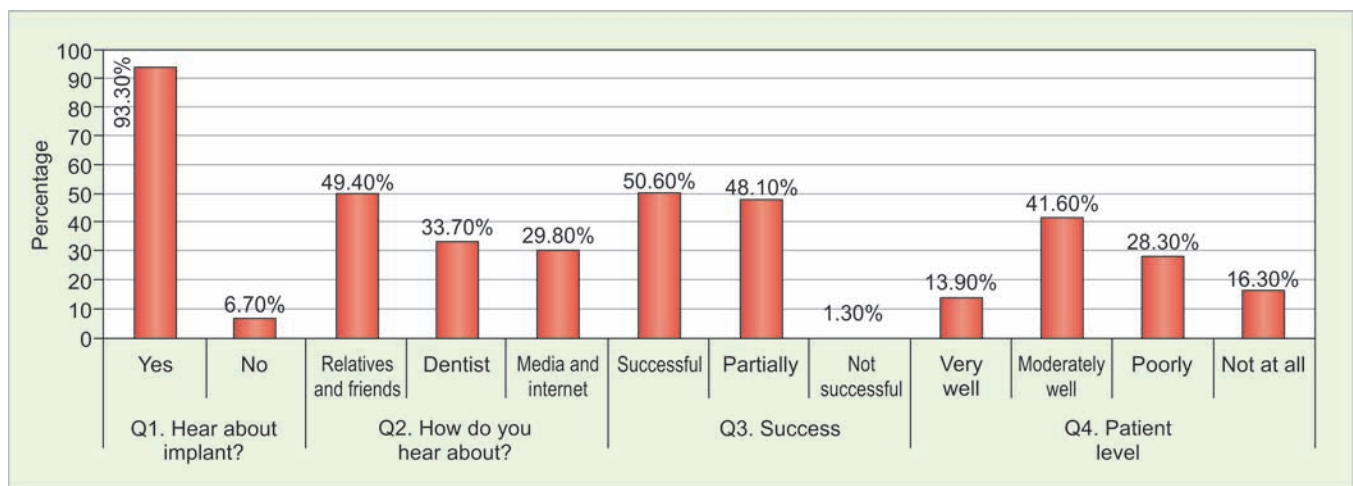
Approximately 68% of the participants (n = 121) were between 20 and 39 years, 28.1% (n = 50) were between 40 and 59 years, 3.9% (n = 7) were 60 years or more; 70.8% were female compared with 29.2% male (Table 1). The majority (69.3%) of single missing cases, 67.2% of partially edentulous cases, and 89.5% of completely edentulous cases were female. According to oral status, significantly more single missing cases were between 20 and 39 years compared with partially edentulous cases where most were between 40 and 59 years and completely edentulous cases, where most were 60 years or more. According to education, the majority (78.2%) of single missing and partially edentulous cases were university educated, while 36.8% of completely edentulous cases were primary school educated.

Patient's Information

Regarding hearing about implants, there was a statistically significant difference between the study groups

Table 1: Distribution of the study population by oral status according to age, gender, and education

		Oral status							
		Single missing n1 = 101		Partially edentulous n2 = 58		Completely edentulous n3 = 19		Total	
		No.	%	No.	%	No.	%	No.	%
Age group (years)	20–39	86	85.1	33	56.9	2	10.5	121	68.0
	40–59	15	14.9	21	36.2	14	73.7	50	28.1
	60 or more	0	0.0	4	6.9	3	15.8	7	3.9
Gender	Male	31	30.7	19	32.8	2	10.5	52	29.2
	Female	70	69.3	39	67.2	17	89.5	126	70.8
Education	Illiterate	1	1.0	5	8.6	6	31.6	12	6.7
	Primary	2	2.0	4	6.9	7	36.8	13	7.3
	Intermediate	2	2.0	8	13.8	1	5.3	11	6.2
	Secondary	17	16.8	9	15.5	3	15.8	29	16.3
	University	79	78.2	32	55.2	2	10.5	113	63.5

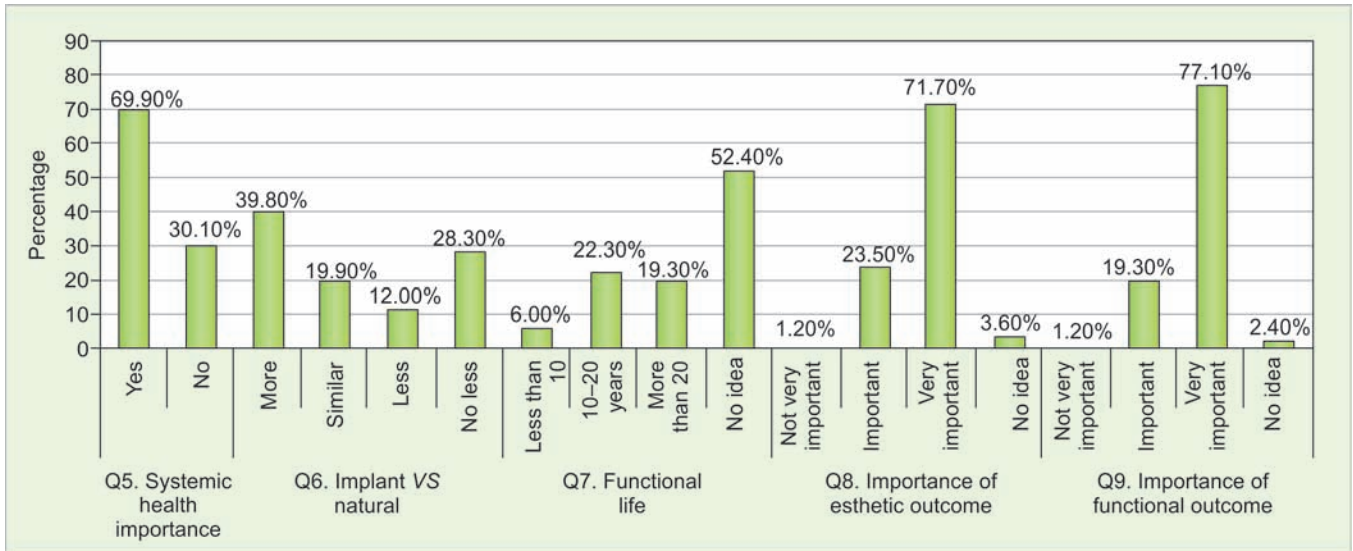


Graph 1: Comparison between the study groups regarding their information

($p = 0.012$; Graph 1). The main source of information for 49.5% of single missing cases was relatives and friends, followed by media and internet and then dentists. Also, relatives and friends were the main sources of information for the majority of partially edentulous cases (46.6%) and of completely edentulous cases (49.4%), but followed by dentists then media and internet, with significance difference between study groups for media and internet as source of DI information ($p < 0.05$). With regard to the success of DI treatment, 50.6% of the participants who heard about DI experiences from the different sources reported success with DI experiences, while 48.1% reported partially success experiences, and 1.3% reported unsuccessful experiences. For the patient level of information, there was a significance difference between the study groups ($p = 0.016$) as 18.9% of the partially edentulous cases revealed a very good level of information. While 45.9% showed a moderately good level of information, 33.3% of the completely edentulous cases had a poor level of information, while 40% had no information about DIs.

Level of Information

Only 69.9% believed that patient systemic health was important when considering implant therapy, and 30.1% were not aware of such importance (Graph 2). Concerning oral hygiene in the care of implants, 39.8% of the patients questioned expected an implant to require more care than natural teeth; 19.9% estimated the care to be similar. Only 12.0% of the patients expected that less care would be needed, while 28.3% had no idea, with no significant differences between the study groups. Most participants (52.4%) had no idea about how long an implant would last, and only 22.3% thought that implant would last between 10 and 20 years, followed by 19.3% who thought that it would last more than 20 years and 6% who thought it would last less than 10 years; 71.7% of the participants found the esthetic appearance of the implant to be a very important consideration, while 1.2% found it as not very important. Significant differences between single missing cases, partially and completely edentulous patients existed in their evaluation of the importance of the chewing function of an implant set; 77.1% of the



Graph 2: Comparison between the study groups regarding level of information

participants judged this as very important, but only 1.2% judged as not very important ($p < 0.05$).

Level of Acceptance

About 1, 1.9, and 13.3% of single missing, partial, and completely edentulous cases favored removable prosthetic options respectively. By contrast, 30.6, 24.5, and 6.7% of three groups preferred to have fixed prostheses. Around 64, 73.6, and 80% favored their teeth to be replaced with DIs. Only 3.1% of the single missing cases reported no replacement (Graph 3). Approximately 69.3% preferred to replace missing teeth by implants if such treatment was possible: 30.7, 27.6, and 31.6% of three groups for esthetic, 29.7, 34.5, and 57.9% for functional reasons. In addition, 37.6, 41.4, and 15.8% preferred having implants to avoid damaging adjacent teeth. Fear of surgical risks was the major reason preventing patients from choosing implants

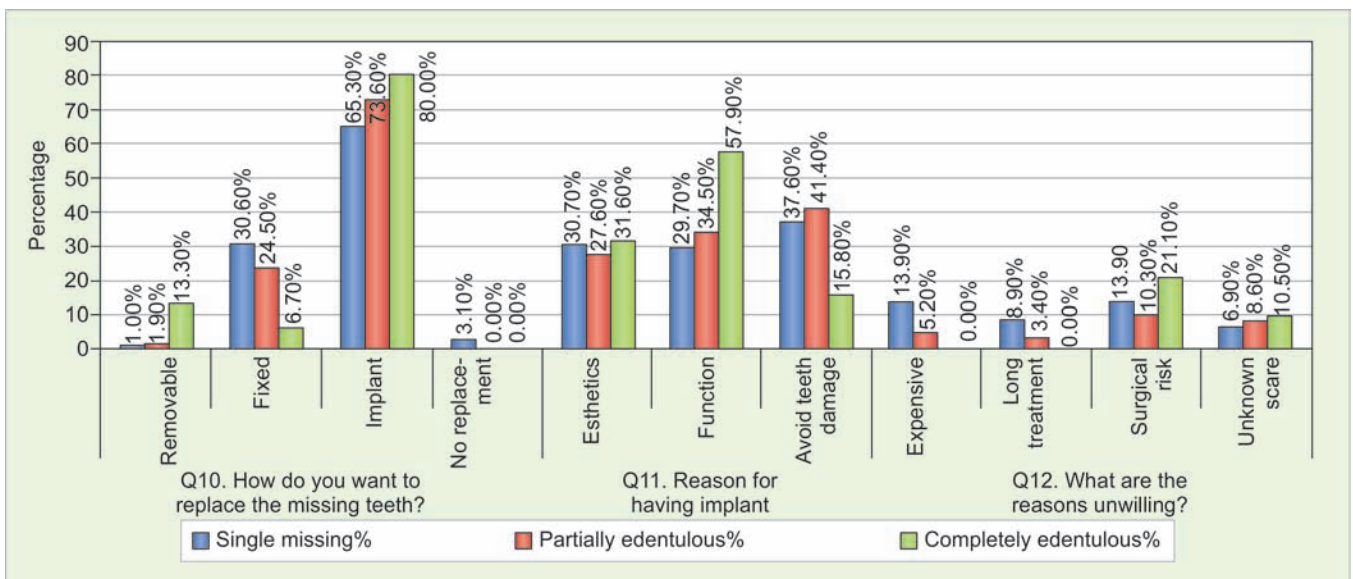
(13.5%), followed by high costs (9.6%), unknown scare (7.9%), and long treatment times (6.2%).

Patient’s Expectation for Completely Edentulous Patients Only

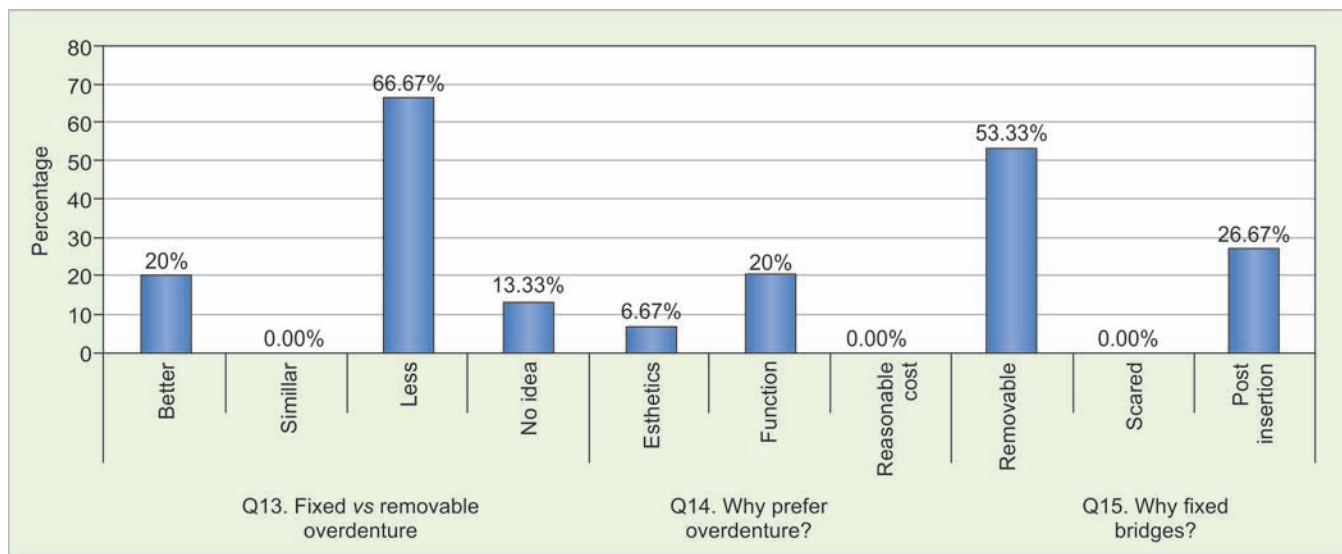
Graph 4 reflects that 20% of the completely edentulous participants preferred implant-supported overdentures over implant-supported fixed bridges for its function (20%) followed by esthetics (6.67%). The majority do not prefer it because they consider it a removable prosthodontics (53.33%) or they are scared of postinsertion complaints (26.67%), so they prefer implant-supported fixed bridges (66.67%).

DISCUSSION

This study was conducted among the patients attending the dental clinics regarding knowledge, awareness, and



Graph 3: Comparison between the study groups regarding their level of acceptance



Graph 4: Patients' expectation for completely edentulous patients only

acceptance about DIs as a treatment modality for replacing missing teeth.

Similar to Al-Dwairi et al,¹⁹ the present study used a sample of patients with a wide age range enabling the authors to assess awareness of DIs in different age groups.

Concerning hearing about DIs, in this study, the majority of patients were aware of DI as an option for missing teeth replacement, which almost coincides with the results of Al-Johany et al¹⁷ Müller et al,¹⁸ and Al-Dwairi et al¹⁹ (66.4%).

Regarding the sources of information about DIs, this survey showed that the main source of information was relatives and friends, followed by dentists and lastly the media and internet. Only 29.8% of the interviewees claimed that their primary source of information about DIs had been the internet, TV/radio, or newspapers/magazines. The less role of internet information partially might be due to the lack of internet access and lower educational status.

Our results were in agreement with those of Al-Johany et al,¹⁷ who found that relatives and friends were the main sources of information about DIs for 31.5% of the questioned subjects (379 patients), followed by dentists (28.3%). Also, studies by Müller et al¹⁸ and Al-Dwairi et al¹⁹ showed similar results. Rustemeyer and Bremerich,¹ found the most common source of information (41% of patients) on the subject of implants was family dentist. Laymen, friends, or the media were seldom relatively the first sources. Although 25% of the patients found information through several sources, including the internet, use of the internet as a sole source of information was low.

In the present study, the subjective level of information about DIs was moderately well for 41.6% of the participants, and there was a significant difference between the study groups at (p = 0.016). This is different from the

results reported by Al-Dwairi et al¹⁹ in which only 0.3% of the participants felt very well informed about DIs, while 64% of the participants claimed that they were not informed about DIs in any way, while only 10% were moderately informed.

Regarding the importance of systemic health, 69.9% of the participants believed that patient systemic health was important when considering implant therapy and 30.1% were not aware of such importance. This might be due to the majority of cases being university educated. The result coincides with the study of Al-Dwairi et al¹⁹, in which only 66% agreed with the importance of systemic health, and 32.3% did not agree with this importance.

Concerning oral hygiene in the care of the implants, the majority (39.8%) of the patients questioned expected an implant to require more care than natural teeth, which might reflect their expectations toward DIs as foreign bodies and necessitate more care, while 19.90% expected similar care as natural teeth, 12% expected less care, and 20.30% had no idea. This result is different from the results of Rustemeyer and Bremerich¹ and Al-Dwairi et al,¹⁹ while it coincides with the results of Al-Johany et al.¹⁷

According to DI lifespan, in this study most participants (52.4%) had no idea about how long an implant would last; this might be due to the low level of the accurate information. Results comparable to findings in this study were reported by Müller et al¹⁸ and Al-Dwairi et al.¹⁹ While in Rustemeyer and Bremerich¹ study, the majority (66%) of the patients expected them to last between 11 and 20 years and this is contrary to the result of the present study.

For patients' missing teeth replacement preferences, there is a significance difference between the study groups. The highest percentage was for the DIs among single, partially, and completely edentulous cases (65.30,

73.60, and 80% respectively), followed by fixed bridges for single missing (30.60%) and partially edentulous cases (24.50%), then removable prosthesis for completely edentulous cases (13.30%), which confirms the fact that most patients do not prefer removable prosthesis in replacing their missing teeth regardless of the clinical situation they have. Most of the patients felt that the implants and fixed prosthesis give a better feeling in the mouth and appear more natural. Similarly, in the study of Al-Johany et al,¹⁷ the majority of the sample (61.5%) believed that DIs are the best treatment choice for replacing missing teeth, while 35.2% said fixed partial dentures and only 3.3% said removable dentures. In the study by Al-Dwairi et al,¹⁹ approximately 75% of the participants preferred to replace missing teeth by implants if such treatment was possible.

In the present study, completely edentulous cases prefer DIs for its function, while single and partially edentulous cases prefer it to avoid adjacent teeth damaging. However, fear of surgical risks was the major reason preventing patients from choosing implants (13.5%), followed by high costs (9.6%), unknown scare (7.9%), and long treatment times (6.2%). Some patients think that the implant is a major surgical procedure because of the use of the word surgery. This may explain the high fear rate. Results comparable to findings in this study with different in the order reported that the fear of unknown side effects was the strongest argument against implant therapy (11.7%) in Al-Dwairi et al¹⁹ study, followed by high costs (9.7%), surgical risks (8.7%), postinsertion complaints (4%), complicated treatments (1.7%), and long treatment times (1%). By contrast, Rustemeyer and Bremerich¹ and Zimmer et al²⁰ reported that the cost of an implant-supported overdenture is a major argument against the implant. Al-Johany et al¹⁷ also demonstrated that high cost was the major factor preventing the questioned subjects from choosing DIs. Müller et al¹⁸ also agreed with the previous studies in that the cost was a predominant factor against DI therapy.

Regarding implant-supported overdenture, some of the completely edentulous cases prefer the implant-supported overdenture for its function (20%), while the majority of them do not prefer it because they consider it a removable prosthodontics so they prefer the implant-supported fixed bridges (53.33%), while in Rustemeyer and Bremerich¹ study, 54 and 79% participants respectively, found the esthetical and the functionality of the implant-supported overdenture to be the most important consideration.

CONCLUSION

- The majority of the questioned participants were aware of DIs as an option in replacing missing teeth, and there was a statistically significant difference between the study groups ($p = 0.012$).

- Relatives and friends were the main sources of information regarding DIs among the population; however, this awareness was associated with a low level of accurate information about implants.
- The functional and esthetic outcomes were very important for all study groups.
- Concerning oral hygiene in the care of implants, 39.8% of the patients expected an implant to require more care than natural teeth.
- The majority of completely edentulous cases do not prefer implant overdenture because they consider it a removable prosthodontics so they prefer the implant-supported fixed bridges.

RECOMMENDATIONS

- The need to provide more accurate information about DIs to the patients by the dentists.
- Do further researches to assess the patients' awareness in the coming years and include more completely edentulous cases in the sample.

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