

Dental Implants and Quality of Life: An Assessment of the Impact on Oral Health (OHIP-14)

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Abstract

Background and objectives: Oral health impact profile index (OHIP-14) is considered one of the most famous and reliable known strategies for identifying and evaluating various aspects of the quality of life associated with oral health. In spite of the developmental studies in this field, very few studies have implant-dependent prostheses recipients are a community of their own. In the present study, which is conducted in Iran for the first time, we intend to study the effect of using implant-dependent prostheses on the quality of life during 6 and 12 weeks.

Materials and methods: The research was a descriptive cross-sectional study in which 126 patients referred to a number of dental clinics. The Implant-based Treatment Plan was considered for their prosthetic treatments. They are interviewed before the start of the treatment process and respond to questions from the OHIP-14 questionnaire. In addition, after the relative improvement of the site of implant surgery, the questionnaire was reinstated by the patients before the process of prosthetic rehabilitation was started. In the next stage, after receiving the prosthesis, after 6 weeks and then 12 weeks, the questionnaire was completed again.

Results: The mean score of the questionnaire before the treatment was 39.17, after the surgical stage, 41.47, six weeks after the delivery of the prosthesis 30.15 and 12 weeks after the delivery of the final prosthesis was 27.87. The average of the total scores varied in different stages, increasing between the first and second stages, and then decreasing further, and the difference between the mean of the total scores in these sections was significant ($P < 0.0001$). In other words, the quality of life associated with oral health in postoperative patients decreases somewhat and will increase significantly in post-delivery delivery of the final prosthesis.

Conclusion: In conclusion, an increase in quality of life was observed after the completion of prosthetic reconstruction in all domains of OHIP-14. The patients with prosthesis receiving more than three units generally have better results in physical scales.

Keywords: Oral health-related quality of life; Dental prosthesis; Dental implants.

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1. Introduction

Tooth loss resulting from caries, periodontal disease, or trauma strongly affects the quality-of-life individuals, and increasing the number of lost teeth decreases the quality of life (1). Patients' function, comfort, and esthetic are all

enhanced with dental implants, which improve the retention and stability of dental prostheses. However, this treatment plan has limitations (in cases with insufficient bone volume) and biological and prosthetic complications (2, 3). Besides, the differences between implants and natural teeth are also crucial regarding the mechanical

sensation created by patients when chewing, which can cause discomfort (4).

Different factors have been studied in recent years for individual quality of life. Quality of life is linked to oral health (5). Oral health affects people physically and mentally and how they grow, feel the joy of life, and social relationships (6). Personal assessment of the impact of functional, psychological, social, pain, and discomfort factors on issues related to the oral cavity is considered an oral health-related quality of life (OHRQL) (7). Oral health and quality of life have been examined in the literature through various questionnaires. A well-known and dependable strategy for identifying and evaluating various dimensions of OHRQL is the oral health impact profile (OHIP) (8). The initial version had 49 questions in seven domains. Despite the high accuracy of OHIP-49, the diversity of questions and, consequently, the possibility of reducing the respondent's cooperation led to the questionnaire being summarized in 14 questions named Oral Health Impact Profile-14 (OHIP-14) (9). OHIP-14 is the most authoritative questionnaire widely used in studies and translated into many languages (8, 9). This study evaluated the quality of life of patients with implant-supported prosthesis before surgery, one week after surgery, and 6 and 12 weeks after completion of prosthodontic treatment using OHIP-14. The effect of age, sex, and different prosthetic type were also assessed.

2. Materials and methods

2.1. Study design

This study was designed following the World Medical Association Declaration of Helsinki and subsequent revisions (10). For dental implant treatment, individuals referred to dental school, Shahid Beheshti University of Medical Sciences, participated. First, the study protocol was explained to them, and then they signed informed consent.

2.2. Quality of Life Assessment (Oral Health Impact Profile)

The Persian version of OHIP-14 was used, and its reliability (Cronbach's $\alpha = 0.095$) and validity (more than 70%) was approved in the study of Motalebnejad et al. (9); the questionnaire was filled in four phases before surgery, one week after surgery, 6 and 12 weeks after completion of prosthodontic treatment. Furthermore, demographic information, including age and gender, as well as the type of edentulousness, is recorded. The

questioner owned 14 questions assessing seven dimensions (including pain, limitation of function, physical disability, social disability, psychological discomfort, psychological disability, and handicap). Every 2-question assessed one dimension. The response to these questions was valued according to the Likert score as 1 (never), 2 (hardly ever), 3 (occasionally), 4 (fairly often), and 5 (mostly often). In each of the domains, the sum of scores will be calculated in different periods and will be assessed in the same way as mentioned.

2.3. Statistical analysis

We used SPSS 15 for the statistical analysis of the present study (Chicago, IL, USA). Mean values and standard deviation of the total OHIP-14 index in each of the subgroups of the questionnaire were assessed before the surgery, before the prosthesis, six weeks after treatment, and twelve weeks after treatment. A generalized estimating equation regression modeling was done to evaluate the effect of time and other variables on volunteers' scores (OHIP-14). Regarding assessing age groups, they were formed in groups with an interval of 10 years, with a total of 6 age groups from 20 to 80 years.

3. Results

Finally, 126 volunteers with treatment plans for dental implant placement participated in this study, including 61 females and 65 males (with an age range of 26 to 71 years old and mean age of 51.35 years). Based on treatment plans, patients were divided into three groups: A: Single implant ($n = 59$), B: Two or three implants ($n = 48$), and C: More than three implants ($n = 19$).

Table 1 shows the average total score of the OHIP-14 in different studied stages. The mean of total scores in different stages differed as it increased between the first and second stages and then decreased. The difference between the mean of total scores in these stages is statistically significant ($P < 0.0001$). In other words, the OHRQL in patients after surgery showed a slight decrease, and in the periods after the final prosthesis delivery, it was significantly increased.

The mean total scores of different types of treatment plans were significantly different, so as we moved from the single-tooth implants to more than three implants, the OHRQL decreased ($P < 0.05$) (Figure 1). Considering sex and age, there were no statistically significant differences ($P = 0.939$ and $P = 0.242$, respectively).

The mean scores of each domain were compared separately in different treatment groups. The domains of functional limitation and physical disability showed a

significant increase of OHRQoL 12 weeks after prosthetic completion in patients with more than three implants (P-value < 0.0001, < 0.001) (Figures 2 and 3).

Table 1. Statistical findings of total scores of participants from OHIP-14 in different studied times.

Time	Mean	Standard deviation	Median	Minimum	Maximum
Before surgery	39.17	6.57	41.0	23	54
One week after surgery	41.47	5.96	42.0	25	53
6 weeks after surgery	30.15	3.44	30.0	22	41
12 weeks after surgery	27.87	3.40	28.0	18	35

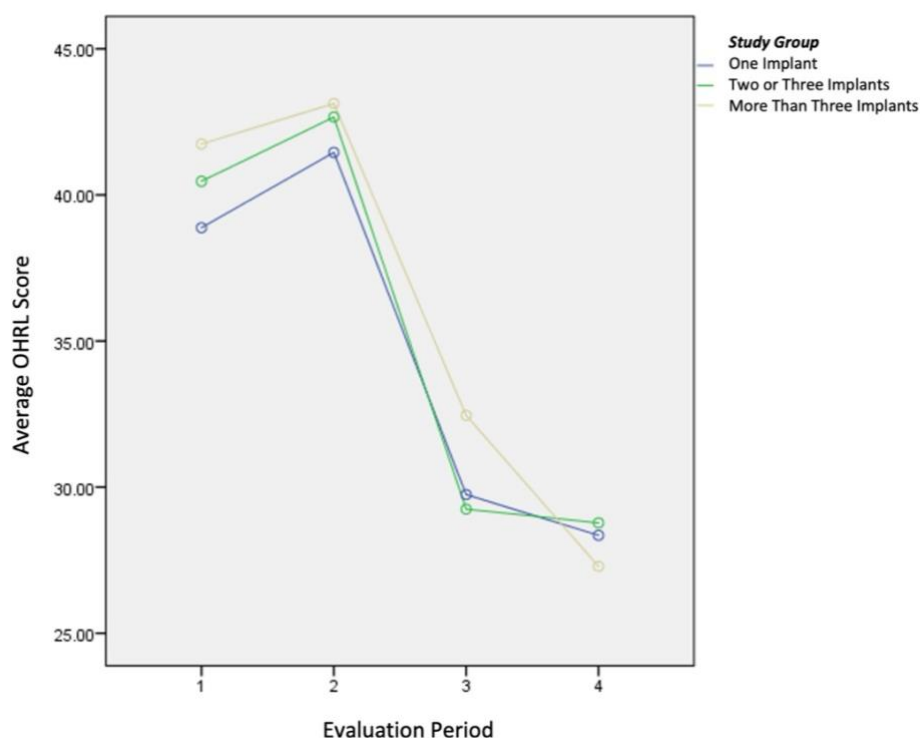


Figure 1. Mean total scores of the OHIP-14 questionnaire in different study groups according to periods of before treatment, after surgery, six weeks after delivery of prosthesis, and twelve weeks after delivery of the final prosthesis.

4. Discussion

Regarding the total scores of the questionnaire, significant changes can be seen in each stage. After surgery, the quality of life has decreased by 2.3 points compared to before treatment, which can be due to pain and discomfort caused by surgery and the wound healing process resulting from surgery, which leads to impaired function. It is confirmed that critical processes have a faster and more significant impact on the results of the OHRQoL (11).

The comparison of OHIP-14 domains demonstrated that functional limitation, physical pain, and physical

disability worsened after surgery due to surgical process and subsequent tissue repair. It appears that the psychological impact of starting treatment improved the quality of life in the domains of psychological discomfort and psychological disability, social disability, and handicap. Between the second and third stages, there is an increase in quality of life in all the domains, which is in line with previous studies, which shows that prosthetic treatments based on dental implants lead to improved OHRQoL (5, 12, 13). Twelve weeks after prosthetic completion, OHRQoL significantly increased functional limitation, physical pain, and physical disability.

The comparison between studies was difficult because of

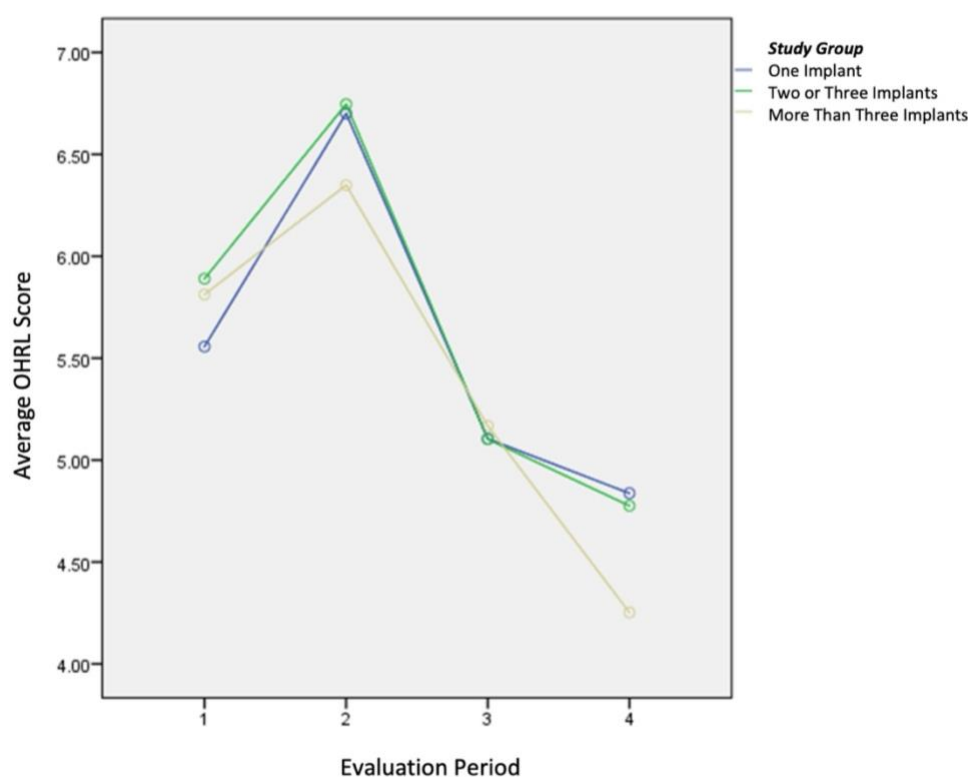


Figure 2. Mean total scores of the OHIP-14 questionnaire of the first domain (functional limitation) in different study groups according to periods of before treatment, after surgery, six weeks after prosthesis delivery, and twelve weeks after final prosthesis delivery.

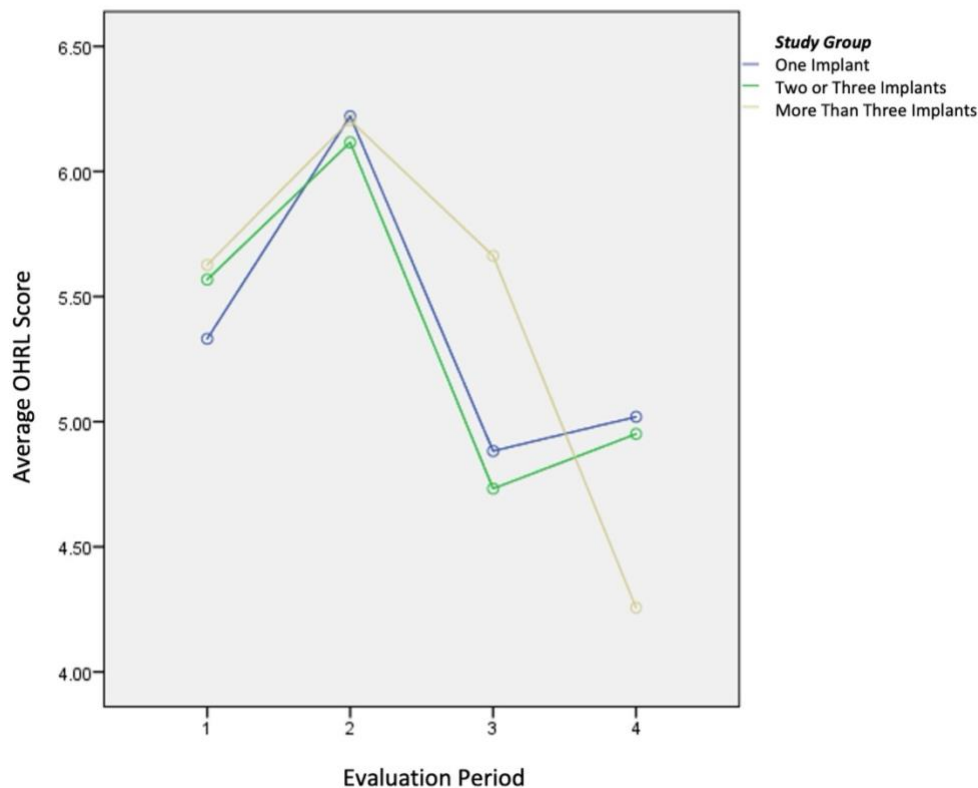


Figure 3. Mean total scores of the OHIP-14 questionnaire of the fourth domain (physical disability) in different study groups according to periods of before treatment, after surgery, six weeks after prosthesis delivery, and twelve weeks after final prosthesis delivery.

heterogeneity in the studied issues about dental implant treatment and selection time. Dental implants have been shown to improve the quality of life in most studies (14, 15).

However, evidence is insufficient to show the superiority of implant-supported prosthesis compared to conventional prosthesis (16). Yoshida et al. (17) showed that the type of partially edentulous arch was essential, and the quality of life of patients with unilateral free-end edentulous space improved more than bounded edentulous space one week after prosthetic completion. Beresford et al. (18) showed no differences between two-implant overdenture and three-implant-fixed prosthesis considering OHIP-14. Still, patients' satisfaction was higher with the fixed prosthesis regarding retention, stability, and ease of chewing.

5. Conclusion

In conclusion, despite the decreased quality of life immediately after implant surgery, an increase in quality of life was observed after the completion of prosthetic reconstruction. This quality-of-life improvement was observed in all domains of OHIP-14. Patients who received more than three dental implants generally showed better results in physical domains.

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None.

Ethics

The research protocol was reviewed and approved by the ethics committee of Shahid Beheshti University of Medical Sciences (IR.SBMU.RIDS.REC.1395.247).

Author contributions

Fazele Atarbashi-Moghadam: Conceptualization, Methodology, Supervision, Validation, Writing-Original Draft, Writing- Review & Editing.

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Ramin Ansari: Data Curation, Writing- Review & Editing.

Ardeshtir Khorsand: Data Curation, Writing- Review & Editing.

Mohsen Golkar: Investigation, Writing-Original Draft, Writing- Review & Editing.

Conflict of interest

The authors declare no conflict of interest.

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