



DEGREE OF PATIENT SATISFACTION WITH OVERDENTURES

Dental Science

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ABSTRACT

OBJECTIVES/AIMS: Based on the consensus statements of McGill and York, overdentures are an excellent solution for the rehabilitation of edentulous patients, providing comfort and restoring masticatory function and aesthetics. The main objective of this study was to determine the degree of patient satisfaction with overdentures.

MATERIALS AND METHODS: A questionnaire was administered using the visual analogue scale (VAS) method and yes/no and multiple-choice questions. The sample was collected in 4 clinics in northern Portugal and included 95 participants of both genders. The results were statistically analyzed using SPSS® (t-test and ANOVA).

RESULTS: Regarding the degree of satisfaction (scored 1 to 10) in the use of an overdenture, the responses were very clear; 73 of 95 patients rated their experience in the top three grades as follows: 19 patients rated their experience at grade 8 (20%), 29 patients rated it at grade 9 (31%), and 25 patients rated it as grade 10 (26%).

CONCLUSION: Analysis of the results leads us to conclude that the degree of patient satisfaction with overdentures is quite high and that factors such as gender, type of overdenture retention and degree of satisfaction with previous use of a conventional denture positively affect the degree of patient satisfaction.

KEYWORDS:

attachments, overdentures, tooth loss, removable prosthesis

INTRODUCTION

The loss of a dental organ is a recognized fact and promotes a significant edentulism problem in older adults.^{3,4} The increasing use of acrylic dentures is understandable. Retention of this type of denture is obtained by saliva through adhesion, surface tension and atmospheric pressure, which oppose extrusive forces.

Difficulties in chewing, phonetics, atrophy of the tissue supporting the denture, a bad interocclusal relationship between the upper and lower dentures and psychosocial shame are the main concerns of edentulous patients using dentures.^{5,7}

Only 5% to 20% of patients report satisfaction after the construction of new conventional dentures.^{8,9} According to a study, 10% to 18% of patients are dissatisfied immediately after the fitting of a conventional denture.^{8,9}

Implants are viewed as the best solution for increasing denture retention. At least two implants should be placed strategically in the jaw,¹⁰ between the mental foramina (15 to 25mm distant), and should have a length and diameter of 8 and 4mm, respectively.^{11,12} According to Eckert and Carr and referenced in many studies, there are usually no specific rules for the number of implants required for denture retention; however, the use of four implants in the anterior area is recommended.¹³⁻¹⁶

Against this backdrop, overdentures have emerged. Overdentures have been described as offering a reasonable degree of efficacy and good relative predictability. In such cases, the choice of denture is affected by patient age; in terms of jaw rehabilitation, younger patients prefer fixed dentures, whereas older patients more readily opt for overdentures.¹⁷

Extension of the overdenture support base allows complete

reconstruction of the lost alveolar tissue volume, increasing lip support and providing considerable improvements in aesthetics and phonetics.^{18,19}

This type of denture is a viable solution for many edentulous patients due to its relatively low cost (compared to hybrid dentures), ease of installation, simple attachment accessories, faster repair, ease of cleaning (due to the design of the bar) and short lip contour, which can be easily compensated for in individuals with a short upper lip.¹⁷⁻¹⁹

The fixation pieces used in overdentures differ according to the needs of each case. Possible fixation pieces include 1) a bar and 2) an individual (resilient and hard) piece.

Currently, the attachments most used for overdentures are the bar, locator® and ball attachment systems. Further comparative studies of these options are necessary.²⁰

The bar retention system is slightly more expensive due to its clinical and technical time constraints. The bar is splinted between each implant and screwed directly onto them or onto transgingival abutments. The length of the support arm cannot exceed 1.5 times the distance between implants. Different techniques are used to manufacture the bars. In addition to the traditional technique, electrodeposition and CAD/CAM are also used.²¹⁻²⁴

Based on the consensus statements of McGill and York,² dentures over implants are an excellent solution for the rehabilitation of edentulous patients, providing more comfort and promoting an improvement in chewing and aesthetics, regardless of the retention system used.

The aim of the study was to determine patient satisfaction with overdentures. Thus, we analyzed whether gender, age, type of previous

rehabilitation, time of use or not of other types of dentures, location on the arch, satisfaction with their current system, the retention system used, and whether they would have a new overdenture fitted had an effect on the degree of satisfaction.

MATERIALS AND METHODS

In this study, a questionnaire was administered (Figure 1). The sample was collected in 4 clinics in the north of Portugal, between 16th December, 2014 to 17th July, 2015.

INFORMED CONSENT

We ask for your participation in the study "Degree of Patient Satisfaction with Overdentures". We would like to know if you agree to participate in this study by answering some questions relating to your overdenture. Your participation is very important for us to determine your opinion about this type of denture. Your information will remain strictly confidential; the results will be codified and used only in this study. This participation is voluntary and can be withdrawn at any time.

Investigator's signature
Participant's signature

(Dr. Juliana de Sá)
8070
____/____/____

QUESTIONNAIRE

1. Gender Female Male

2. Age
 18- 30 years 31- 40 years 41- 50 years 51- 60 years 61- 70 years 71- 80 years
 81- 90 years 91- 100 years ≥101 years

3. What did you wear before the overdenture?
 Nothing Removable partial denture Removable total denture

4. If you wore a removable denture, how long did you wear it for?
 <1 year 1- 5years 6- 10years 11- 15years 16- 20years ≥ 21years

5. How long have you worn the overdenture?
 1month- 1year 1- 5years 6- 10years 11- 15years 16- 20years ≥ 21years

6. Your overdenture is:
 Upper Lower Both

7. What is your overdenture's retention system?
 Bar Locator® Other

8. Were you satisfied with the situation that you had before fitting the overdenture?
 Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Very satisfied

9. Are you satisfied with the overdenture?
 Not at all satisfied 1 2 3 4 5 6 7 8 9 10 Very satisfied

10. If you had the choice today, would you opt again to have an overdenture? Yes No

Figure 1: Informed consent form and questionnaire given to patients. A declaration/consent form for the collection of data for research purposes was delivered to each clinic. The clinics were advised that the participants would not be identified at any time and that the collected data would remain confidential. It was also explained that the normal functioning of each institution would not be affected.

The total sample was 95 participants comprising both genders.

The following criteria were defined for the selection of participants:

- Inclusion criteria (patients ≥18 years; both genders, literate or illiterate, without health conditions that would prevent clear understanding of the questions, attendance at the clinic or voluntarily and anonymously completing the questionnaires; having one or two overdentures; having a removable full denture, removable partial denture or a fixed denture simultaneously with an overdenture; patients who had previously worn removable full or partial dentures; patients who were in dental treatment but had at least one complete overdenture).
- Exclusion criteria (patients <18 years; patients who did not consent to participate in the study; patients who had health conditions that prevented clear understanding of the questions, completing the questionnaire or attending the clinic [e.g., dementia, being bedridden, psychiatric problems, among others]; patients who only had total/partial removable or fixed dentures; patients who had previously worn exclusively fixed dentures; those undergoing incomplete overdenture treatment).
- A questionnaire was applied to the sample by the investigator. The questionnaire was simple and easy to understand and complete and included demographic questions and questions regarding satisfaction with overdenture use.

The researcher asked the patient the questions on the questionnaires, avoiding the need to calibrate several researchers.

The questionnaire method used was the visual analogue scale (VAS), which was chosen to measure participant satisfaction intensity. Multiple choice and yes/no questions were also included.

The data were analyzed using IBM® SPSS® Statistics (version 22). Given the nature of the variables under study, the analysis comprised quantitative and qualitative descriptive statistical analysis and a correlation of different questions using the t-test (independent-samples and paired-samples) and analysis of variance (one-way ANOVA).

RESULTS

In the sample of 95 participants, female patients predominated (55) over males (40) (Figure 2).

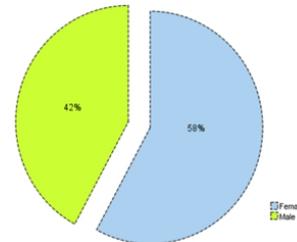


Figure 2: Percent of male and female patients responding to the questionnaire

The patients were divided into six age groups. The sample comprised mostly seniors: 37 patients were in the 61-70 year age group (39%) (Figure 3).

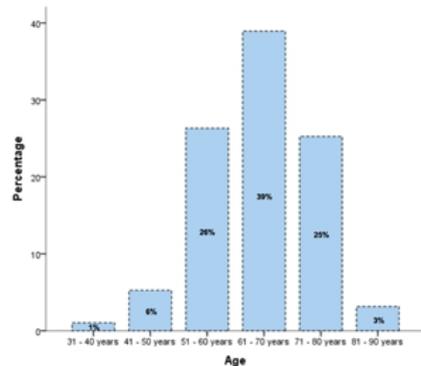


Figure 3: Age groups with corresponding percent of patients with overdentures

In response to the question, "what did you use before your overdenture?", most patients (52) cited the use of a removable partial denture (55%) (Figure 4).

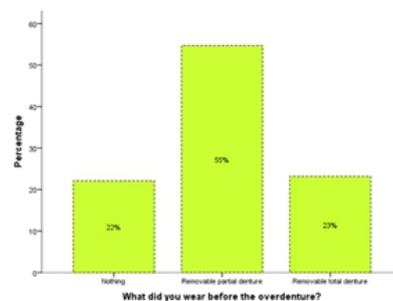


Figure 4: Percent of patients previously wearing removable dentures (partial or total)

Of the patients involved in the study, 74 individuals (78%) used removable dentures, and of this sample, 30 patients (41%) reported having used removable dentures for between 1 and 5 years (Figure 5).

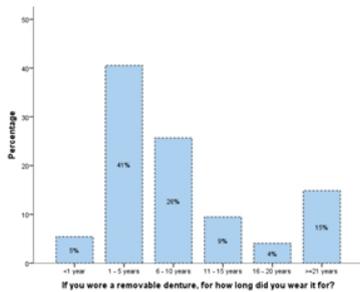


Figure 5: Percent of patients with removable dentures according to their time of use

With regard to the length of time that the subject had worn the overdenture, of the 95 participants, 60 (63%) reported having worn the overdenture for between 1 and 5 years (Figure 6).

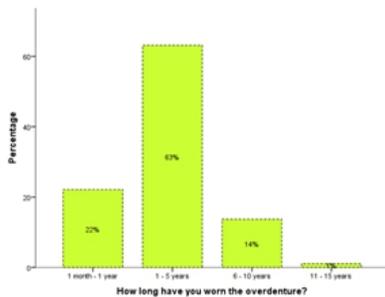


Figure 6: Percent of patients with an overdenture according to time time of use

Most patients (42) reported having a lower overdenture (45%) (Figure 7).

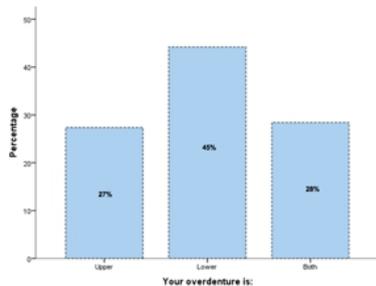


Figure 7: Percent of patients with an overdenture according to overdenture location

Analysis of the chart revealed an absolute majority of patients (79) having bar overdenture retention (83%). No participant had any other type of overdenture retention (Figure 8).

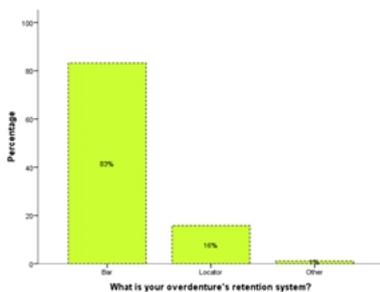


Figure 8: Percent of patients with an overdenture according to type of denture retention system

With regard to the degree of satisfaction that patients had with their removable dentures, the highest sample percentage (29%, 28 patients) rated their satisfaction as a 3 (Figure 9).

Figure 9: Degree of satisfaction expressed by patients who had had removable dentures

The response to the following question was the key to the entire study. The VAS was again used. This measure is ranked on a scale of 1 to 10, where 1 is not at all satisfied and 10 is very satisfied. In response to the question regarding whether they were satisfied with their overdenture, the answers were very conclusive; 73 patients rated their experience as 8-10 (Figure 10).

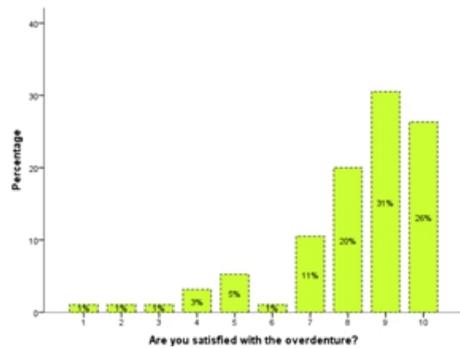


Figure 10: Percent of patients who have overdentures according to the degree of satisfaction with their use Regarding the last question, concerning whether the participant would choose an overdenture again, 77 (81%) of the 95 participants responded positively (Figure 11).

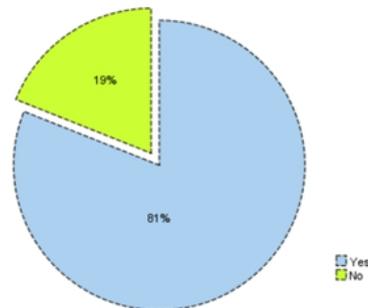


Figure 11: Percent of patients who would or would not have a new overdenture fitted

DISCUSSION

Regarding such implants, several studies describe overdentures as the best option for the treatment of edentulous individuals. This rehabilitation model has several confirmed advantages over conventional dentures, including greater retention and stability, which leads to efficient chewing, safety, improvements in the patient's psychological state, with anatomical, physiological, aesthetic, hygienic and financial implications.²⁴

Consistent with the objectives, this study obtained results similar to those of previous studies in relation to the degree of satisfaction with overdentures of patients in the north of Portugal.

Most of the patients were female (58% of the sample). This suggests that women are concerned with oral health, especially with wanting to improve chewing function and comfort.

The patients reported that they had neglected oral health for many years, leading to an eventual loss of teeth. However, they had reached a stage of life where chewing ability and comfort in the use of conventional dentures were reduced.

These results are not novel; Novais and Seixas, addresses a study which reported in their study that males more readily adopt this type of rehabilitation and are increasingly demanding it.²⁵

By comparison, females are more concerned with aesthetics and always prefer fixed rehabilitation.

Regarding age, many patients with overdentures are aged between 61 and 70 years (39%). In these patients, there is an expectation of at least ten years of use, and the advantages enjoyed will lead to a better quality

of life.

Overdentures are chosen more often than hybrid dentures. This choice is influenced by monetary factors and the fear of possible surgical complications.

In the 81 to 90-year age group, however, overdentures are the option with the fewest users (3.2%). Most of this population, while understanding that overdentures are a good solution for minimizing oral cavity problems, consider the investment not worthwhile due to their advanced age.

Younger patients opt for hybrids, and older patients mainly choose mandibular overdentures. Therefore, we conclude that age may affect the choice of treatment.⁴

Despite a high level of edentulism in Portugal, patients have concerns over resorting to removable dentures mainly due to aesthetic reasons. For some patients, anterior rehabilitation takes priority over posterior rehabilitation, with chewing function and comfort being of lesser importance.

The sample population was mostly partially edentulous with removable partial dentures.²⁶ However, the population did not reach the limits of total edentulism.

In most of the sample (40.5%), usage was over one to five years, which leads us to conclude that these patients recognize that quality of life is fundamental.

As this type of rehabilitation is expensive, patients cited economic factors as a negative consideration, leading them to take longer to acquire the treatment.

In general, the studied population used removable dentures for several years until the basic conditions for their retention deteriorated.

The length of time that the patients had worn overdentures was between one and five years. Presumably this was due to improvements in the quality of the overdenture construction system and increasingly widely available information regarding this option.

Implants are another important factor. Stålblad et al. note that 92% of mandibular implants that retain overdentures continue to function after five years.¹⁸ Walton and Ruse report that 95% of the implants continued to function after this period.²⁶ Both reported good overdenture performance.

Despite the complications of maxillary overdentures in terms of speech and hygiene difficulties, this type of rehabilitation has a survival rate of greater than 92% over 15 years.¹⁴ Our results confirmed this finding; 74 of the 95 studied patients with overdentures had worn them between 1 and 15 years.

One factor affecting overdenture permanence in the oral cavity is the type of retention used. The most used retention form was the bar type, which achieved greater satisfaction than the locator® type (83.2% vs. 16.8%, respectively).

The bar system is among the most expensive and can lose retention in the clip or through fracturing of the bar. However, this system is undoubtedly the most used and preferred retention method.^{26,27}

The locator® system is considered the least advantageous retention system because it does not promote a firm retention/connection, and fractures occur in the dentures.²⁰

However, exceptions occur where patients are satisfied with the locator® system.²³

Occasionally, the choice of retention depends on the location of the overdenture. In general, there has been a greater adoption of overdentures in the jaw due to bone shortages and the impossibility of placing a sufficient number of implants.⁴

Regarding the current situation, patients appear to be quite satisfied (78%), ranking the situation equal to or greater than ⁵. Grades of ^{8,9} and

10 were the most frequent, together totaling 77%. These figures reaffirm that minimum functions are restored to the patient; consequently, their degree of satisfaction increases.²⁸

The patients reaffirmed that the method offers many benefits, and most stated they would use the same system again (81%).

Gender positively affects patient satisfaction with overdentures, especially males, with a mean patient satisfaction score of ^{6,8,73}.

We conclude that the main goal for this population is good chewing function and retention.

Another important consideration relates to the retention system used. In this study, mean patient satisfaction with the bar system was 8.67, which was higher than mean satisfaction obtained using the locator® system (6.06).

Most retention systems are useful in fixing overdentures,²⁰ and most systems offer an improvement over the existing situation; thus, patients are generally satisfied, irrespective of the retention system used.²⁹⁻³¹

Contradicting this statement, some studies report that patient satisfaction is not affected by the existing type of retention.^{29,32,33}

In this study, we observed patients with other types of retention; however, Burns et al. claim that the locator® system yields a better degree of satisfaction than magnetic retention systems.³²

Overdenture fitting is a valid option for most patients, who would choose this rehabilitation system again. This influences the degree of patient satisfaction with overdentures.

The study revealed that the factors of age, previous use of conventional dentures, time of use and location of overdentures do not substantially affect patient satisfaction with overdentures.

Correlating gender with the previous use of conventional dentures and location with retention type, it was found that none of these factors affected each other.

This study offers security to the clinician when proposing an overdenture because the success rate shown here is very high.

In terms of retention, this study suggests that patients prefer the bar system; however, this system is more laborious, implying the need for greater experience on the part of the dentist.

Similarly to the overdenture, the bar retention system is preferred by edentulous patients, as stated by McGill and York in their consensus statement, because it clearly improves the patient's self-esteem, chewing, phonetics and aesthetics.

Because this study depended on third parties, there were important limitations with regard to the sample, which mostly comprised elderly patients, resulting in limited availability to attend the clinic.

The data collection period was limited in terms of obtaining a reasonably statistically relevant sample.

Another issue that emerged was the subjects' difficulty in understanding some questions, despite their being formulated in a direct way.

The constant evolution of dentistry and society's demand for higher quality poses the challenge of solving new issues and developing new ideas: due to the increase in the elderly/edentulous population, overdentures are a solution for solving the problems associated with conventional dentures. Because overdentures are not reimbursed by the state, it would be of interest to determine whether they could be manufactured more economically by using other source materials.

CONCLUSIONS

Based on the results obtained and in accordance with the methodology described in this study, which evaluated the degree of patient satisfaction with overdentures, some conclusions can be drawn.

Patients with overdentures reported a high degree of satisfaction, attributing a grade of 9 (31% of the sample) on a scale from 1 to 10.

Gender positively influenced the degree of patient satisfaction with overdentures. Males reported a higher mean degree of satisfaction than females (8.73 vs. 7.87, respectively).

Age did not affect the degree of patient satisfaction with overdentures. The prior use or non-use of a conventional denture did not affect the degree of patient satisfaction with overdentures.

The time of use of conventional dentures did not affect the degree of patient satisfaction with overdentures.

The length of time that the patient had worn the overdenture did not affect the degree of patient satisfaction with overdentures.

The location of the overdenture on the dental arch did not affect the degree of patient satisfaction with overdentures.

The type of retention positively affected the degree of patient satisfaction with overdentures; the bar retention system had the most significant impact. Patients with overdentures with bar retention had a greater mean satisfaction than those with the locator® and other types (8.67 vs. 6.06 vs. 0.00, respectively).

The degree of patient satisfaction when using conventional removable dentures did not affect the degree of patient satisfaction with overdentures. The current degree of satisfaction was higher than the previous degree (8.23 vs. 3.61, respectively).

The current degree of satisfaction positively affected the possible fitting of a new overdenture. The mean number of patients stating that they would fit an overdenture again was higher than that of those who would not (8.75 vs. 6.00, respectively).

CONFLICTS OF INTEREST STATEMENT

The authors have no conflict of interests, and this work was not supported nor funded by any company.

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