https://doi.org/10.33472/AFJBS.6.11.2024.1548-1556

African Journal of Biological Sciences

Journal homepage: http://www.afjbs.com

Research Paper Open Access

QUALITY OF LIFE OF COMPLETE DENTURE WEARERS

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Article Info

Volume 6, Issue 11, July 2024

Received: 21 May 2024

Accepted: 27 June 2024

Published: 12 July 2024

doi: 10.33472/AFJBS.6.11.2024.1548-1556

ABSTRACT:

Objective: To evaluate and compare the impact of new complete removable dentures on the oral health-related quality of life in patients over a two-year period.
Methods: A longitudinal comparative analysis was conducted involving 15 volunteers (both male and female, aged 50-82 years) seeking treatment at the Department of Prosthodontics of the Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences. Participants were assessed three months after denture installation and again one year after manufacturing. The Oral Health Impact Profile (OHIPEDENT), a Brazilian adaptation, was used to measure quality of life. Descriptive methods and hypothesis testing, including the Friedman and Wilcoxon tests with a significance level of 5%, were employed for data analysis.
Results: Significant improvements were observed in chewing discomfort and inability to chew between the first assessment and the one-year follow-up. However, no discernible differences were noted between time periods in terms of pain, orofacial muscle discomfort, psychological incapacity, and social impairment. Overall, there were significant enhancements in patient quality of life, particularly in reduced discomfort and improved chewing capacity over the two-year period compared to the initial assessment.
Conclusion: New complete removable dentures positively impact the oral health-related quality of life in edentulous individuals, particularly in terms of improved chewing function and reduced discomfort, over a two-year period following installation.

Keywords: Dentures, Oral Health Impact Profile, orofacial muscle discomfort, social impairment, quality of life

1. INTRODUCTION

Complete edentulism refers to the whole absence of permanent teeth.[1] It is a prevalent condition among those aged 65 to 74 years, particularly in the senior population globally.[2,3] This statement also describes a fact about the Brazilian population that was evaluated in the most recent epidemiological study carried out in 2010 by the Ministry of Health.
The survey results indicated that 15.4% of the elderly population was completely edentulous and required complete dentures.[4] According to the 2013 National Health Survey, 11% of individuals who were over 18 years old had no teeth. This percentage was greater among women who were 60 years old or older. While the normal aging process does not always result in the entire loss of teeth, age is a significant contributing factor.[5] Additional prevalent variables include biological processes such as dental caries, periodontal disease, physical

injury, and oral cancer, as well as non-biological factors such as dental treatments, the pursuit of healthcare, and social and cultural influences.[1]

Edentulism results in alterations on functional, neuromuscular, and physiological levels. The functional ability encompasses activities such as chewing and speech, while the psychological status pertains to self-esteem and happiness with appearance.[6] The social components revolve around pain and suffering associated with oral health [7-9]. Gradually, the complete absence of teeth results in the deterioration of supporting structures and decline in muscle strength, which negatively impacts the appearance of the face. Additionally, this condition affects the ability to chew, swallow, and speak effectively[10]. Hence, appropriate oral function encompasses not only the capacity to execute jaw motions and physiological factors, but also encompasses comfort and aesthetics, which can have an impact on one's quality of life.[8]

Rehabilitation with dental prostheses is the most cost-effective method and common treatment to mitigate the effects of complete tooth loss [2, 8, 9, 11]. The objective of this treatment is to reestablish the balance of the stomatognathic system and promote overall health. The acceptance of complete dentures necessitates both psychological and functional adjustment, a process that can be impacted by the patient's expectations [12] and perceptions [7], potentially impacting their quality of life. According to the World Health Organization, quality of life is the way an individual perceives their position in life within their cultural context and the values and systems they live in, taking into account their objectives, expectations, standards, and worries. [13]
Oral health-related quality of life is essential in prosthetic rehabilitation, encompassing functional, psychological, and social components. [7] The objective of this study was to assess the impact of new complete removable dentures on oral health-related quality of life, comparing it to the quality of life experienced with previous dentures. The evaluation was conducted at three months and a year after the fabrication and fitting of the new dentures.

2. MATERIALS AND METHODS

A descriptive, comparative longitudinal study was conducted in Saveetha Dental College, Chennai. Participants were provided with information about the study's objectives and methods, as outlined in the Informed Consent Form, and were asked to give their consent and signature. The participants were chosen among persons who sought treatment at the Department of Prosthodontics and Implantology for the purpose of receiving conventional complete dentures. The inclusion criteria consisted of persons who had been completely toothless for a period of more than one year and were current users of traditional complete upper and lower dentures, requiring replacement dentures. Participants with physical impairments, noticeable cognitive deficits in daily activities, or pathological alterations of the alveolar margins were not included.

The Brazilian version of the Oral Health Impact Profile for edentulous patients (OHIP-EDENT), validated by Souza et al.[12], was employed as the tool to evaluate the influence of quality of life. The assessment of quality of life was conducted at three different time points: while using the previous dentures, and after three months and one year of using the replacement dentures. The sample comprised 15 individuals of both sexes. It is important to mention that a significant portion of the sample was lost during the assessments, resulting in a decrease in the number of participants from the initial 36 to 22, and ultimately to 15 persons. The OHIP-EDENT is a questionnaire comprising of 19 questions categorized into four subscales as defined by Souza et al.[14] These subscales focus on "pain and discomfort in orofacial

muscles", "discomfort and inability related to chewing", "psychological discomfort and inability", and "inability to engage in social activities". The response choices are categorized as "never," "sometimes," and "almost always," and are assigned scores of "0," "1," and "2," respectively. Higher scores indicate a lower quality of life connected to dental health.

Statistical analysis was performed using SPSS, version 20.0 for Windows. The Shapiro-Wilk test was used to test the normality of distribution of data, finding that the variables were not of normal distribution. Friedman test was used to check if the sample showed any significant difference between the three durations evaluated. The post hoc analysis was conducted utilizing the therection method to identify the specific time periods in which discrepancies occurred. A significance level of 5% ($p \leq 0.05$) was used.

3. RESULTS

The ultimate sample comprised 13 females, accounting for 86.67% of the total, and 2 men, or 13.33%. The mean age was 61.53 years, with a standard deviation of 7.67. The minimum age observed was 43 years, while the greatest age was 75 years. The mean duration of edentulism was 26.6 years, with a standard deviation of 12.8. The duration of denture usage was divided into two categories: equal to or less than 5 years (4 - 26.67%) and more than 5 years (11 - 73.33%). The allocation of OHIP-EDENT regions across analyzed time periods is presented in Table 1.

There was a noticeable discrepancy in the region experiencing discomfort while chewing and the inability to chew between the initial assessment and the two-year follow-up. There were no discernible distinctions observed across the assessed time periods in terms of orofacial muscle pain and discomfort, as well as psychological and social incapacity. (Table 2)

AREAS	TIMELINES	MEDIAN	Q25-Q75
Orofacial muscle Pain and Discomfort	Evaluation	6.00	5.00-7.00
	3 months	5.00	3.00-6.00
	1 Year	2.00	2.00-6.00
Masticatory Discomfort and inability	Evaluation	5.00	1.00-7.00
	3 months	2.00	2.00-4.00
	1 year	1.00	0.00-3.00
Psychological inability	Evaluation	1.00	0.00-7.00
	3 months	0.00	0.00-3.00
	1 Year	0.00	0.00-1.00

Social inability	Evaluation	0.00	0.00-2.00
	3 months	0.00	0.00-0.00
	1 Year	0.00	0.00-0.00

TABLE 1 : Distribution of OHIP-EDENT areas between the evaluated periods.

AREAS	n	Evaluation	3 months	1 year
Orofacial muscle Pain and Discomfort	15	6.00^{ABC}	5.00^{BC}	2.00^{C}
Masticatory Discomfort and inability	15	5.00^{EF}	2.00^{FG}	1.00^{G}
Psychological inability	15	1.00^{IJK}	0.00^{JK}	0.00^{K}
Social inability	15	0.00^{MON}	0.00^{NO}	0.00^{O}

TABLE 2 : Comparison of OHIP-EDENT areas in three evaluated periods.

Groups of letters on medians represent multiple comparisons of the Friedman test ($p<0.05$). The medians or pairs of median values with different letters indicate that there are significant differences between the corresponding medians after Bonferroni correction ($p<0.0167$).

4. DISCUSSION

The average age above 60 years aligns with the data presented in other studies [9, 14, 15, 16]. Other studies have also found a greater occurrence of females [16,17], which can be attributed to the fact that women exhibit a higher level of concern for their dental health and are more proactive in seeking treatment compared to men [18]. Regarding the quality of life, there was no notable distinction in terms of discomfort and difficulty to chew between the initial assessment and the one-year follow-up, thereby emphasizing the enhancement in the patient's overall well-being.

The investigation classified the average duration of denture usage, specifically focusing on the main morphological and functional changes observed in persons who are missing teeth, for a period of up to 5 years. The dentures were used for over five years by 60% of the individuals in our study.According to the literature, the quality of dentures tends to deteriorate over time. Individuals may experience difficulties in chewing after the fourth and fifth year of using dentures, which supports the need for replacement, as our data suggests.

The primary factors contributing to the alteration in dentures, as shown in this study and consistent with other research, are attributed to insufficient stability and retention [11]. The reasons can be attributed to the period of bone loss that occurs in the first year after tooth extraction. During this time, the bone may experience a reduction of up to 25% in width and about 4 mm in height due to the ongoing process of bone resorption[11]. It is anticipated that

there would be a decrease in the alveolar ridge of around 1mm every year, with the drop being four times greater in the mandible compared to the jaw [9].

Resorption can result in inadequate fitting of the resin basis for dental prosthesis, leading to mild looseness around the remaining bone edge. The diminished vertical dimension and associated issues lead to severe discomfort during eating, resulting in lower efficiency of chewing. This, in turn, affects patient nutrition since food is not properly crushed, leading to decreased nutritional absorption[5].

Assessing the quality of life related to oral health allows for the evaluation of a patient's personal perception of their condition [20]. This is an important aspect in clinical practice, along with physical indicators, in order to enhance the comprehension and treatment approach of the professionals involved. The success of denture rehabilitation depends on the individual's perspective, with a focus on factors such as denture stability, comfort, speech, ease of removal for cleaning, chewing, and aesthetics[21]. The literature indicates that the OHIP-EDENT, which possesses reliable measurement features, is a specialized tool for evaluating the impact of prosthetic therapy on both the clinical aspects and quality of life of patients who are missing teeth.

The study revealed significant disparities in the OHIP-EDENT subscales related to masticatory discomfort and incapacity between the initial assessment and one year later, indicating a notable enhancement in the individual's quality of life as a result of using the new dentures. Proper alignment of the upper and lower jaws, the shape and fit of the denture base on the supporting tissues, and the anatomy of the teeth contribute to the alleviation of chewing discomfort and difficulty. These factors also enhance comfort during mastication.

The masticatory incapacity index can be enhanced by restoring the vertical dimension of occlusion, achieving accurate central occlusion[11], restoring the cusps for efficient food crushing, and improving chewing efficiency along with aesthetics.
Additionally, the incorporation of advanced molding techniques at the periphery enhances the dentures' capacity to securely fit and remain stable. This leads to improved patient comfort when wearing the new dentures.
Consistent with our research, several studies have demonstrated that replacing dentures with fresh ones substantially enhances quality of life[5,7,16,17,22]. In their study, Goiato et al. [5] assessed the quality of life and patient perception in 60 individuals who received a new prosthesis. The assessments were conducted before and after the prosthesis installation, with a three-month interval between them. The researchers utilized the OHIP-EDENT questionnaire and found that the prosthesis had a substantial impact on the patients' quality of life in all aspects. However, unlike our study, they examined each issue separately. Komagamine et al.[16] investigated the factors influencing the self-assessment of dentures using the OHIP-EDENT questionnaire and masticatory performance. They conducted their study on a sample of 93 individuals and found that replacing dentures improved the appearance and quality of life in edentulous patients by enhancing denture stability and retention. However, they did not observe any significant differences in masticatory ability. Significant disparities were noted in India after one month and six months of denture placement in comparison to the pre-treatment stage. Regarding the quality of life and gender, it was shown that women exhibited statistically substantial disparities compared to men.

A randomized investigation identified no significant changes in the oral health-related quality of life between dentures manufactured using simplified and standard processes at three and six

months.[8] Cardoso et al.[18] assessed the impact of mandibular overdentures with two implants on oral health-related quality of life and chewing efficiency. They found that this treatment option resulted in improved chewing efficiency and overall quality of life compared to conventional dentures.

It is noteworthy that although functional improvements bring significant satisfaction to patients, the aesthetic aspect of facial appearance should also be considered. According to Nordenram et al. [23], individuals who have lost their teeth have ongoing concern and, in some cases, self-blame for neglecting their dental health in the past. They also worry about how others see them. Furthermore, the absence of teeth leads to a noticeable deterioration in the lower part of the face, resulting in premature aging. This is characterized by a protruding jaw, prominent nasolabial folds, sagging cheeks, downturned corners of the mouth, and thin, tight lips. Prosthetic therapy can lead to improvements in the orofacial muscles, resulting in a revitalized appearance that enhances self-esteem and confidence.

Dentures enhance oral functions, but it is important to pay special attention to denture adaptation due to potential morphological and functional changes that might affect the fit and stability of the dentures. The process of adaptation appears to be influenced by the dentures' features and the orofacial myofunctional condition resulting from the muscular forces exerted, which disrupt the stability of the dentures [10].

During the adjustment period, individuals may experience functional challenges such as difficulty in articulating speech clearly, difficulty in controlling saliva, reduced movements of the lower jaw and lips due to the repositioning of teeth, refurbishment of the denture palate, and restoration of the vertical dimension of occlusion [25]. Furthermore, the location and mobility of the tongue play a crucial role in speech, chewing, and swallowing. In addition, individuals may experience tongue interposition when they acquire their new dentures, which can affect the generation of dentolingual phonemes. Therefore, it is important to take into account the use of tongue counter movement to enhance the retention and stability of jaw dentures through tactile sensation [26,27].

Regarding the function of chewing, there is a decline in the ability to perceive and process sensory information, leading to difficulties in organizing the chewing pattern. This is because individuals without teeth are unable to accurately feel the texture of food, unlike those with teeth. Furthermore, there is a decrease in muscle power for the cutting and grinding of food, resulting in uncoordinated movements. This also leads to reduced efficiency in chewing. One issue to consider for the functional constraints indicated above is the timing of the evaluation, which took place around three months. It is important to note that the adaptation process may take up to six months.[28-30]

An inherent constraint of this study is the limited number of participants in the sample. The adaptation phase of traditional complete dentures can lead to discomfort as a result of morphofunctional changes. Consequently, myofunctional therapy is a potential therapeutic option to promote balanced performance of oral functions.

5. CONCLUSION -

The study confirmed variations in discomfort and chewing difficulty between the initial examination and one year into wearing the dentures, indicating an improvement in the patient's quality of life. This study highlights the significance of evaluating pertinent factors of oral

health-related quality of life in individuals who use complete dentures. Additional investigation should be undertaken using more extensive samples and extended study durations.

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