Assessment of Satisfaction Level of Edentulous Patients Rehabilitated with Implant-Supported Prostheses

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Purpose: *Edentulism usually leads to esthetic, functional, and emotional discomfort resulting in a loss of self-esteem and a decrease of the patient's quality of life. Dental implants provide new possibilities to ensure the comfort and efficacy of prosthetic rehabilitation. The aim of this study was to evaluate the satisfaction level of patients rehabilitated using the Brånemark protocol or overdenture implant-supported prostheses.* ***Materials and Methods:*** *Fifty-two patients were rehabilitated using the Brånemark protocol and 23 using overdenture prostheses. Then, an adapted oral health–related quality of life questionnaire was administered in addition to a clinical exam to determine the condition of the dental implants and prostheses. The results for treatment expectation, understanding of the type of treatment, phonetic function, chewing comfort, pain, and self-esteem improvement were analyzed with Fisher exact test (*$P \leq .05$*).* ***Results:*** *Both treatments presented satisfaction of above 87%, with no statistical difference between them. Eighty-two percent of patients treated with overdenture prostheses and 80.8% of those treated with the Brånemark protocol had no complaint of pain (*$P = .087$*).* ***Conclusion:*** *The treatments analyzed in this study were highly satisfactory with regard to functional and esthetic factors, resulting in an increase in self-esteem and quality of life. The psychological factor is a complex variable in patient satisfaction that directly influences quality of life. Considering the desires of patients in choosing the type of prosthesis is critical to treatment success.* Int J Oral Maxillofac Implants 2016;31:884–890. doi: 10.11607/jomi.4267

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During the last few decades, the scientific community has become increasingly interested in assessing patients' perspectives on rehabilitation treatments.[1] The partial or total absence of dentition leads to esthetic, emotional, social, and functional discomfort in patients, decreasing their self-esteem and quality of life.[2]

Treatment of chronic and complete edentulism is often seen as palliative and aims to improve oral function and quality of life, even if the improvement is minimal.[3,4] Many users of conventional dentures are able to adapt effectively with no major decline in their quality of life.[5,6] However, prosthetic rehabilitation using conventional dentures, particularly in patients with high bone resorption, is characterized by an absence of stability and retention in the mandibular arch,[7–9] which affects masticatory function, increases pain, and consequently decreases the psychosocial stability and self-esteem of the patient.[2,4,10]

With the advent of osseointegration, dental implants offer new paradigms for oral rehabilitation.[11] These devices have low failure rates and provide comfort and functionality, making them an efficient and reliable option for prosthetic rehabilitation.[12,13] These features translate into high patient satisfaction[11,14] and clinical predictability.[15–17]

According to the McGill consensus,[18] the first choice of treatment for edentulous patients is the two-implant overdenture, rather than the conventional denture, because the two-implant overdenture

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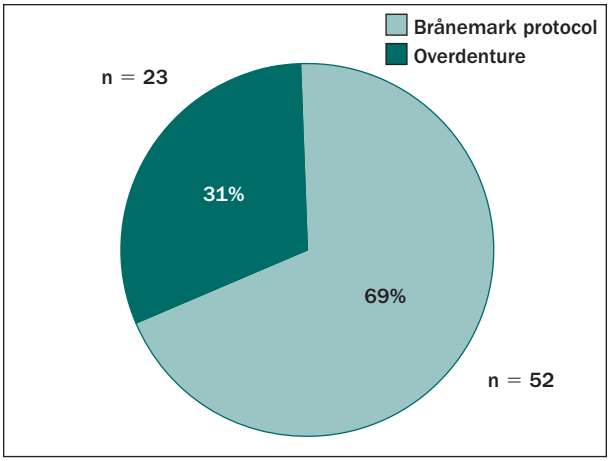

Fig 1 Patients' distribution according to the type of rehabilitation.

Table 1 Patient Responses to the Question: "Has Your Expectation Regarding the Rehabilitation Been Achieved?"

	No		Yes		
Type of rehabilitation	n	%	n	%	Total
Overdenture	3	13.0	20	87.0	23
Brånemark protocol	6	11.5	46	88.5	52
Total	9	12	66	88	75

Fisher exact test, $P = .5171$.

substantially improves the patient's comfort and chewing ability. Nonetheless, most clinicians usually consider the Brånemark protocol to be the standard treatment for the mandibular arch, due to the greater stability of a prosthesis that is fixed to the implants.[19] However, the Brånemark protocol is contraindicated in patients with mobility problems, such as difficulty in cleaning the fixed prosthesis, exposure of the implant surface to the oral environment, morbidity, or high bone resorption.[20]

Patients' satisfaction with their dental prosthesis is directly linked to therapeutic efficacy and functionality, and comfort during oral activities—particularly speech and mastication—is critical.[7,21] Thus, the purpose of this study was to evaluate the level of satisfaction in patients who received prostheses using either the Brånemark protocol or overdentures and to verify the clinical success and esthetic and functional outcomes of these techniques.

MATERIALS AND METHODS

Selection of Sample

This study was approved by the Research Ethics Committee. A total of 75 patients—29 men and 46 women aged between 45 and 67 years—at the postgraduate center of the Faculty of Dentistry, Dentistry School, São Leopoldo Mandic Research Center, Campinas, Brazil, were eligible. In total, 52 participants underwent prosthetic rehabilitation using the Brånemark protocol, and 23 received overdenture prostheses in the mandibular arch.

Inclusion and Exclusion Criteria

All selected patients for both techniques were users of conventional dentures prior to the dental implant therapy. The maxillary arch of each patient was rehabilitated with new conventional dentures during the specified treatment. Patients who had received two implants and a bar-clip attachment system to support the prosthesis were selected for the overdenture group. Patients who had received four implants to fix the denture were selected for the Brånemark protocol group. The patients were chosen randomly and were required to have received the new prosthesis at least 6 months prior to the study, which improved the accuracy of the data-collection phase.

Data Collection

Patients were administered an oral health–related quality of life (OHRQoL) questionnaire adapted for the study.[22,23] In addition, patients received an examination to evaluate the clinical conditions of the implants and prostheses that focused on satisfactory osseointegration and the stability of the prosthesis.

The data were analyzed using tables and graphs of the frequency distribution. The various parameters were evaluated according to the rehabilitation type using the Fisher exact test. Questionnaire answers marked as "do not know/not reported" or patients who lost their responses were excluded from the analysis. All analyses were performed using statistical software (SAS Institute), and significance was designated at a level of 5%.

RESULTS

Data from 75 volunteer questionnaires were assessed. Figure 1 illustrates the population distribution according to the rehabilitation type.

Table 1 shows the patients' responses to the following question regarding their prostheses: "Has

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Table 2 Patient Responses to the Question: "Did You Understand the Explanation from the Dentist about Your Rehabilitation?"

	No		Yes		Not answered		
Type of rehabilitation	n	%	n	%	n	%	Total
Overdenture	1	4.3	22	95.7	0	0.0	23
Brånemark protocol	2	3.8	49	94.2	1	1.9	52
Total	3	4	71	94.6	1	1.3	75

Fisher exact test, $P = .4009$.

Table 3 Overdenture Patient Responses to the Question: "What Led You to Choose the Overdenture as Your Form of Rehabilitation?"

Reasons for choice of treatment	n	%
Cost	12	52.2
Fear of more complex procedure	2	8.7
Absence of support	1	4.3
Self-esteem and confidence to chew	1	4.3
Facility sanitation	1	4.3
Clinical indication	1	4.3
Dissatisfaction with old prosthesis	1	4.3
Need for large bone grafts	1	4.3
Other treatment not successful	1	4.3
Possibility of better chewing	1	4.3
Simplicity and shorter treatment	1	4.3
Total	23	100.0

Table 4 Brånemark Protocol Patient Responses to the Question: "What Led You to Choose the Brånemark Protocol as Your Form of Rehabilitation?"

Reasons for choice of treatment	n	%
Dissatisfaction with previous prosthesis	11	21.2
Stability of the prosthesis and safety	8	15.4
Periodontitis	8	15.4
Comfort and safety	5	9.6
Esthetics/comfort	4	7.7
Clinical indication	3	5.8
Cost	3	5.8
Most appropriate treatment	3	5.8
Did not adapt with use of removable prosthesis	2	3.8
Low self-esteem and headaches	1	1.9
Indication of family	1	1.9
Improved quality of life	1	1.9
Necessity	1	1.9
Emotional trauma for the extraction of teeth in youth	1	1.9
Total	52	100.0

your expectation regarding the rehabilitation been achieved?" Overall, 88% of the patients were satisfied. The rate of satisfaction with the overdenture treatment was 87%, and satisfaction with treatment by the Brånemark protocol was 88.5%. There was no statistically significant difference in the expected function of each treatment between the two patient groups ($P > .05$).

Table 2 shows the patients' understanding of the treatment performed by the clinician. A total of 94.6% of participants said they understood the explanation given (95.7%, overdenture; 94.2%, Brånemark protocol). There was no statistically significant difference between the responses of the two treatment groups ($P > .05$).

Among the 23 patients who received overdentures, the most frequently cited reasons for choosing this procedure were its lower cost (52.2%) and a fear of more complex surgery (8.7%) (Table 3).

The primary reasons cited by the 52 patients who were rehabilitated using the Brånemark protocol were dissatisfaction with a previous prosthesis (21.2%) and improved stability and safety of a fixed device (15.4%) (Table 4).

Patient satisfaction with phonetic function after receiving the prosthesis is detailed in Table 5. A total of 89.3% of the patients reported satisfaction with their speech (87%, overdenture; 90.4%, Brånemark protocol). There were no statistically significant differences between the patients according to prosthesis type ($P > .05$).

Patient satisfaction with chewing function after receiving the prosthesis is described in Table 6; 88% of the patients were satisfied (87%, overdenture; 88.5%, Brånemark protocol). No statistically significant difference was observed between the two groups ($P > .05$).

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Table 5 Patient Responses to the Question: "Are You Satisfied with Your Phonetic Function?"

	No		Yes		Not answered		
Type of rehabilitation	n	%	n	%	n	%	Total
Overdenture	3	13.0	20	87.0	0	0.0	23
Brånemark protocol	4	7.7	47	90.4	1	1.9	52
Total	7	9.3	67	89.3	1	1.3	75

Fisher exact test, $P = .1840$.

Table 6 Patient Responses to the Question: "Are You Satisfied with Your Chewing Ability?"

	No		Yes		Not answered		
Type of rehabilitation	n	%	n	%	n	%	Total
Overdenture	3	13.0	20	87.0	0	0.0	23
Brånemark protocol	5	9.6	46	88.5	1	1.9	52
Total	8	10.6	66	88	1	1.3	75

Fisher exact test, $P = .1977$.

Table 7 Patient Responses to the Question: "Are You Feeling Pain?"

	No		Yes		Not answered		
Type of rehabilitation	n	%	n	%	n	%	Total
Overdenture	19	82.6	3	13.0	1	4.3	23
Brånemark protocol	42	80.8	10	19.2	0	0.0	52
Total	61	81.3	13	17.3	1	1.3	75

Fisher exact test, $P = .0870$.

Table 8 Patient Responses to the Question: "Do You Feel Improvement or More Self-Confidence in Interpersonal Relationships?"

	No		Yes		Not answered		
Type of rehabilitation	n	%	n	%	n	%	Total
Overdenture	3	13.0	20	87.0	1	4.3	23
Brånemark protocol	2	3.8	49	94.2	0	0.0	52
Total	5	6.6	69	92	1	1.3	75

Fisher exact test, $P = .1149$.

Table 7 describes the presence of pain following rehabilitation. Overall, 17.3% of patients reported pain after treatment (13%, overdenture; 19.2%, Brånemark protocol). There was no statistically significant difference between the groups ($P > .05$).

Table 8 shows the reported improvement in self-confidence and relationships with others after rehabilitation. A total of 92% of participants reported improvement (87%, overdenture; 94.2%, Brånemark protocol). The treatments did not differ statistically in this parameter ($P > .05$).

Table 9 describes the reported improvement in patient self-esteem after receiving the prosthesis. The overall improvement was 94.6% (87%, overdenture; 98.1%, Brånemark protocol). No statistically significant difference between the groups was observed ($P > .05$).

Table 9 Patient Responses to the Question: "Do You Feel that Your Self-Esteem Has Improved Significantly?"

	No		Yes		
Type of rehabilitation	n	%	n	%	Total
Overdenture	3	13.0	20	87.0	23
Brånemark protocol	1	1.9	51	98.1	52
Total	4	5.3	71	94.6	75

Fisher exact test, $P = .0646$.

DISCUSSION

Dentistry contributes to an individual's health as well as psychological and social welfare.[10] Patients with esthetic and functional impairment caused by missing teeth or by prostheses with stability or retention

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problems are more vulnerable to psychological disorders due to insecurity, poor self-image, and low self-esteem. These factors can result in social exclusion and poor quality of life.[21,24]

The questionnaire was administered to evaluate the reasons for patients' treatment choice and also their level of satisfaction with their prosthesis. Overall, 88% of patients (87%, overdenture; 88.5%, Brånemark protocol) reported that they were satisfied. These outcomes may be related to the type of prosthesis used before the dental implant treatment. Conventional dentures usually do not offer the stability and comfort necessary for the function of the stomatognathic system, particularly in the mandibular arch. Dental implant placement may provide retention and stability for overdentures,[25–27] and because the prostheses are fixed to implants in the Brånemark protocol, the problems mentioned above are eliminated in both treatments.

The superior esthetics of prostheses attached to implants, combined with the psychological benefits of replacing old dentures, seen by many as indicative of being old and socially incapable,[2,28] contribute to improved patient satisfaction. The high levels of satisfaction reported in this study are corroborated by previous studies.[11–13,29–31]

Yet other authors do not report high levels of satisfaction.[32,33] Patient dissatisfaction is related to excessively high expectations for the treatment, as well as a lack of information provided by the clinician performing the rehabilitation. Treatment must restore oral function and esthetics, while also respecting the feelings and desires of patients who do not always know how to describe what they feel or want.[29,34] The dentist can perform treatments with their own technical quality and satisfaction standards and acceptability criteria in mind, but these may be in disagreement with patients' expectations and satisfaction standards.[31] Based on this, an extensive discussion with the patient regarding the potential outcomes, complications, difficulties, and benefits of the therapeutic options to achieve, or at least approach, the patient's desired outcome is essential to successful treatment.

The present study addressed this issue, as shown in Table 2, by asking patients whether they understood the clinician's explanation of the rehabilitation. The majority of patients (95.7%, overdenture; 94.2%, Brånemark protocol) reported that they understood their dentist's explanation. This high level of patient understanding substantially reduced the frustration of the patients with the rehabilitation procedure.

With regard to the reason for the treatment choice, the open style of the questions allowed for highly subjective responses from the patients. However, 52.2% of patients who chose overdentures cited the lower cost of that treatment compared to the Brånemark protocol as the primary reason for their choice. Although overdentures have similar effectiveness to that of the Brånemark protocol,[28,35] they are less expensive due to their decreased invasiveness and complexity.[29] Among patients treated with a fixed prosthesis, 21.2% reported dissatisfaction with the previous prosthesis as the main reason for their therapeutic choice, followed by comfort and safety (9.6%). The method of questioning used to evaluate these issues rendered few other individual responses, which makes them statistically insignificant—thereby representing a limitation of this study.

According to Awad et al,[36] the vast majority of patients with conventional dentures are unsatisfied with the therapeutic results. The phonetic, functional, esthetic, and emotional complications that commonly occur with prolonged use of conventional dentures cause patients difficulties with relating to others socially and emotionally. The fact of the prosthesis in the Brånemark protocol is fixed to implants and thus becomes inseparable from the patient may lead to the impression of it being part of the body,[28,35,37] improving patients' comfort level with their reliability and safety.

In this study, a relatively small percentage (7.7%) of patients who received fixed dentures were dissatisfied with their phonetic outcome, which is consistent with previous reports.[29,38] In addition to esthetics, problems with phonetics are the most frequently reported patient complaints following treatment.[32,39] These problems could easily be corrected with the use of a removable gingival prosthesis, which can improve esthetics and prevent the escape of air.[28] In the overdenture group, 13% of patients reported dissatisfaction, with no significant statistical difference between the two treatments ($P > .05$). This finding contradicts a previous study,[40] which reported 100% satisfaction with phonetic function in patients treated with overdentures. Overall, 89.3% of the total patient population in this study reported that they were satisfied.

A total of 88.5% of patients reported satisfaction with masticatory function after treatment with Brånemark Protocol (Table 6); 87% of the overdenture group reported that they were satisfied. Slightly lower satisfaction was reported in a previous study,[40] in which 83.7% of the patients rehabilitated with overdentures reported satisfactory chewing ability. In a comparative review of studies evaluating the two treatments, Strassburger et al[41] reported that 87% of patients treated with implant-supported overdentures noticed no change in mastication following treatment. Among patients treated with full fixed prostheses, according to the same authors, 67% of patients reported improved mastication following treatment. In the present study,

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88% of patients reported satisfactory masticatory function, reinforcing previous reports.[12,13,29] The superior retention and stability offered by implant placement inhibits pain and discomfort while chewing, thus improving mastication.[42]

When asked about the presence of pain (see Table 7), 81.3% of patients reported no discomfort. Specifically, 80.8% of patients rehabilitated with the Brånemark protocol and 87% rehabilitated with overdentures reported no pain after treatment. Similarly, in a previous study, only a small percentage of patients reported pain during mastication.[42] Another study reported the interesting finding that among its patients, a larger number of implants was associated with increased pain when biting.[34] This may explain the pain symptoms reported among those treated with the Brånemark protocol, although there was no statistically significant difference between the treatment groups in the present study ($P > .05$).

Improved patient self-confidence in relationships with other people was observed in this study. A total of 92% reported improvements in their interpersonal relationships. Among the patients rehabilitated with overdentures, 87% reported improvement, which is similar to the results of several previous studies.[4,12,23,42–44] Among those treated with the Brånemark protocol, 94.2% said that they experienced improvement, which is similar to a previous report.[45] There was no significant difference in the reported improvement between the treatments ($P > .05$).

Friedman et al[46] documented that the experience of total edentulism is always traumatic and involves complex emotional and social issues that often cause embarrassment and hinder a patient's personal relationships. Users of conventional dentures reported feeling ashamed to eat with friends and family, which led to discomfort or retreat from social life.[10,21] However, after rehabilitation with implants, patients reported an improved quality of life. Their improved self-esteem and self-image manifested in the resumption of routine social activities.[47]

Overall, 94.2% of patients in this study reported improved self-esteem compared to their experience with the old prosthesis. In the overdenture group, 87% reported improvement, and in the Brånemark protocol group, 98.1% reported increased self-esteem, which is in agreement with previous observations.[48] According to Puppin et al,[49] after rehabilitation with implants, friends and family of patients reported that the patients "have become younger and talkative," an essential factor in increasing the self-esteem of people who feel socially isolated by their oral condition.

The possibility of osseointegration resulted in new options for the planning of prosthetic rehabilitation in edentulous patients. The results are less debilitating, more predictable, and more closely match the ideal. Listening to patients and adjusting treatment according to their desires and expectations is critical for the successful rehabilitation of the oral cavity, and the prosthesis is just one step in the complex process of individual rehabilitation.

CONCLUSIONS

Overdenture and Brånemark protocol rehabilitation achieved high satisfaction in esthetic and functional factors among patients in this study. It promoted increased self-esteem and improved the quality of life of the treated patients. There was no significant statistical difference between the treated groups in any of the parameters evaluated in this study.

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