|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
PubMed (National Library of Medicine ID: 101738825)
Index Copernicus Value 2018: 75.71
Original Research Article
Volume 3, Issue 4; April: 2019; Page No. 60-66

ORAL HEALTH RELATED QUALITY OF LIFE OF PATIENTS AFTER IMPLANT TREATMENT: A PROSPECTIVE COHORT STUDY IN A PRIVATE DENTAL PRACTICE

MOHAMMED SIRAJ UR REHMAN

Assistant Professor, Department of Prosthodontics, Government Dental, College & Hospital, Hyderabad, Telangana

Article Info: Received 20 March 2019; Accepted 06 April. 2019
Cite this article as: REHMAN, M. (2019). ORAL HEALTH RELATED QUALITY OF LIFE OF PATIENTS AFTER IMPLANT TREATMENT: A PROSPECTIVE COHORT STUDY IN A PRIVATE DENTAL PRACTICE. *International Journal of Medical and Biomedical Studies*, *3*(4).
DOI: https://doi.org/10.32553/ijmbs.v3i4.193
Address for Correspondence: MOHAMMED SIRAJ UR REHMAN, Assistant Professor, Department of Prosthodontics, Government Dental, College & Hospital, Hyderabad, Telangana
Conflict of interest: No conflict of interest.

Abstract

Introduction: Clinicians are currently unable to quantify the psychosocial, functional, and esthetic effects of prosthetic interventions to replace teeth. Understanding the effects of treatment to replace teeth on oral health-related quality of life (OHRQoL) is important.

Aims and Objectives: This study aimed at analysing the improvement of OHRQoL of patients who underwent dental implant treatment using the "functional", "psychosocial" and "pain and discomfort" categories of the Geriatric Oral Health Assessment Index (GOHAI).

Materials and Methods: These patients were assessed for their OHRQoL by answering a GOHAI questionnaire before implant placement and between 3 to 9 months after treatment. Gender, age, tobacco habits and potential preliminary periodontal treatment were also determined at the beginning of the study. In our study, evaluation process of OHRQol was assessed using the GOHAI questionnaire and data were collected during interviews. GOHAI comprised 12 items. For each one a score between 1 and 5 was given.

Results: Out of 200 subjects, 125 were males and 75 females at a ratio of 1.66 to 1. The mean age was 45±2.9 years. According to the degree of oral treatment needed, the subjects were categorised as "Single Tooth" (n = 95), "Fixed Partial Denture" (n = 85; 2 to 6 teeth replaced) and "Full Prostheses" (n = 20; 10 to 14 replaced teeth). The latter category comprised "full fixed Prostheses" (n = 9) and "Implant Retained Complete Over-denture" (n = 11). The characteristics of this population did not have any statistically significant impact on GOHAIAdd scores before or after treatment. These parameters were also not associated with changes in the OHRQoL of the participants.

Conclusion: OHRQoL was found to be improved after oral treatment by implants.

Key Words: Implant, Oral health, Questionnaire Removable Partial Denture, Fixed Partial Denture.

INTRODUCTION:

Despite declines in edentulism, particularly in developed countries, tooth loss remains prevalent globally and leads to functional and esthetic disabilities with negative psychosocial impact.[1, 2] Prosthodontic options for replacing missing teeth in patients with partial edentulism include implant-supported crowns (ISCs), implant-supported fixed dental prostheses

(IFDPs), implant-supported removable dental prostheses (IRDPs), tooth-supported fixed dental prostheses (TFDPs), and removable partial dentures (RPDs).[3, 4]

Quality of life includes conditions that enable good living, such that a person is able to perform everyday activities in a good physical, mental and social state and the patient is satisfied with therapeutic efficacy, disease control, or rehabilitation. In the elderly and young people, tooth loss has significant side effects on different aspects of quality of life, and these effects are internalized by the person. Studies demonstrate that edentulous conditions have negative effects on oral health-related quality of life (OHRQoL), including inability to chew, trouble speaking, and pain and dissatisfaction associated with appearance. Dental implants have beneficial effects in individuals who have lost their teeth.[5-7]

Although the exact number of dental implant treatments in our country is not known, evidence suggests that the demand for implant therapy is increasing similar to other countries in the world. A majority of dental specialists are familiar with this technique and introduce it as a proper treatment. The introduced process has been accepted worldwide but there are some conditions that may prevent the installation of dental implants like financial or anatomical problems and this may affect the quality of life of the affected person. To assess how a dental implant can affect the daily performances of a patient, a scientific investigation on the influence of the implant in patients' lives and their satisfaction of the result should be performed. However, some evidence suggests a possible role of implants in quality of life.[1] Practitioners can rely on a number of tools for evaluating OHRQoL, including the Oral Health Impact Profile (OHIP), the oral impacts on daily performances (OIDP), and the Geriatric Oral Health Assessment Index (GOHAI).[8]

The GOHAI simply consists in a series of clear and concise questions grouped in twelve items which allow accurate analysis of the functional and psychosocial domains and of discomfort and pain. This questionnaire is reproducible, easy to use and has already been applied previously in the evaluation of the impact of oral treatment.[9] Given the importance of this subject, the present study was carried out to assess whether implants and fixed or retained prostheses could improve the OHRQoL of partially or completely edentulous patients.

Materials and Methods:

Our study was done on 200 patients who visited a private dental clinic in Hyderabad for replacing missing teeth by implants from January 2018 to December 2018. All the patients were explained about the study and an informed consent was obtained from all of them. These patients were assessed for their OHRQoL by answering a GOHAI questionnaire before implant placement and between 3 to 9 months after treatment (average; 7.3±1.1 months). Three homogenous groups were then formed according to the time between two evaluations: less than 4 months (n = 63), 5 to 7 months (n = 52), and 7 to 9 months (n = 85). Gender, age, tobacco habits and potential preliminary periodontal treatment were also determined at the beginning of the study.

In our study, evaluation process of OHRQol was assessed using the GOHAI questionnaire and data were collected during interviews. GOHAI comprises 12 items grouped into three fields: (1) the functional field (eating, speaking, swallowing), (2) the psychosocial field (concerns, relational discomfort, appearance), (3) the pain or discomfort field (drugs, gingival sensitivity, discomfort when chewing certain foods). For each question a score between 1 and 5 was given. The maximum score is 60 (20 = functional field; 25 = psychosocial field; 15 = pain or discomfort field).

According to Atchison and Dolan (1990), a score ranging between 57 and 60 is considered as high and corresponds to a satisfactory OHRQol. A score ranging between 51 and 56 is regarded as

average, and a score of 50 or less is considered as a low score, reflecting a poor OHRQol.[10]

Statistical Analysis:

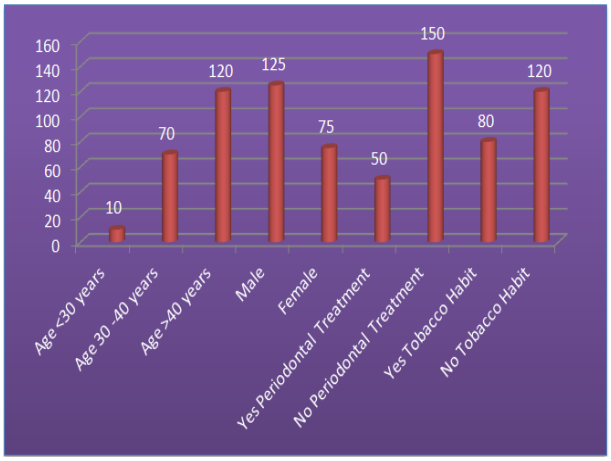
Data were expressed as mean±SD and analyzed by software SPSS Version 20 (IBM SPSS Statistics for Windows, IBM Corp., Armonk, NY: USA). Data from the GOHAI questionnaire before and after implant treatment were analyzed using a General Linear Model procedure (GLM) (variable: GOHAI parameters; fixed variable: type of oral treatment). A Student Newman-Keuls Post Hoc test (SNK) was applied to discriminate the impact of the type of treatment ($\alpha = 0.05$). The same method was used to measure possible impacts of age, gender, primary periodontal treatment and tobacco habits on GOHAI scores before and after treatment. The impact of the type of treatment and different follow-up times on GOHAI scores was tested by repeated-measure analysis (variable: GOHAI parameters before and after treatment; fixed variable: type of oral treatment; follow up time) followed by the SNK test. Possible impacts of age, gender, periodontal treatment and tobacco habits on GOHAI scores were tested similarly.

Results:

Out of 200 subjects, 125 were males and 75 females at a ratio of 1.66 to 1. The mean age was 45±2.9 years. According to the degree of oral treatment needed, the subjects were categorised as "Single Tooth" (n = 95), "Fixed Partial Denture" (n = 85; 2 to 6 teeth replaced) and "Full Prostheses" (n = 20; 10 to 14 replaced teeth). The latter category comprised "full fixed Prostheses" (n = 9) and "Implant Retained Complete Over-denture" (n = 11). The characteristics of the participants were gathered and the distribution according to gender, age group, tobacco habits and preliminary periodontal treatment (**Table 1** and **Graph 1**).

Table 1 Distribution of Subjects characteristics

Sr. No.	CATEGORY		NUMBER	PERCENTAGE
1	Age	<30 years	10	5%
		30-40 years	70	35%
		>40 years	120	60%
2	Gender	MALE	125	62.5%
		FEMALE	75	37.5%
3	Periodontal Treatment	YES	50	25%
		NO	150	75%
4	Tobacco Habit	YES	80	40%
		NO	120	60%

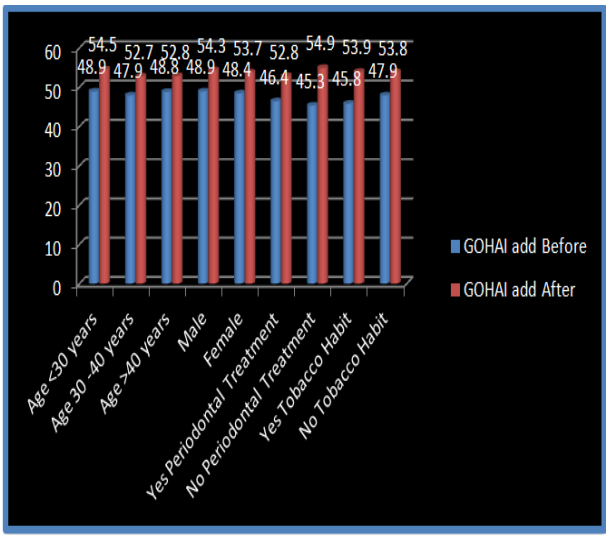


Graph 1 Distribution of Subjects characteristics

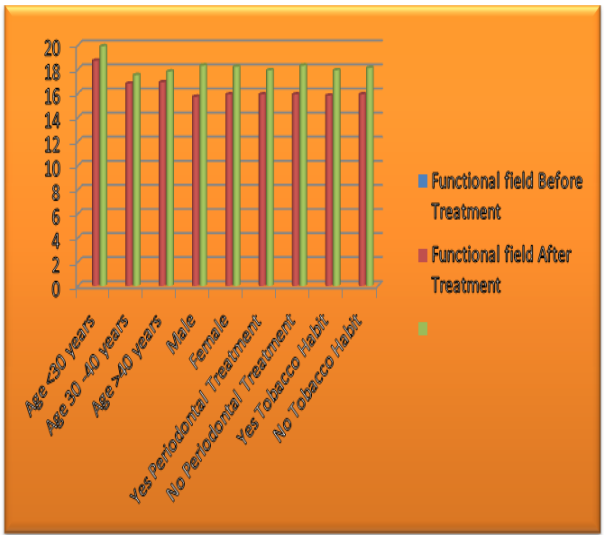
For each evaluation time (before and after treatment), the mean values (±SD) of GOHAI-Add and each GOHAI field (Functional, Pain or Discomfort, and Psychosocial domains) according to gender, age, tobacco habits and preliminary periodontal treatment were recorded (**Table 2 and Graphs 2-5**). The characteristics of this population did not have any statistically significant impact on GOHAIAdd scores before or after treatment. These parameters were also not associated with changes in the OHRQoL of the participants.

Table 2 Means values of GOHAI-Add, for each GOHAI fields, before and after treatment and according to the gender, age, tobacco habits and primary periodontal treatment

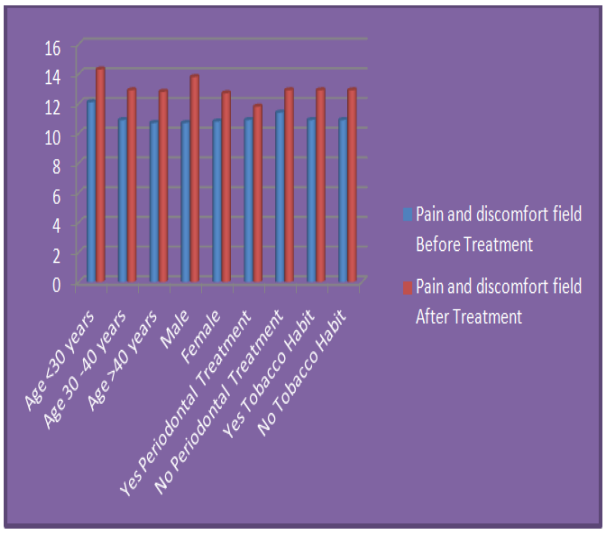
Sr. No.	Category		GOHAI add		Functional field		Pain and discomfort field		Psychosocial field	
			Before	After	Before	After	Before	After	Before	After
1	Age in years	<30	48.9	54.5	18.7	19.9	12.1	14.3	19.8	21.2
		30-40	47.9	52.7	16.8	17.5	10.9	12.9	19.2	21.3
		>40	48.8	52.8	16.9	17.8	10.7	12.8	19.4	21.9
2	Gender	Male	48.9	54.3	15.7	18.3	10.7	13.8	19.6	21.9
		Female	48.4	53.7	15.9	18.2	10.8	12.7	18.8	21.5
3	Periodontal Treatment	Yes	46.4	52.8	15.9	17.9	10.9	11.8	17.4	21.8
		No	45.3	54.9	15.9	18.3	11.4	12.9	19.4	22.1
4	Tobacco Habit	Yes	45.8	53.9	15.8	17.9	10.9	12.9	17.9	21.9
		No	47.9	53.8	15.9	18.1	10.9	12.9	19.8	21.9



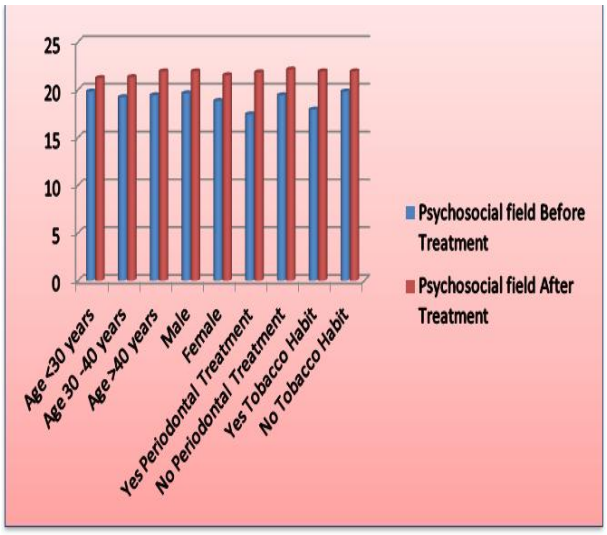
Graph 2: Means values of GOHAI-Add, for each GOHAI fields, before and after treatment and according to the gender, age, tobacco habits and primary periodontal treatment



Graph 3: Means values of GOHAI-Add, for Functional GOHAI field, before and after treatment and according to the gender, age, tobacco habits and primary periodontal treatment



Graph 4: Means values of GOHAI-Add, for Pain and discomfort GOHAI field, before and after treatment and according to the gender, age, tobacco habits and primary periodontal treatment



Graph 5: Means values of GOHAI-Add, for Psychosocial GOHAI field, before and after treatment and according to the gender, age, tobacco habits and primary periodontal treatment

Discussion:

Concerns about the impact of dental treatment on the patients quality of life are increasing. Using social dental indicators to assess quality of life and patient satisfaction have been recently suggested as an important tool for treatment plans because these indicators provide behavioral data in addition to mechanical principles.[11]

We carried this study with an objective to assess the impact of dental implant treatment on the OHRQoL of a group of patients. We found that an improved OHRQoL after implant treatment, regardless of the GOHAI fields measured. We did not find studies based on OHIP (Oral Health Impact Profile) in Indian scenario, hence we used version of the GOHAI for OHRQoL of patients is the OHIP We found that before treatment, the functional GOHAI score was lower for those with the fewest teeth but, afterwards, scores varied less and were no longer significantly different. We found that implant treatment had physiological and functional benefits, similar to previous similar studies.[13, 14]

Regarding the psychosocial field, the GOHAI scores before treatment were significantly lower for those with fewer teeth ($P < 0.001$). After treatment, these scores were no longer statistically different according to the type of prosthetic treatment ($P < 0,001$). A low GOHAI score in the psychosocial field reflects a difficulty for maintaining regular social relationships, embarrassment at eating in front of other people, concerns over dental, and/or gingival status, or over dentures. In particular, the treatment greatly improves the everyday life of complete denture wearers.[15]

Initially, exploration of the “discomfort and pain” field did not reveal any significant difference between the different types of edentulousness. A significant improvement of these scores was observed after treatment. Our findings are in accordance with et al, who found that 90% of the patients evaluated with a VAS were satisfied by implant treatment when considering the aesthetic and functional points of view.[16]

We found a significant improvement of OHRQoL in retained or fixed complete denture wearers, similar to the findings of Berretin-Felix G et al.[17,18]

We also found that treatment with conventional or implant retained dentures has an impact on

social and sexual activities. Two months after treatment, participants wearing full dental implants showed higher OHIP scores, especially in the following activities; eating, speaking, kissing, and yawning. This is similar to Zani SR et al. [19, 20, 21]

We found that all the patients were satisfied about their chewing ability and the aesthetics. Maintaining oral hygiene was easier for the wearers of removable prostheses on implants. However, regarding the psychosocial aspect, participants wearing a fixed prosthesis were generally more satisfied than others, similar to the findings of Brennan et al.[15]

Conclusion:

OHRQoL was found to be improved after oral treatment by implants. However, a study with a longer follow-up period would be necessary to validate the long-term benefits of oral implantology with regards to OHRQoL. Similarly, studying the possible effects of various implant treatment techniques would be of great interest.

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