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Dental patients' awareness and knowledge in using dental implants as an option in replacing missing teeth: A survey in Riyadh, Saudi Arabia

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Abstract *Aim:* The purpose of this survey was to assess the level, sources, and need for information about dental implants among a selected sample of dental patients in Riyadh, Saudi Arabia.

Materials and methods: Patients' knowledge and awareness in using dental implants as an option in replacing missing teeth were evaluated through a standardized self-explanatory questionnaire distributed in two places in Riyadh: Military Hospital and College of Dentistry, King Saud University (Darrayyah campus). The questionnaires were handed to the patients during their regular dental visits. A total of 379 subjects were included in this survey.

Results: The results of this study indicate that 66.4% of the subjects knew about dental implants. The subjects' friends and their relatives were the main source of information about dental implants for 31.5% of the subjects, and dentists were the secondary source for 28.3% of the sample. About 82.4% of the subjects need more information about dental implants and 85.2% of them chose the dentist to be the desired source for such information, followed by the internet in 28.5% of the cases. Almost 74.4% of those surveyed did not know if their regular dentists use dental implants. High

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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 was the factor in 71% and 68.6% of the subjects, respectively.

Conclusion: The results of this survey showed an acceptable level of awareness about dental implants among a selected sample of dental patients in Riyadh. It also showed the need for providing more general and accurate information to the patients about this treatment modality.

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1. Introduction

Since the introduction of dental implants, long-term clinical studies have confirmed the efficacy of implant therapy (Adell et al., 1981, 1990a; Albrektsson, 1988; Albrektsson et al., 1986, 1987, 1988). Dental implants were originally used for the treatment of edentulous patients and are associated with improved denture retention, stability, functional efficiency, and quality of life (Adell et al., 1981, 1990; Albrektsson, 1988; Albrektsson et al., 1986, 1987, 1988, 1990). Currently, dental implants are widely accepted as a prosthetic treatment of completely or partially edentulous patients (Naert et al., 2002a,b). This led to widespread acceptance and popularity of dental implants within the dental professional community (Berge, 2000).

Several reports have shown that dental implants are highly accepted by dental patients. Grogono et al. (1989) reported that, of the patients questioned, 88% had an increase in their self confidence after implant treatment, 89% said that they would accept to go through implant treatment procedure again, and 98% said their oral health had generally improved. A survey study among Saudi patients in Riyadh which evaluated the level of satisfaction of patients after dental implant treatment showed that 71% of the patients were highly satisfied with the esthetic results, 78% were highly satisfied with the function, 76% were willing to undergo the same procedure again and 79% would recommend it to the others (Al-Hamdan, 2007). In a literature search of reports on dental implants, roughly 6000 citations were found, which reflect the extensive basic and clinical research on a wide spectrum of aspects, but what the public thinks about dental implants has largely been neglected (Tepper et al., 2003a).

The level of awareness of dental implant treatment varies among several studies in different countries. In a survey by Zimmer et al. (1992) among 120 American subjects, public awareness and acceptance of dental implants were found to be high as well as to have a general positive attitude toward dental implants. They also reported that implant-supported rehabilitations were esthetically more attractive than removable prosthesis and rated this as a major advantage of implant dentistry.

Other reports from Finland (Salonen, 1994) and Australia (Best, 1993) have shown that the level of awareness of dental implant treatment procedures among selected group of patients was found to be around 29% and 64%, respectively. A survey report from Austria (Tepper et al., 2003b) showed that the awareness rate of dental implant procedure was 72%, and 42% of those who questioned said that they were not informed at all about dental implants, while only 4% said they were well informed about dental implants. The study concluded that the information about conventional dentistry was only marginally higher than that about implant dentistry.

Information about dental implants can be provided by various means. In some countries media can play a major role in public dental education and contribute to an increased level of awareness about dental implants. In the United States, Zimmer et al. (1992) reported that 77% of those questioned knew about dental implants, but their main source of information was the media, while their dentists did not contribute much. Similarly, In Japan, a study showed that dentists provided no more than 20% of the information about dental implants (Akagawa et al., 1988). Other studies (Best, 1993; Berge, 2000) found the media to be the main source of information, while dentists played a secondary role at best, while other reports (Tepper et al., 2003a,b) showed that for 68% of those questioned, the main source of information about dental implants was the dentist, followed by print media (23%), and by friends and acquaintances (22%). Berge concluded that mass media like periodicals, TV, and broadcasts was reported to be the main sources of mostly negative information about dental implants (Berge, 2000). Tepper et al. (2003a,b) showed that 31% of the subjects would be interested in more information about dental implants, and 75% would want to obtain this information from their dentists, and a high cost was a major disadvantage of dental implants. Kent (1992) reported that the treatment cost, fear of surgery, and long post surgical period may prevent people from undergoing dental implant treatment. Tepper et al. (2003b) showed that 34% of a sample of the general population of Austria thought that the implants lasted for a lifetime, which reveals misinformation or incomplete information of the public in terms of a major information gap, whereas in another study from Japan, only 28% of those questioned believed that their implants would last forever. Also 44% of a sample of Austrian subjects thought that special oral hygiene or dental care was necessary for implants (Tepper et al., 2003a). But in a study, only a few patients said that they would not choose implant dentistry because of the need for more rigorous oral hygiene (Muller et al., 1994).

To the authors' knowledge, there are no data available in the literature which evaluate the dental patients' awareness and knowledge toward dental implants in Saudi Arabia. Hence, the aim of this survey was to assess the level, sources, and need for information about dental implants among a selected sample of dental patients in Riyadh, Saudi Arabia.

2. Materials and methods

A self explanatory questionnaire was designed to assess the patient's knowledge and awareness about dental implants. The questionnaire was adapted from a previous study performed by Tepper et al. (2003a). A pilot test was performed on 20 den-

tal patients to evaluate the efficiency of the questionnaire after which the survey questionnaire was finalized.

The final questionnaire comprised of 17 questions to assess the following aspects:

1. Level of information about dental implants as an option in replacing missing teeth.
2. Level of acceptance of dental implants as a treatment option compared to other conventional treatment modalities.
3. Source of information about dental implants.

The questionnaires were distributed in two places: Military Hospital and College of Dentistry (King Saud University) both in Riyadh, Saudi Arabia. The questionnaires were handed to the patients during their regular dental visits. The collected data were entered into computer and analyzed by using Excel and Statistical Package for Social Sciences (SPSS Inc., Chicago, IL) software. Descriptive statistics were generated to summarize the responses.

3. Results

Out of 420 distributed questionnaires, 379 responded (90.2%). Majority of the subjects (51%) was under 30 years of age. 74.1% of the respondents were males and 25.9% were females. Table 1 summarizes the demographic data of the sample.

3.1. Level of information

For the questions about the assessment level of information in using different approaches in replacing missing teeth, 67.9% were aware about removable dentures, 79.4% were aware about fixed partial dentures, and 66.4% were aware about dental implants. Fig. 1 shows the percentages of the level of awareness for each of these options.

To assess the level of general knowledge about dental implants, 49.9% of the sample thought that the dental implant is placed in the jawbone, while 15.7% thought that it is placed in the gingiva, 9.1% in the neighboring teeth, and 25% of the sample did not know where the dental implants are placed. When subjects were asked about their knowledge about the survival rate of dental implants, 3.2% said less than 5 years, 9.4% from 5 to 10 years, 40% from 10 to 20 years, 44.6% up to 20 years and 28.8% did not know. 49.5% of the questioned subjects believed that implant failure could be due to poor oral hygiene, and 31.6% due to the type of dental implant. But 22.6% blamed the patients themselves for implant failure, 19.9% attributed implant failures to poor quality of treatment provided by the dentist and 24.2% did not know. When asked about the ideal care and hygiene of dental implants, 34.3% said that implants should be cleaned similar to natural teeth. 61.6% said it needs more care than natural teeth, while 3.3% said it needs less care than natural teeth.

3.2. Source of information

The relatives and friends were the main source of information about dental implants for 31.5% of the questioned subjects fol-

Table 1 Demographic structure of the sample.

	No.	%
<i>Age</i>		
Under 30 years	185	48.8
30–50 years	162	42.8
Above 50 years	32	8.4
<i>Gender</i>		
Male	281	74.1
Female	98	25.9
<i>Educational level</i>		
High school or below	160	42.2
Diploma	45	11.9
Bachelor	126	33.2
Master	16	4.2
Ph.D.	29	7.7
Others	3	0.8

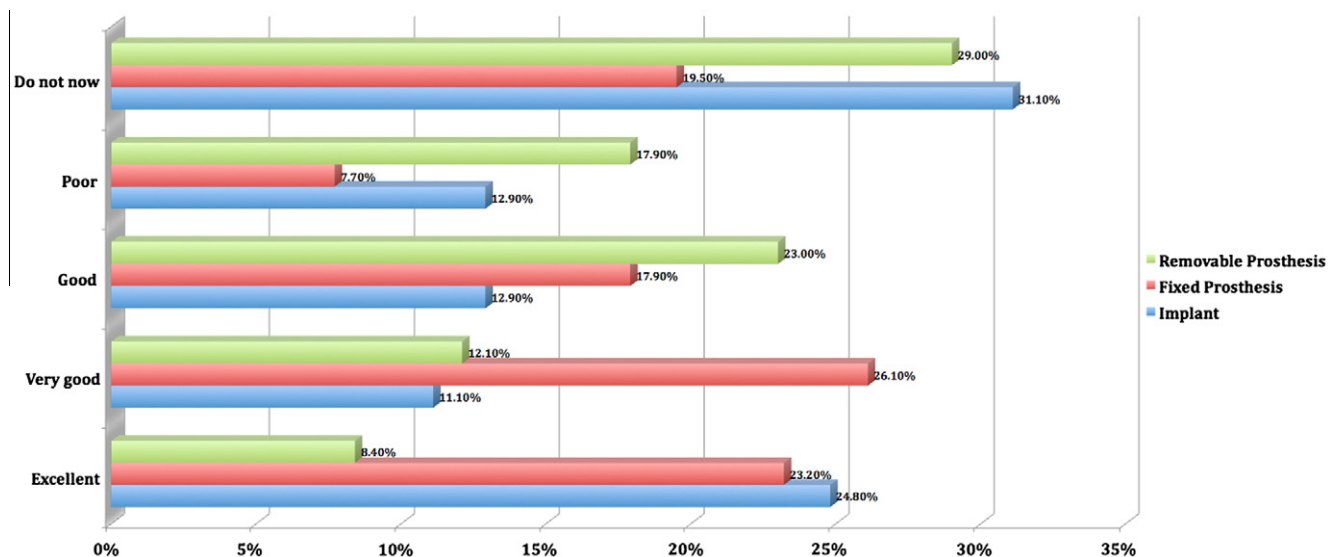


Figure 1 Subjects' response for the level of awareness for the different tooth replacement options.

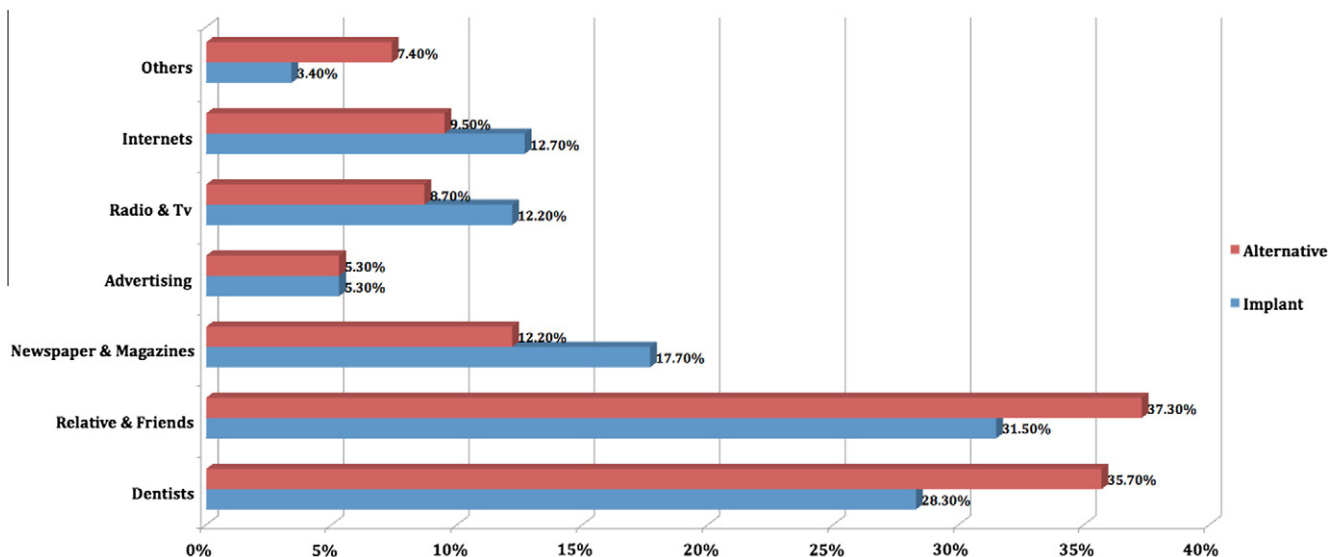


Figure 2 Percentages of the different sources of the subjects about dental implants and the alternatives.

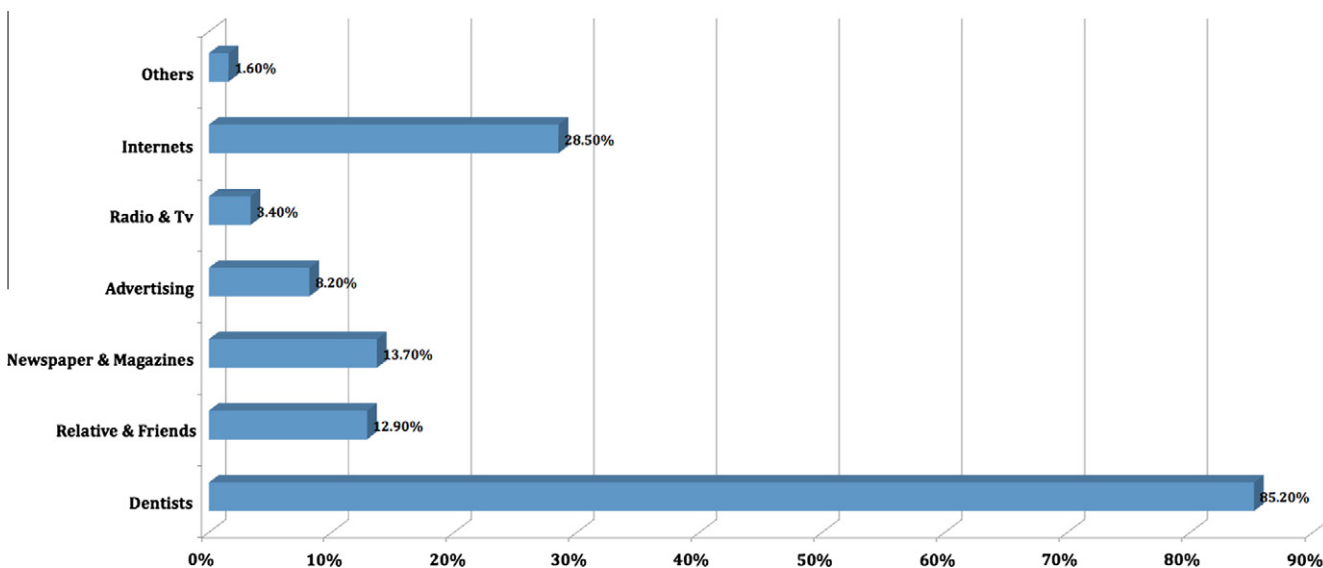


Figure 3 Percentages of different sources of information about dental implants as preferred by the questioned subjects.

lowed by dentists for 28.3% of them. Fig. 2 shows the percentages of the other sources.

About 82.4% of those questioned were interested in having more information about dental implants while 7.7% were not interested. Fig. 3 shows the percentages of the preferred sources of information about dental implants as ranked by the questioned subjects.

3.3. Level of acceptance of dental implants as a treatment option compared to other conventional treatment modalities

Majority of the sample (61.5%) believed that dental implants are the best treatment choice in replacing missing teeth, while 35.2% said fixed partial dentures, and only 3.3% said removable dentures. When comparing fixed to removable prostheses,

the respondents believed that fixed prosthesis is better than removable prosthesis in: giving a more comfortable feeling (43.7%), looking more natural (41.3%), better chewing capability (35.7%), and easier in speech and pronunciation (25.4%). The idea of having a removable denture was rejected by 40.8% of the sample. 42.7% accepted the idea, while 16.4% will accept if there is no other choice. A breakdown by age groups showed that 70.9% of those above 50 years of age accepted the idea of having a removable denture.

High cost was the major factor preventing the questioned subjects from choosing dental implants followed by long treatment time, the need for surgery, fear from the concept of implantation, and lack of sufficient knowledge about dental implants. Fig. 4 shows the percentage of each factor.

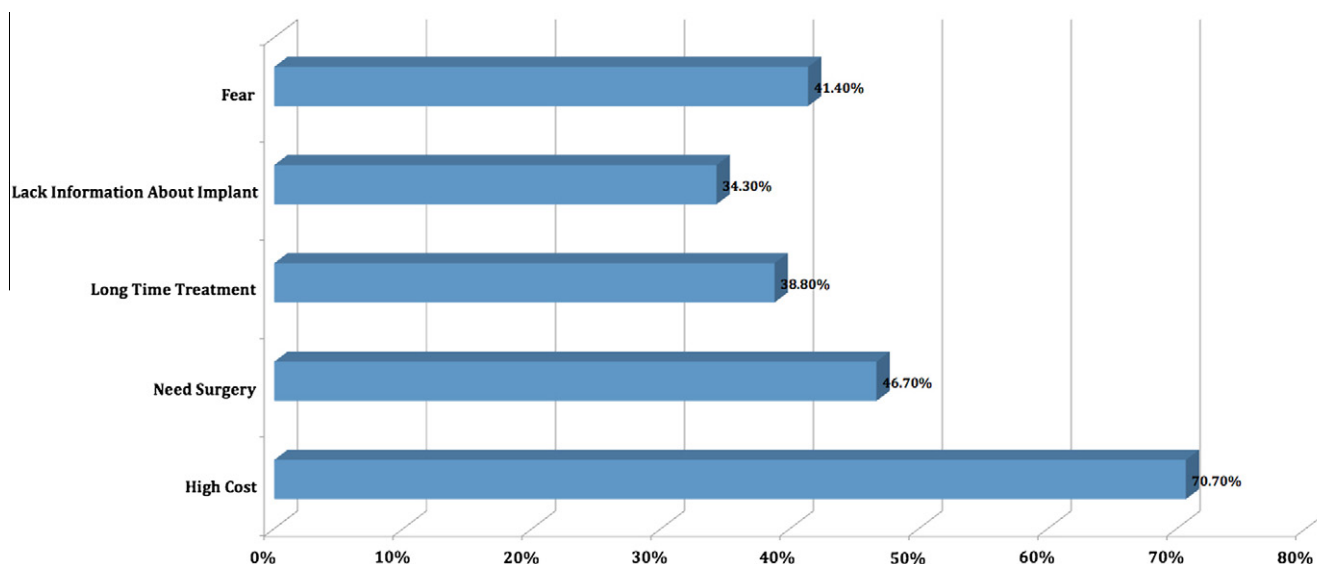


Figure 4 Percentages of different factors preventing the patients from choosing implants for replacing their missing teeth.

3.4. Level of information about patients' regular dentists and patients' desire to have dental implants provided by their regular dentists or specialists

Around 74.4% of those questioned did not know whether their regular dentists are practicing implant dentistry or not. 14% thought their regular dentists were involved in implant dentistry, while 11.6% said they were not.

78.8% of the questioned subjects felt that implants should only be inserted by specialists, while 21.2% wanted their regular dentists to provide them with dental implant treatment.

4. Discussion

The present survey gives information about subjects' knowledge and their need for more information related to dental implants as an option in replacing missing teeth, in a selected sample of dental patients in Riyadh, Saudi Arabia. This specific group sample was selected for ease of access and to increase the response rate as they are dental patients who were approached during their regular dental visits. Due to the limited access to the female patients, the responses of the females to the survey were less. The age distribution was chosen randomly.

The subjective level of information about dental implants varies, but 66.4% knew about dental implant as an option in replacing missing teeth. This is not different significantly than the results reported by Zimmer et al. (1992), Berge (2000) and Tepper et al. (2003a) which reported the level of awareness as 77%, 70.1% and 72%, respectively.

Only 3.3% of the subjects chose removable prosthesis as the best treatment in replacing missing teeth, 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 fixed prosthesis gives a better feeling in the mouth and appears more natural. This result confirmed almost what was concluded by Tepper

et al. (2003a) and Zimmer et al. (1992) that fixed prosthesis is esthetically more attractive than removable prosthesis and less annoying in the mouth.

This survey showed that, the main source of information about dental implant was the relatives and friends, followed by the dentists, newspaper and magazines, and lastly the internet. This is different than what were published before. The survey made by Zimmer et al., showed that, the media was found to be the main source of information about dental implants, while the dentists were the source for such information in not more than 17% of the cases. Berge (2000) and Best (1993) also found that, the media was the main source of information; while dentists played a secondary role at best Akagawa et al. (1988) in their study concluded that, dentists provided not more than 20% of the information.

In this survey, direct personal communication, including persons who were previously treated with dental implants, appears to be an important information source about dental implants. This may reflect the fact that subjects may rely on the experience of those exposed patients to dental implants rather than the information itself, or it could be the only available source of information available for most of the subjects questioned. Nevertheless, the dentists still have a high percentage as a source of information, but there may be a difficulty in having direct access to dentists to have the information or may be the dentists themselves who treated those patients do not have or provide information about dental implants to their patients.

Around 82% of the dental patients questioned in this survey were interested in having more information about dental implants and more than three quarters of them prefer to have their dentists as the source of such information followed by the internet. This indicates the real need for dental education about dental implants.

When patients were asked about the factors that may prevent them from choosing implants, the responses were high cost, long treatment time and fear from surgery. 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 (68%). These results are in agreement with the results of most of the previously mentioned studies (Tepper et al., 2003a,b; Kent, 1992).

Despite the comparatively high level of awareness of dental implants, only 49.9% of those questioned correctly cited the jawbone as the host site for implants, which reveals incomplete or incorrect information about dental implants even when being aware of this treatment option.

5. Conclusion

The results of this survey among a selected sample of Saudi dental patients showed that the majority of the questioned subjects were aware about using dental implants as an option in replacing missing teeth. It also showed the need for providing more general and correct information to the patients about this treatment modality.

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