



Original article

Oral health-related quality of life and satisfaction before and after treatment with complete dentures in a Dental School in Brazil

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Abstract

Purpose: The aim of this study was to evaluate the impact of treatment with new complete dentures on oral health-related quality of life and satisfaction of edentulous patients attending the Prosthodontic Department in a Dental School in Brazil. **Methods:** A total of 70 edentulous subjects (37–86 years) treated by undergraduate students at the Araçatuba Dental School, University of State of São Paulo, were accessed. A specific questionnaire for edentulous patients (EDENT) based on the Oral Health Impact Profile (OHIP-EDENT) was applied to collect information on patient oral health-related quality of life. Questions related to the personal satisfaction of the edentulous patients with their complete dentures were also included. The patients were accessed before the treatment, and 3 months after receiving the new dentures. **Results:** After rehabilitation with new complete dentures, all domains of OHIP-EDENT showed significant improvements. There was also a significant improvement in patient satisfaction after placement of new complete dentures. Furthermore, it was possible to observe association between upper denture satisfaction and age. **Conclusion:** Conventional complete dentures may have a positive impact on oral health-related quality of life and satisfaction of edentulous patients.

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Keywords: Oral health-related quality of life; Complete denture; Patient satisfaction

1. Introduction

It is well known that the transition to edentulousness is occurring later in patient lives due to increased life expectancy and high levels of dental disease in middle-aged and old-aged population [1,2]. The lack of all teeth contributes to disability, impairment and handicap [3], and for most of edentulous patients the rehabilitation with conventional complete dentures is the only accessible treatment option [4]. In this context, it is possible that the edentulousness and the wearing of conventional complete dentures can affect the quality of life and patient satisfaction [5].

Oral health-related quality of life (OHRQoL) has been used to investigate the impact of loss of all natural teeth and available

treatment options in clinical researches [6–9]. This term includes some factors that may be affected by oral health of patients, such as personal ability to function, psychological state, social factors, and pain/discomfort [10]. Usually, OHRQoL is measured by the Oral Health Impact Profile (OHIP) questionnaire [11], and there are several studies in the literature using the OHIP in complete denture wearers [12–15]. The original OHIP consists of 49 questions, but reduced versions of this questionnaire without adverse changes have been explored [16]. Among the smaller versions, OHIP-EDENT has emerged to be a specific questionnaire for edentulous patients [16], which shows OHRQoL changes before and after placement of new complete dentures [17].

Several researches have examined the impact of edentulism and its subsequent rehabilitation on OHRQoL [5,13,18–20]. Ellis et al. [13] evaluated the satisfaction and OHRQoL of patients rehabilitated with complete conventional or duplicate dentures. The authors found an overall improvement in patient satisfaction and OHRQoL one month after delivery of new dentures (conventional or duplication technique). In addition, these findings were significant for some domains, depending on

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Functional limitation

1. Have you ever noticed that your dentures retained food?
☐ never ☐ sometimes ☐ almost always
2. Have you ever felt that your dentures were not correctly fit?
☐ never ☐ sometimes ☐ almost always
3. Have you ever had difficulty in chewing any food due to problems with your mouth or dentures?
☐ never ☐ sometimes ☐ almost always

Physical pain

4. Have you ever felt your mouth painful?
☐ never ☐ sometimes ☐ almost always
5. Have you ever felt any kind of discomfort while eating due to problems with your mouth or dentures?
☐ never ☐ sometimes ☐ almost always

Psychological discomfort

6. Have you ever felt embarrassed because of your mouth or dentures?
☐ never ☐ sometimes ☐ almost always
7. Have you ever been in an embarrassing situation due to problems with your mouth or dentures?
☐ never ☐ sometimes ☐ almost always

Physical disability

8. Have you ever avoided eating anything due to problems with your mouth or dentures?
☐ never ☐ sometimes ☐ almost always
9. Have you ever felt unable to eat due to problems with your mouth or dentures?
☐ never ☐ sometimes ☐ almost always

Social disability

10. Have you ever avoided leaving home due to problems with your mouth or dentures?
☐ never ☐ sometimes ☐ almost always

Handicap

11. Have you ever felt that life in general was less satisfying due to problems with your mouth or dentures?
☐ never ☐ sometimes ☐ almost always

Satisfaction

12. Are you satisfied with your upper denture?
☐ mostly satisfied ☐ satisfied ☐ not satisfied ☐ mostly not satisfied ☐ no answer
13. Are you satisfied with your lower denture?
☐ mostly satisfied ☐ satisfied ☐ not satisfied ☐ mostly not satisfied ☐ no answer

Fig. 1. Questionnaire answered by the patients.

the technique used for the fabrication of the dentures. Similarly, in the study of Veyrune et al. [19], an improvement on the OHRQoL was verified 12 weeks after the edentulous patients received their new complete dentures. However, Forgie et al. [5] found that the new complete dentures improved patient satisfaction, but in general it did not have impact on the quality of life parameters.

Despite of the aforementioned context, little is known about the consequence of conventional complete dentures replacement on OHRQoL and satisfaction of patients treated in university clinics in Brazil. Thus, the aim of the current study was to assess the impact of treatment with new complete dentures on OHRQoL and satisfaction of edentulous patients attending the Prosthodontic Department in a Dental School in

Brazil. The null hypothesis was that there would be no difference between the OHRQoL and patient satisfaction before and 3 months after treatment with new dentures.

2. Materials and methods

The study was carried out in 2006–2007 and received the approval by the local Ethic Committee in Research of Araçatuba Dental School (Process Number 2006-08152). Inclusion criteria comprised edentulous patients who sought prosthodontic treatment for provision of both upper and lower complete dentures, regardless of complexity of the cases, in 2006 in the Dental Clinic of the Araçatuba Dental School, Univ Estadual Paulista (UNESP), Brazil. Exclusion criteria included

Table 1

Comparison of the OHIP scores before and after treatment for all patients.

Domains	OHIP scores – mean (SD)		Wilcoxon value	P value
	Before treatment	After treatment		
Functional limitation	8.61 (3.18)	5.14 (1.96)	6426	<0.0001*
Physical pain	5.11 (2.17)	3.37 (2.02)	6034.05	<0.0001*
Psychological discomfort	4.20 (2.32)	2.30 (1.14)	6120	<0.0001*
Physical disability	5.84 (2.59)	3.30 (2.26)	6122.5	<0.0001*
Social disability	1.41 (0.98)	1.10 (0.48)	5220	0.0113**
Handicap	1.85 (1.12)	1.10 (0.48)	5770.5	<0.0001*

* $P < 0.01$.** $P < 0.05$.**Table 2**Distribution of the patients according to association between upper denture satisfaction and gender, before and after treatment ($n = 70$).

Upper denture satisfaction	Before treatment			After treatment		
	Female	Male	Total	Female	Male	Total
Very satisfied	0 (0.0)	0 (0.0)	0 (0.0)	42 (60.0)	12 (17.1)	54 (77.1)
Satisfied	24 (34.3)	6 (8.6)	30 (42.9)	7 (10.0)	6 (8.6)	13 (18.6)
Unsatisfied	23 (32.9)	7 (10.0)	30 (42.9)	3 (4.3)	0 (0.0)	3 (4.3)
Very unsatisfied	1 (1.4)	1 (1.4)	2 (2.8)	0 (0.0)	0 (0.0)	0 (0.0)
No answer	4 (5.7)	4 (5.7)	8 (11.4)	0 (0.0)	0 (0.0)	0 (0.0)

Values are expressed as n (%).

patients with overdenture supported by implants or natural teeth, with previous diagnosis of psychosis, dementia or delirium, and patients with some disability in answering the interview questions. All subjects agreed to participate in the study by signing the informed consent.

The sample included 70 edentulous patients in which only 7 did not previously wear any complete denture. Among the patients, 18 were men and 52 were women with their ages between 37 and 86 years.

The rehabilitation of patients with conventional complete dentures was performed by undergraduate students under supervision. New dentures were fabricated according to the following clinical sequence: primary and secondary impressions, recording of the jaw relationships, trial insertion and fitting of the dentures. After initial placement, the patients were reviewed and the adjustments of the complete dentures were made as needed.

The edentulous patient attitude toward complete dentures was measured by means of 13 items in a questionnaire (Fig. 1). This tool was composed of 11 questions related to OHRQoL and 2 questions related to patient satisfaction.

Some questions of the OHIP-EDENT were used to assess OHRQoL. These questions included 6 domains: functional limitation, physical pain, psychological discomfort, physical disability, social disability and handicap. Patients answered the questionnaire before treatment and 3 months after the new complete dentures were delivered, and they did not see the initial responses about their old dentures. Responses were made on a three-grade Likert-type scale. A low score denoted better OHRQoL as follows: 1 = never, 3 = sometimes, and 4 = almost always. The evaluations were undertaken by one calibrated examiner.

The OHIP scores for individual domains were calculated before and after denture delivery and comparisons between them were made using the Wilcoxon Signed Ranks test. Moreover, the associations between gender and patient satisfaction and between upper denture satisfaction and bands of age were statically analyzed using Fisher's exact test (SPSS version 19.0 – Statistical Package for the Social Sciences, Inc., Chicago, USA) at 5% significance level.

3. Results

The questionnaire was answered by a total of 70 edentulous patients in which 52 (74.3%) were female and 18 (25.7%) were male. Patient age ranged from 37 to 86 years (median 63.8 years), and the majority of the subjects (68.6%) aged from 60 to 86 years.

A comparison was made between the OHIP scores for all subjects before and after treatment. The results indicated that in all domains there were significant improvements in the OHIP scores with the new complete dentures (Table 1). Subjects reported significant improvements in the OHIP scores in relation to functional limitation ($P < 0.0001$), physical pain ($P < 0.0001$), psychological discomfort ($P < 0.0001$), physical disability ($P < 0.0001$), social disability ($P = 0.0113$) and handicap ($P < 0.0001$). For all domains, the OHIP scores were better 3 months after rehabilitation with new complete dentures.

Patient satisfactions before and 3 months after treatment are shown in Tables 2 and 3. It was possible to observe improvements in the overall satisfaction with both new upper and lower dentures. There were no associations between upper denture satisfaction and gender, before and after treatment

Table 3Distribution of the patients according to association between lower denture satisfaction and gender, before and after treatment ($n = 70$).

Lower denture satisfaction	Before treatment			After treatment		
	Female	Male	Total	Female	Male	Total
Very satisfied	0 (0.0)	0 (0.0)	0 (0.0)	40 (57.2)	9 (12.8)	49 (70.0)
Satisfied	16 (22.9)	5 (7.1)	21 (30.0)	8 (11.4)	4 (5.7)	12 (17.1)
Unsatisfied	26 (37.2)	5 (7.1)	31 (44.3)	4 (5.7)	5 (7.1)	9 (12.8)
Very unsatisfied	3 (4.3)	1 (1.4)	4 (5.7)	0 (0.0)	0 (0.0)	0 (0.0)
No answer	7 (10.0)	7 (10.0)	14 (20.0)	0 (0.0)	0 (0.0)	0 (0.0)

Values are expressed as n (%).**Table 4**Distribution of the patients according to association between upper denture satisfaction and bands of age, before and after treatment ($n = 70$).

Upper denture satisfaction	Before treatment			After treatment		
	≥60 years	<60 years	Total	≥60 years	<60 years	Total
Very satisfied	0 (0.0)	0 (0.0)	0 (0.0)	33 (47.1)	21 (30.0)	54 (77.1)
Satisfied	24 (34.3)	6 (8.6)	30 (42.9)	12 (17.1)	1 (1.4)	13 (18.6)
Unsatisfied	20 (28.6)	10 (14.3)	30 (42.9)	3 (4.3)	0 (0.0)	3 (4.3)
Very unsatisfied	2 (2.8)	0 (0.0)	2 (2.8)	0 (0.0)	0 (0.0)	0 (0.0)
No answer	2 (2.8)	6 (8.6)	8 (11.4)	0 (0.0)	0 (0.0)	0 (0.0)

Values are expressed as n (%).

($P = 0.577$ and $P = 0.127$, respectively; Table 2) and between lower denture satisfaction and gender before treatment ($P = 0.581$; Table 3). However, 3 months after denture delivery, there was association between lower denture satisfaction and gender ($P = 0.046$; Table 3). In addition, dividing the patients into two groups of ages ($\geq$ and <60 years), no association between upper denture satisfaction and bands of age was noted both before ($P = 0.356$) and after ($P = 0.060$) treatment (Table 4).

4. Discussion

The findings of the present study allowed the rejection of the null hypothesis that there would be no difference between the OHRQoL and patient satisfaction before and 3 months after treatment with new dentures. The OHIP-EDENT was used because it is a validated questionnaire and specific for edentulous patients [16]. OHIP and its shorter versions [5,12–16], Global Oral Health Assessment Index [19] and others questionnaires [18,20,21] have been used in several studies to verify the impact of oral rehabilitation on quality of life parameters in patients requiring new complete dentures and to facilitate comparison of data.

High OHIP-EDENT scores were verified before treatment in this study. Usually, old complete dentures have poor fit and are unstable or uncomfortable, compromising the chewing, speech, sleep, emotional and social stability of patients [22,23]. However, as observed in Table 1, significant improvements in all domains of the OHIP-EDENT were found 3 months after placement of the new complete dentures. These results may be due to the enhanced retention, stability and occlusion of new complete dentures, which improve chewing of hard foods by the denture wearers [21]. The review period of 3 months may

have been enough for patients to adapt to changes in the drawing features of the new dentures [12]. Thus, the subjects received a satisfactory treatment, and the treatment with conventional complete was helpful in treating edentulous patients.

Additionally, the main complaints of edentulous patients for replacement of their old dentures were denture instability and soreness, probably due to alveolar bone resorption and reduced tissue fit. As the treatment with new complete dentures resulted in a positive impact on quality of life (Table 1), the findings from this study support the idea that patients wearing conventional complete dentures in inappropriate conditions are more likely to feel positive impacts on their quality of life after treatment with new dentures. Similar results were found by John et al. [24] who observed significant improvements in OHRQoL of patients treated with conventional dentures, following a 1–12 months review period.

On the other hand, Forgie et al. [5] demonstrated that the quality of life parameters (measured by the OHIP) of subjects treated by undergraduate students in Dental Schools in England and Scotland were not greatly affected by the wearing of new dentures. These differences between studies could be due to the fact that the subjects studied were different in race, culture, and socioeconomic characteristics, which may have effects on the quality of life.

Veyrune et al. [19] verified no enhancement of quality of life in patients treated with new dentures after a 6-week evaluation period. However, after 12 weeks, a noteworthy improvement in quality of life was observed. In the study of Takamiya et al. [25] the prevalence of wearing of complete dentures was evaluated among subjects rehabilitated in university clinics in Brazil. These authors concluded that almost 26% of the edentulous patients did not wear their dentures and the main reason for

non-wearing of dentures was trauma on the mucosa. The results of these studies highlight the significance of the follow-up periods for adjustments and patient adaptation with new dentures [19,25]. Patient follow-ups were fundamental for the psychological and functional adaptation of the new conventional complete dentures.

With regard to patient satisfaction (Tables 2 and 3), the percentage of dissatisfied patients was higher for new lower denture, most likely due to difficulties in the stability of this denture. Nevertheless, after treatment, the patients reported improved satisfaction with both upper and lower dentures (Tables 2 and 3). These results show that the new complete dentures were well fitted and adapted to the oral tissues [12], reducing functional restrictions that happen as a consequence of pain [13]. In addition, the neuromuscular adaptation and personal comfort thresholds may establish satisfaction or disappointment with new dentures [21]. Forgie et al. [5] found that dentures replacement enhanced the patient satisfaction, particularly for the lower one, since the patients changed their old denture due to fitting problems of the lower denture.

Interestingly, 3 months after placement of the new complete dentures, there was association between lower denture satisfaction and gender (Table 3). However, there were no relationships between upper denture satisfaction and gender (Table 2) and between upper denture satisfaction and bands of age (Table 4), before and after treatment. Subjects aged 60 years or older were more satisfied with their upper dentures than subjects aged less 60 years. The patients were divided into two groups of ages ($\geq$ and <60 years) because according to World Health Organization (WHO), for developing countries such Brazil, people aged 60 years or more are considered elderly. Furthermore, most people aged 60 years or older were economically inactive. Usually, in retired people, self-esteem and feel utility decrease and these individuals tend to isolate themselves from the world. Thus, these facts could influence the denture satisfaction.

Generally, older patients are less exigent than the younger ones, especially in relation to the aesthetics of their dentures. Turker et al. [20] verified that age or gender did not display an association with denture. Müller and Hasse-Sander [26] reported that the abilities of adaptation to new dentures are not evidently age correlated. Moreover, aging is a biologic process which leads to substantial personal difference in oral ability [26]. Finally, the interpretation of patients regarding to experience with their complete dentures is intrinsically individual and extremely subjective [13]. Therefore, a certain level of discomfort or handicap may be acceptable to one patient and intolerable to another [13].

5. Conclusions

According to the findings from this study, three months after placement of new conventional complete dentures, the patients reported improvements in terms of OHRQoL, which were statistically significant for all domains of OHIP-EDENT. This research also showed a positive impact associated to the patient satisfaction with both new upper and lower dentures. Therefore,

conventional complete dentures may still be considered a good option for the rehabilitation of edentulous patients.

Conflict of interest statement

The authors claim to have no financial and personal relationships with other people or organizations that could inappropriately influence this work.

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