

Assessment of Patient Satisfaction and Quality of Life Outcome Following Treatment with Implant-Supported Crowns Compared To Traditional Methods

Faleh Hamad Alshammari^{1*}, Maram Ahmed Almanasif², Aishah Eissa Alanazi³, Zidan Muead Alanazi⁴, Hamda Fayeze Alosleb⁵

¹Consultant Endodontist - Dental center - Hafaralbatin - Saudi Arabia, Email: Falshammari40@moh.gov.sa

²General Dentist working in Azizia Dental Center Hafar Al Batin, Email: Maaalmanasif@moh.gov.sa

³Dental hygienist working in Azizia Dental Center Hafar al Batin, Email: aishahea@moh.gov.sa

⁴Specialist Maxillofacial surgeon - Azizia Dental Center Hafar al Batin, Email: Dr-zidan00@yahoo.com

⁵Dental Assistant working in Azizia Dental Center Hafar al Batin, Email: halosleb@moh.gov.sa

*Corresponding Author

Received: 18.09.2024

Revised: 28.10.2024

Accepted: 14.11.2024

ABSTRACT

Background and Aim: The methods, materials, and technologies used in dental implants are the subject of numerous studies and areas of intense focus, but the dentist's assessment of the treatment frequently falls short of the patient's expectations and level of satisfaction with regard to function, aesthetics, and psychosocial adaptation. A key component of assessing the effectiveness of the treatment is patient satisfaction. Numerous studies that were conducted used questionnaires to get patient opinions about oral function and satisfaction. This study set out to look into how satisfied patients were with their implant therapy.

Material and Methods: The study included one hundred patients who saw the Department of Dentistry Tertiary Care Teaching Institute of India for a year. Each of them had a case sheet made for it. There were two sections to the case sheet. The examiner recorded movement, suppuration, and bleeding when probing the implant-supported prosthesis in the first section of the clinical evaluation. The patient responded to a questionnaire that made up the second section of the case sheet. The questionnaire consisted of five questions: (1) speaking ability; (2) prosthesis appearance; (3) comfort level with implant-supported prosthesis; and (4) overall satisfaction with treatment outcome. A scale of 1 to 5 was used to measure the degree of satisfaction, where 1 meant not at all satisfied, 2 meant not satisfied, 3 meant partially satisfied, 4 meant satisfied, and 5 meant highly satisfied.

Results: Of the sample, 68% expressed satisfaction with the result, 18% expressed moderate satisfaction, and 14% expressed dissatisfaction. There was no discernible correlation found between the degree of pleasure and the other variables, such as age, the quantity of implants, and tooth location. Out of the four patients that exhibited movement, 100% expressed dissatisfaction, in contrast to 11.62% of the non-mobile patients ($p < 0.05$).

Conclusion: Dental implant therapy satisfies patients' needs when they lose teeth because the majority of patients expressed satisfaction with the current implant-supported prostheses' functionality, appearance, phonation, and general comfort. Additionally, it was noted that the patient's happiness was highly correlated with clinical evaluations such as movement, suppuration, and bleeding on probing.

Keywords: Crown, Dental Implants, Patient Satisfaction, Quality of Life

INTRODUCTION

The excellent predictability of oral implants has led to changes in the models used to restore edentulous patients in recent decades.¹ In the past, patients who were completely edentulous had dental implants placed in an effort to make full denture prostheses more stable.² However, a variety of dental implant-loading regimens have been offered as implant treatment has become more predictable, broadening the scope of implant rehabilitation treatments for patients who are partially denticulated.^{3,4} Rehabilitating severely atrophic maxillae resulting from tooth loss has posed significant hurdles for both doctors and patients in the field of implant dentistry. The primary goal of implants when they were initially introduced to the field of dentistry was to restore the edentulous space's function and cosmetic appeal by supporting the prosthesis. The patient's general health and quality of life are so impacted. Restorations supported by implants have a high success rate. As a result, implant-

supported single-unit crowns or fixed bridges appear to be a reasonable method of reconstruction for patients who are partially edentulous. Nonetheless, a crucial factor in assessing the efficacy of a treatment is the outcome as seen by the patient.⁵⁻⁸

The methods, materials, and technologies used in dental implants are the subject of numerous studies and areas of intense focus, but the dentist's assessment of the treatment frequently falls short of the patient's expectations and level of satisfaction with regard to function, aesthetics, and psychosocial adaptation. A key component of assessing the effectiveness of the treatment is patient satisfaction.⁹ Implant-supported fixed bridges have a high survival rate, but patients have occasionally expressed concerns about them, which has led to low patient comfort. At the same time, several reports on the satisfaction of partially edentulous patients treated with dental implants have found that most of them are very satisfied.^{10, 11}

The most important parameters for a clinician are implant survival, prosthesis longevity, and the incidence of problems. However, from the perspective of the patient, the treatment's social and psychological effects, cost-effectiveness, benefit, and value are more significant. A number of variables, including functionality, comfort, aesthetics, and any speech disturbance, affect how satisfied he or she is.¹²⁻¹⁴

Numerous studies that were conducted used questionnaires to get patient opinions about oral function and satisfaction. This study set out to look into how satisfied patients were with their implant therapy.

MATERIAL AND METHODS

The study included one hundred patients who saw the Department of Dentistry Tertiary Care Teaching Institute of India for a year. All patients had to be at least eighteen years old and have lost a single tooth for a minimum of three months in order to be eligible. Patients had a two-step surgical procedure to implant bone-level implants, and they consented to timely follow-up as per the research strategy and informed written consent.

Patients who had received implant treatment prior to this study and who were unable to adhere to all study protocols—for example, if they required immediate implant placement and had a history of smoking, severe periodontitis, systemic diseases, chemotherapy, or head and neck radiation—were excluded.

A total of 100 individuals who completed questionnaires were enrolled and their data were reviewed in this study out of the 120 patients who met the inclusion criteria.

Patients were phoned and requested to come in to complete the questionnaire and have their implant-supported prostheses clinically checked. The goals and specifics of the study were explained to each participant orally and in writing. Before a case sheet was created for them, those who consented to participate completed an informed consent statement.

There were two sections to the case sheet. A clinical evaluation recording of mobility, suppuration, and bleeding on probing of the implant-supported prosthesis was examined by the author in the first section, along with general patient data such as name, age, number and location of implants, and prosthesis type (porcelain fused to metal or zirconia).

The second part of the case sheet was a questionnaire that the patient answered. The five main points that were assessed:

1. How would you evaluate your ability to chew foods?
2. Are you satisfied with the appearance of your prosthesis?
3. How would you evaluate the comfort of your implant-supported prosthesis?
4. How would you evaluate your speaking ability with your implant-supported prosthesis?
5. How would you evaluate your overall satisfaction with the outcome of your treatment?

The degree of satisfaction was assessed by a scale from (1-5) with 1: corresponding to Not satisfied at all, 2: Not satisfied, 3: Partially satisfied, 4: Satisfied, and 5: Highly satisfied.

Statistical analysis

The collected data was combined, input into a spreadsheet using Microsoft Excel 2007, and exported to the SPSS version 15 data editor page (SPSS Inc., Chicago, Illinois, USA). Depending on how they were distributed, quantitative variables were defined as means and standard deviations or median and interquartile range. Counts and percentages were used to display the qualitative factors. The significance threshold and confidence level for each test were set at 5% and 95%, respectively.

RESULTS

In this study, 100 patients who had previously received treatment with implant-supported prostheses were evaluated. Their ages ranged from 18 to 75 years old, with a mean age of 44.20 ± 09.15 . Fourteen percent of the patients were older than fifty years. Table 1 reveals that the majority of patients (56%) were female. Overall, 33% and 45% of the sample were satisfied and highly satisfied, respectively, with the treatment outcome. By contrast, 2.5% of the patients expressed dissatisfaction, 20% expressed moderate satisfaction, and 2.5% expressed complete dissatisfaction. Regarding the satisfaction with the implant-supported prosthesis's look, comfort, speaking ability, and capacity to chew food, almost identical percentages were found.

Sixty-eight percent of the samples were satisfied, 18% moderately satisfied, and 14 percent unsatisfied with the outcome. Compared to 54.5% of males, the majority of females, 78.57%, were either satisfied or extremely satisfied with the results ($p < 0.05$). There was no discernible correlation found between the degree of pleasure and the other variables, such as age, the quantity of implants, and tooth location. (Table 2)

Table 3 demonstrates that of the four patients who had obtained mobility, 100% were not satisfied, $p < 0.05$, compared to 11.62% of the patients who had not developed mobility. 9.52% of patients without suppuration and 100% of individuals who developed suppuration expressed dissatisfaction ($p < 0.001$).

Table 1: Age and gender distribution of the studied sample

Age (Years)	No	Percentage (%)
<35	20	20
36-50	38	38
>50	42	42
Mean±SD	44.20±09.15	
Gender		
Male	44	44
Female	56	56

Table 2: Level of satisfaction by the studied factors

Variables	Unsatisfied (< 15)		Moderately satisfied		Satisfied (≥ 20)	
	No.	%	No.	%	No.	%
Age						
<35	3	16.6	3	16.6	14	77.7
36-50	3	7.89	3	7.89	32	84.21
>50	8	19.04	12	28.57	22	52.38
Gender						
Male	10	22.72	10	22.72	24	54.5
Female	4	7.14	8	14.28	44	78.57
No. of implants						
1-3	8	12.5	12	18.75	44	68.75
≥4	6	16.6	6	16.6	24	66.6
Position of teeth						
Anterior	3	15.78	3	15.78	13	68.4
Posterior	5	8.77	7	12.28	45	78.94
Both	6	25	8	24	10	41.6

Table 3: Level of satisfaction by complications

Variables	Unsatisfied (< 15)		Moderately satisfied		Satisfied (≥ 20)	
	No.	%	No.	%	No.	%
Mobility						
Yes	4	100	0	0	0	0
No	10	11.62	18	20.93	68	67.44
Suppuration						
Yes	6	100	0	0	0	0
No	8	9.52	18	21.42	68	69.04
Bleeding on probing						
Yes	11	68.75	5	31.25	0	0
No	3	4.05	13	17.56	68	78.37

DISCUSSION

Understanding and assessing dental patient satisfaction's importance to treatment looks to be crucial for dentists to enhance clinical outcomes, since it is one of the key indicators for evaluating clinical services. Satisfied patients typically exhibit higher compliance and follow-up rates. In general, tooth extractions, root canals, and removable partial dentures accounted for a sizable amount of dental treatments administered to patients.^{15, 16} But as implantology has advanced, replacing lost teeth with dental implants has become a more practical procedure that also enhances patients' quality of life. All of the research that evaluated the degree of patient satisfaction during the implant therapy process were mid-term and long-term assessments, even if the types of investigations varied.^{17, 18} The most important thing to remember is that these forms can potentially have an issue ignoring

patients' feelings in real time. We designed a questionnaire that looked at four phases, each of which examined a patient- and implant-related component to better understand implant satisfaction. Therefore, our study would identify the most important variables influencing dental implant satisfaction at various times.

On the other hand, patients who lost their teeth earlier had a tendency to heal and feel more emotionally and aesthetically restored, as well as to be able to chew food again. Specifically, tooth loss negatively affects the maintenance of alveolar bone, resulting in a loss of alveolar ridge volume and dimension in the transversal, horizontal, and vertical dimensions. Prolonged tooth loss can also cause the dentition to alter, the paired jaw teeth to elongate, the neighboring teeth to tilt, there to be insufficient space for repairs, and the alveolar bone to retract. Dentists are forced to grind the paired or neighboring jaw teeth in response to these unfavorable developments. As a result, the final implants will result in unpleasant things like gingival recession and food impaction.

It is often recognized that a variety of factors are taken into account while evaluating dental implants, including appearance, comfort, lifespan, usefulness, hygiene, presentation, and psychological satisfaction.¹⁹⁻²¹ In this study, a researcher evaluated patients' happiness with implant-supported prostheses based on their ability to chew, speak, look good, feel comfortable, and be satisfied overall. Furthermore, it was associated with the clinical assessment of bleeding on probing and mobility suppuration. The results demonstrated that most patients were happy with their care. Similar assessments have been done by earlier research using a range of scales and questionnaires.^{22, 23}

While other studies revealed differing results, high levels of patient satisfaction have been reported, with statistically significant differences between genders. There was no discernible correlation found between the degree of pleasure and the other variables, such as age, the quantity of implants, and the placement of the teeth. Similar results were reported in the literature.^{24, 25}

Unlike previous research that did not include clinical assessments, the current study demonstrated a correlation between the patient's satisfaction level and the clinical evaluation findings, which included movement, suppuration, and bleeding on probing.^{21, 25} The information demonstrated a direct relationship between the mobility of suppurations and the implant-supported prosthesis and patient satisfaction. Every patient who experienced these two clinical symptoms expressed dissatisfaction with their course of care. Furthermore, it was discovered that while the majority of patients whose implant-supported prostheses did not bleed upon probing were satisfied, two-thirds of those who had bleeding were not.

The majority of patients expressed satisfaction with the aesthetics of their therapy, even though all of them had prosthesis made of porcelain fused to metal. This outcome was consistent with earlier research assessing patient satisfaction with porcelain versus metal prostheses.^{26, 27} They came to the conclusion that those with metal-ceramic bridges evaluated their gingiva's state more accurately than those with resin veneer bridges. Prior research has also demonstrated that dental porcelain, as opposed to resin and even hard tooth structures, is less prone to the buildup of bacterial plaque. The patients' modest expectations for the prosthesis' appearance they were more focused on its functionality than its appearance are believed to be another factor contributing to the study's findings. Given that posterior teeth accounted for the majority of occurrences and the patients' poor socioeconomic status, this could be the cause.

CONCLUSION

The quality of life associated with oral health has grown in importance as a measure of treatment success after implant therapy. In cases where a patient loses teeth, dental implants are a suitable treatment option because the majority of patients expressed satisfaction with the current implant-supported prostheses' functionality, appearance, phonation, and general comfort. Additionally, it was noted that the patient's happiness was highly correlated with clinical evaluations such as movement, suppuration, and bleeding on probing. As a result, patient satisfaction data is a valuable resource that dentists may use to help them deliver care that will more fully satisfy their patients' expectations. In order to improve patient satisfaction with dental implant surgery at the stomatological hospital, it is crucial to increase oral hygiene knowledge among the general public as early as feasible and to maximize dental implant therapeutic processes.

REFERENCES

1. Karoussis I, Salvi G, Heitz-Mayfield L, Bragger U, Hammerle C, Lang NP. Long-term implant prognosis in patients with and without a history of chronic periodontitis: a 10-year prospective cohort study of the ITI Dental Implant System. *Clin Oral Implants Res.* 2003;14:329-339.
2. Branemark PI, Adell R, Breine U, Hansson BO, Lindstrom J, Ohlsson A. Intra-osseous anchorage of dental prostheses. I. Experimental studies. *Scand J Plast Reconstr Surg.* 1969;3:81-100.
3. Adell R, Lekholm U, Rockler B, Branemark PI. A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. *Int J Oral Surg.* 1981;10:387-416.

4. Chen ST, Wilson TG Jr, Hämmerle CH. Immediate or early placement of implants following tooth extraction: review of biologic basis, clinical procedures, and outcomes. *Int J Oral Maxillofac Implants*. 2004;19(Suppl):12-25.
5. Awad MA, Lund JP, Dufresne E, Feine JS. Comparing the efficacy of mandibular implant-retained overdentures and conventional dentures among middle-aged edentulous patients: satisfaction and functional assessment. *Int J of Prosthodont*. 2003;16(2):117-22.
6. Brägger U, Karoussis I, Persson R, Pjetursson B, Salvi G, Lang NP. Technical and biological complications/failures with single crowns and fixed partial dentures on implants: a 10-year prospective cohort study. *Clin Oral Implants Res*. 2005;16(3):326-34.
7. Lang NP, Pjetursson BE, Tan K, Brägger U, Egger M, Zwahlen M. A systematic review of the survival and complication rates of fixed partial dentures (FPDs) after an observation period of at least 5 years: II. Combined tooth-implant-supported FPDs. *Clin Oral Implants Res*. 2004;15(6):643-53.
8. Jung RE, Pjetursson BE, Glauser R, Zembic A, Zwahlen M, Lang NP. A systematic review of the 5-year survival and complication rates of implant-supported single crowns. *Clin Oral Implants Res*. 2008;19(2):119-30.
9. Gavranović-Glamoč A, Berhamović E, Strujić-Porović S, Đonlagić A, Berhamović L, Pasić E. Evaluation of patients' satisfaction with fixed prosthodontics therapy. *Stomatol Vjesn*. 2017;6(1-2):17-23.
10. Lundqvist S, Lohmander-agerskov A, Haraldson T. Speech before and after treatment with bridges on osseointegrated implants in the edentulous upper jaw. *Clin Oral Implants Res*. 1992;3(2):57-62.
11. Den Hartog L, Huddleston Slater JJ, Vissink A, Meijer HJ, Raghoobar GM. Treatment outcome of immediate, early and conventional single-tooth implants in the aesthetic zone: a systematic review to survival, bone level, soft-tissue, aesthetics and patient satisfaction. *J Clin Periodontol*. 2008;35(12):1073-86.
12. Locker D. Patient-based assessment of the outcomes of implant therapy: a review of the literature. *Int J Prosthodont* 1998;11:453-61.
13. Zitzmann NU, Marinello CP. Treatment outcomes of fixed or removable implant-supported prostheses in the edentulous maxilla. Part I: patients' assessments. *J Prosthet Dent* 2000;83:424-33.
14. Guckes AD, Scurria MS, Shugars DA. A conceptual framework for understanding outcomes of oral implant therapy. *J Prosthet Dent* 1996;75:633-9.
15. Lee CT, Zhang S, Leung YY, Li SK, Tsang CC, Chu CH. Patients' satisfaction and prevalence of complications on surgical extraction of third molar. *Patient Prefer Adherence*. 2015;9:257-263. doi:10.2147/PPA.S76236
16. Besford JN, Sutton AF. Aesthetic possibilities in removable prosthodontics. Part 1: the aesthetic spectrum from perfect to personal. *Br Dent J*. 2018;224(1):15-19. doi:10.1038/sj.bdj.2018.2
17. Topcu AO, Yamalik N, Guncu GN, et al. Implant-site related and patient-based factors with the potential to impact patients' satisfaction, quality of life measures and perceptions toward dental implant treatment. *Implant Dent*. 2017;26(4):581-591. doi:10.1097/ID.0000000000000623
18. Adler L, Liedholm E, Silvegren M, Modin C, Buhlin K, Jansson L. Patient satisfaction 8-14 years after dental implant therapy - a questionnaire study. *Acta Odontol Scand*. 2016;74(5):423-429. doi:10.1080/00016357.2016.1177661
19. Becker W, Hujoel P, Becker BE, Wöhrle P. Dental implants in an aged population: evaluation of periodontal health, bone loss, implant survival, and quality of life. *Clin Implant Dent Relat Res*. 2016;18(3):473-479.
20. Angkaew C, Serichetaphongse P, Krisdapong S, Dart MM, Pimkhaokham A. Oral health-related quality of life and esthetic outcome in single anterior maxillary implants. *Clin Oral Implants Res*. 2017;28(9):1089-1096.
21. Moghadam M, Dias R, Kuyinu E, Ferguson MB, Mucciolo T, Jahangiri L. Predoctoral fixed implant patient satisfaction outcome and challenges of a clinical implant competency. *J Dent Educ*. 2012;76(4):437-442.
22. Baracat LF, Teixeira AM, dos Santos MBF, da Cunha VdPP, Marchini L. Patients' expectations before and evaluation after dental implant therapy. *Clin Implant Dent Relat Res*. 2011;13(2):141-5.
23. Pjetursson BE, Karoussis I, Bürgin W, Brägger U, Lang NP. Patients' satisfaction following implant therapy: a 10-year prospective cohort study. *Clin Oral Implants Res*. 2005;16(2):185-93.
24. Siadat H, Alikhasi M, Mirfazaelian A, Geramipanah F, Zaery F. Patient satisfaction with implant-retained mandibular overdentures: a retrospective study. *Clin Implant Dent Relat Res*. 2008;10(2):93-8.
25. Gurgel BC, Pascoal AL, Souza BL, Dantas PM, Montenegro SC, Oliveira AG, et al. Patient satisfaction concerning implant-supported prostheses: an observational study. *Braz Oral Res*. 2015;29(1):1-6.
26. Shenoy A, Shenoy N. Dental ceramics: An update. *J Conserv Dent*. 2010;13(4):195-203
27. Anusavice KJ, Shen C, Rawls HR. *Phillips' science of dental materials*. 12th ed. Elsevier Health Sciences; 2012. 506 p.