

EVALUATION OF SATISFACTION OF PATIENTS TREATED WITH DENTAL IMPLANTS IN KERMAN CITY (IRAN)

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ABSTRACT

Aim: The need for progress in the sciences that deals with the treatment of human beings is the study of the patients' satisfaction with the therapies to address the deficiencies and strengths of the therapies in order to increase the satisfaction of the people being treated, which the treatment of edentulous population of the community with dental implants is not excluded from this, and the study of patient satisfaction is an appropriate indicator for evaluating this relatively new and well-documented treatment. So this study performed to evaluate of the satisfaction of patients treated with dental implants in Kerman city.

Materials and Method: This study was performed on 49 patients treated with 103 dental implants and for at least two months after placement of prosthesis on their implant. Patients' viewpoints regarding their satisfaction with implant treatment in terms of speaking, eating food, beauty, cost of treatment, duration of surgery and prosthesis, pre-treatment awareness, meeting their expectations, encouraging others to implant and taking action repeated implantation (if necessary) was examined by 10 closed and 2 open questions.

Result: Of the ten raised closed questions, the response to eight questions supported the high level of satisfaction with dental implants, but in response to the third question, there was no satisfaction with the cost of implants and in response to the fourth question, they expressed dissatisfaction on interval between performing surgery and placing the prosthesis on it.

Conclusion: Overall, patients were very satisfied with the implants. In these individuals, the most important factor that attracted their satisfaction was the fact that the implant's naturalness and the most important cause of dissatisfaction was long duration of treatment.

Key words: Evaluation, Dental Implant, Satisfaction.

Introduction

Since the early 1980s, when the *Brånemark's* dental implant system was introduced into dental treatments for the treatment of edentulous areas, so far, significant advances have been made in this field, and while introducing various systems in the field of implantology, patients are benefiting from this new treatment, and the need for progress in the sciences that deal with human treatment is the consideration of patients' satisfaction with treatment, and this treatment satisfaction is an appropriate indicator for assessing the treatment of diseases, since the patient's life with this treatment and its satisfaction are more important than the actual treatment of the disease.¹ Therefore, in this research, patients' satisfaction in Kerman city with regard to dental implants was evaluated in order to use the results to provide better treatment services for such patients.

In performing dental procedures as well as placing implants, both dentists and patients are seeking to obtain acceptable results following the replacement of the missing teeth and establishing contact with the patient and getting feedback from the results of the treatments will lead to better therapeutic goals and treatments and it will be of great help to make this communication more effective, and the patient's prior knowledge of the treatment outcomes will have high degrees of satisfaction with dental implants.^{1,2}

Materials and Method

This study was a cross-sectional type and people who entered the study at least 2 months have passed since the

prosthesis was placed on their implants. Therefore, through a telephone call, they were invited to attend the study, in the first stage of 45 patients, and in the second phase, to review the views of non responders, only 4 patients participated in the study, which, due to the similarity of their views with those who were in the first stage participated in the project, their viewpoints could not be compared statistically, and only the studied population increased to 49.

In this study, patients were asked while visit us, re-evaluate the implants and then respond to the questions in the questionnaire.

The questionnaire consisted of 12 closed questions and 2 open-ended questions. Subjects in the study to evaluate patients' satisfaction were as following: esthetic, implant function, comfort and phonation. The validity of this questionnaire was 87.8% and its reliability was 0.775%.

The questionnaires were gathered after completion and the collected data were coded and evaluated using SPSS version 11.5.

Data were analyzed by Chi square test (adaptation) and Sign test (one-sample) to determine the significance of satisfaction of patients treated with dental implants and Spearman and *Kendall tau* correlation tests, Mann-Whitney and *Kruskal-Wallis* test with coefficient Confidence of 5% were used.

Results

Question 1: Are the patients treated with dental implants satisfied with the treatment?

Of the 49 patients, the degree of satisfaction of the implant in 1 subject (2%) was very low, 1 (2%) low, in 2 subjects (4.1%) moderate, in 23 subjects (46.9%) high and in 22 subjects (44.9%) was very high.

Based on the calculations, Chi square test (adaptation) and significance level of 0.05 ($\alpha = 0.05$), the satisfaction rate of patients treated with dental implants in the five levels was different and according to frequency distribution, patient satisfaction treated with implant is towards the high (high and very high) levels.

Also, according to the sign test (for one-sample) and the significance level of 0.05, the satisfaction rate of patients treated with dental implants is more than average³ and as a result, it can be said that patients treated with dental implants have been satisfied with the treatment (statistical calculations for the second to tenth questions are similar to the first one).

Question 2: Do patients are satisfied with chewing food with implants?

Of the 49 patients, satisfaction with chewing food with implants was very low in 1 subject (2%), in 6 subjects (12.2%) low, in 2 subjects (4.1%) moderate, in 20 subjects (40.8%) was high and in 20 subjects (40.8%) was very high. According to the calculations, patients' satisfaction from chewing food with implants is towards high (high and very high) levels and patients were satisfied with chewing food with implants.

Question 3: Are patients satisfied with the cost of the implant?

Of the 49 patients, the satisfaction rate for implant in 4 subjects (8.2%) was very low, in 11 subjects (22.4%), 10 (20.4%), in 22 subjects (44.9%), high and in 2 subjects (4.4%) was very high. According to the calculations, patients' satisfaction from the cost of the implant is toward moderate and patients were not satisfied with the cost of the implant.

Question 4: Are patients satisfied with the time interval between surgery and implant placement?

Of the 49 patients, the satisfaction rate with the time interval between surgery and implant placement was very low in 8 subjects (16.3%) was very low, in 15 with the time interval between (30.6%) was low, in 9 subjects (18.4%) was moderate, and in 9 subjects was high (18.4%) and in 8 subjects (16.3%) was very high. According to the calculations, patients have not been satisfied with the time interval between surgery and placement of the implant.

Question 5: Do patients recommend implants to others?

Of the 49 patients, recommendation for placement of implants was very low by 2 (4.1%) subjects, moderate by 3 (6.1%), high by 16 (32.7%) subjects and very high by 28 (1 / 57%) subjects. According to the calculations, patients' advice to others to put the implant is toward high levels, and patients recommend others to implant.

Question 6: Do patients welcome new implants in their mouths?

Out of 49 patients, the rate of acceptance of new implant placement in the mouth was very low in 1 subject (2%), low in 2 subjects (1.4%), moderate in 3 subjects (1.6%), was high in 17 subjects (34.7%) and very high in 26 (53.1%) subject. Based on the calculations, the patient's acceptance rate from placing new implants in the mouth is toward high levels and they welcome the introduction of new implants in their mouths.

Question 7: Are patients satisfied with the beauty and comparison of the implant with the natural teeth in front of the mouth?

Of the 36 patients who placed the implant in the front of the mouth, the satisfaction rate with the aesthetic and the comparison of the implant with the dental implant was moderate in 4 (11.1%) subjects, high in 11 (30.6%) subjects and very high in 21 (58.3%) subjects. According to the calculations, the satisfaction of patients from the beauty and the comparison of the implants with the natural teeth in the front of the mouth towards the high (high and very high) levels and they are satisfied with the beauty and comparison of the implants with the natural teeth in the front of the (anterior region) mouth.

Question 8: Are patients satisfied in terms of speaking and producing sounds from implant placement in the anterior region of the mouth?

Of the 36 patients who have implants in front of the mouth (in the anterior region of mouth), satisfaction rate in terms of speaking (phonation) and produce sounds from the implant placed in the mouth in was moderate in 4 (11.1%) subjects, high in 9 (25%) subjects and very high in 23 (23.9%) subjects. According to the calculations, the patients' satisfaction in speaking (phonation) and producing sounds from the implant placed in the front of the mouth towards the high (high and very high) levels, and they are satisfied in terms of speaking (phonation) and producing sounds with the implants placed in front of the mouth.

Question 9: Did patients know enough about the implant prior to insertion?

Of the 49 patients, enough knowledge before implantation was very low in 1 (2%) subject, low in 7 (14.3%) subjects, moderate in 6 (12.2%) subjects, high 26 (53.1%) subjects and very high in 9 (18.4%) subject. According to the calculations, the level of sufficient knowledge of patients before inserting the implant was high levels and they knew enough about it before placing the implant.

Question 10: Has the placed implant met the expectations of the patients??

Out of 49 patients, satisfying the desired expectations from the implant in 2 (1.4%) subjects was very low, in 3 (6.1%) subjects was low, in 7 (14.3%) subjects was moderate, in 22 (44.9%) subjects was high and in 15 (30.6%) subjects was very high. According to the calculations, the patient's

expectations are at a high level and the implant has met the expectations of the patients.

Regarding patients' response to two open-ended questions of the questionnaire, the results are as follows:

Of the 49 patients, regarding factors that most commonly cause their dissatisfaction, 34.69% of the patients stated that they had no particular problem and the response of long duration of treatment with 20.41% was the most common cause of patients' dissatisfaction and the other items listed in Table 1.

Factors causing patient dissatisfaction	Frequency	Frequency Percentage
No specific problem	17	34.69
Long duration of treatment	10	20.40
High cost	4	8.16
Surgery difficulty and pain and swelling in area	5	10.20
Fear of failure	2	4.12
Anomalous crown and gingival around the implant	2	4.12
Inappropriate occlusion in the patient's view	3	6.12
No answer (response)	2	4.12
Chin Anesthesia Subsequent to Nerve Movement	1	2.04
Laying the covers	1	2.04
Extra gingival growth around the implant	1	2.04
Implant Failure	1	2.04

Figure 1: Factors causing patient dissatisfaction.

Of the 49 patients, regarding factors that most commonly cause their satisfaction, the most common cause of patients' satisfaction the feeling of having a natural tooth with 30.61% was the most important issue that caused satisfaction of the patients, and the other items listed in the table 2.

Factors causing patient satisfaction	Frequency	Frequency Percentage
The feeling of having a natural tooth	15	20.61
Effective chewing of food with implants	11	22.44
Having a fixed and firm tooth	10	20.40
Beauty	2	4.11
Proper behavior of the surgeon	3	6.12
Prosthetist's proper behavior	1	2.04
No answer	2	4.11
Independency of Implant	1	2.04
Absence of pain	1	2.04
No occupation of the extra space by the prosthesis	1	2.04
Covering Empty Space	1	2.04
Easier use than removable prosthesis	1	2.04

Table 2: Factors causing patient satisfaction

Discussion

Considering the consequences of tooth loss and the need to replace missing teeth, the application of dental implants can be considered as a perfectly suitable treatment. Over time, this treatment method has been more considered by patients and dentists, as a result the knowing the satisfaction rate of patients from different aspects of this treatment can be very helpful in choosing this method. In this study, we evaluated

the satisfaction of 49 patients treated with implants in different aspects. Among 49 examined patients, the overall satisfaction of the implant was high.

In a study by Pjetursson and colleagues, patients were satisfied more than 90% with 214 implants after 10 years of operation.³

In the study of Kaptein *et al.*, overall satisfaction with implant therapy was 79.7%, and the patients reported that they had improved the problems they had in chewing and talking before the treatment.⁴

In the study by Zarb and Gibbar, which was performed on 43 patients with 49 implants in 2002, patients' satisfaction from single-dental implants was evaluated over a period of 5 years and the results showed that patients were very satisfied with the treatment.⁵

Also, in the study by Topçu and colleagues, it was that fixed dental restorations based on dental implants had a high degree of satisfaction.⁶ As can be seen, the results of this study are consistent with other studies in this area. In the patients examined in this study, the satisfaction of chewing food with the implant has been high.

In a study by Pjetursson *et al.*, which was done on 104 patients in 2004, 97% of patients expressed satisfaction with chewing comfort, and 72.1% of the patients felt the same with implant and natural teeth chewing. 7% of them reported chewing with implants more easily than normal teeth.³

In a study by Strassburger and colleagues (2004) on 207 patients, 86% of them were satisfied with the implant's chewing function and the results of the current study on implant chewing were consistent with other studies. In the present study, the satisfaction rate of the cost payment for implant was moderate.⁷

Studies have shown that around 30% of Sweden, Americans and Japanese have not accepted implant treatment because of financial issues. Also, 61% of Australians think implants are only for the benefit of wealthy people, while costs are not a major problem in German patients.¹ In a study by Pjetursson and his colleagues in Norway, a large number of patients (86%) considered the cost of implant therapy reasonable and considered the cost to be fair.³

In 2004, Ralf Schular and colleagues 79 percent of those surveyed, considered implant treatment an expensive one.⁸

In comparing the results of research on the level of satisfaction with implant cost, the results of this study are consistent with some studies conducted in the other parts of the world, for example, in Norway, but differ with some countries, which can be associated with the conditions and economic situation of people in this countries and its differences with Iran. In this study, the satisfaction of the time interval between surgery and placement of the implant was moderate.

In a study by Kaptein *et al* (1998), 60% of patients stated that treatment time was not according to what they had been expecting before, and 32.9% of patients complained of long-term treatment, 53.3% of them reported which treatment was longer than expected.⁴

In a study by Tepper *et al* (2003) about disadvantages of implant treatment, 76% of subjects considered cost as disadvantages of this treatment and 34% of them considered anxious surgeries as disadvantages of this treatment, and only 15% complained about the time of repair and long prosthesis.⁹

Concerning the satisfaction of time intervals and prolonged implant treatment, the results of this study are consistent with the results of studies conducted in other countries. The subjects in this study recommend others to put on implants too much.

In a study by Vermylem (2003), patients were positive about the question of whether they recommend implant therapy to others,¹⁰ which is consistent with our study. Also, in a study by Pjetursson, 86% of patients stated that they would recommend this treatment to friends and relatives if needed.³

In our study, the rate of acceptance of the placement of new implants in the mouth was very high.

In a study by Pjetursson *et al.*, 94% of the patients were willing to tolerate the treatment if needed.³

In the study by Vermylem, which was conducted in Belgium in 2003 on 43 patients regarding the degree of satisfaction with implant therapy, only one quarter of the patients responded negative to the question of whether you would like to undergo the same treatment as previously provided for you.¹⁰

Of the 49 patients, 36 patients with implant in front of the mouth (in the anterior region of mouth) had a high level of satisfaction with the beauty and comparison of the implant with the normal tooth.

In the study conducted by Pjetursson, 97% of the patients were satisfied with the beauty that the implant provided in comparison with the natural teeth.³

In a study performed by Strassburger *et al* (2004) on 207 patients, satisfaction in terms of esthetics was 77% compared to implant treatment.⁷

In terms of patient satisfaction with the aesthetic aspect, compared to the implant treatment, the results of the studies are consistent with the results of our study.

Of the 36 patients who placed implant in front of their mouth (in the anterior part of their mouth), the satisfaction of speaking (phonation) and producing sound from the place implant in the anterior region of the mouth was very high.

In a study by Pjetursson *et al.*, 86% of the subjects were satisfied with implant treatment in terms of speaking (phonation).³ Satisfaction with speaking (phonation) with

implants was 68% in the study conducted by Strassburger and colleagues.⁷

In this study, patients had enough knowledge about the implant prior to insertion. And in a study by Kaptein *et al* (1998), 52 percent of patients reported that they had received information about the implant from the press and relatives. Of the remaining 48%, 36% had familial dentists and 22% had been informed with their physicians, and patients responded that they wanted to know before surgery.⁴

In the study conducted by Berge (2000) that examined the extent of general knowledge, information resources and patients' assessment of implant therapy, results showed that 70.1% of the studied population had a few information about dental implants and the main source of information, was Media and communications together.¹¹ The results of these studies were similar to the results of our study on patients' knowledge about implant therapy. In this research, the implant has met the patient's expectations to a great extent.

In a study by Kaptein *et al.*, 86% of patients after treatment expressed that they expected a similar operation (surgery), and 75% of patients had fulfilled the expectations regarding the structure and function of the implant prosthesis.⁴ The results are consistent with the results of our study.

In response to two open-ended questions 1- what is the most common factor causing their dissatisfaction, 34.69% of the patients stated that they had no particular problem and the response of long duration of treatment with 20.41% was the most common cause of patients' dissatisfaction. In this regard, patients in the study conducted Zimmer mentioned anxiety costs and surgery as disadvantages.¹²

And In response to questions 3- what is the most common factor causing their satisfaction, the feeling of having a natural tooth with 30.61% was the most important issue that caused satisfaction of the patients.

In a study by Tepper *et al* (2003), 91 percent of those treated with implants reported the fixed prosthesis as advantages of treatment. And 39% stated that their implant function is completely similar to natural teeth, and 36% reported the beauty and attractiveness of the treatment as benefits of this treatment,⁹ which is consistent with the other studies.

Conclusion

The satisfaction rate of patients treated with dental implants in Kerman city is desirable, which use of this new and scientific method should be facilitated by increasing the knowledge and awareness of the people. Also, in view of expressing patients' dissatisfaction with the long duration of treatment, it is advisable to use advanced and scientific methods and systems that reduce the time interval between performing implant surgery and loading implant implants. Furthermore, due to the patient's dissatisfaction with the cost of the implant, with the localization of the construction

of titanium fixture and prosthetic implants, it is possible to pay attention to the patient's desire to reduce costs.

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