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Evaluating Oral Health Related Quality of Life in North Gujarat Completely Edentate Patients: A Cross-Sectional Study

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Abstract

Aim: This study assesses the impact of complete denture rehabilitation on oral health-related quality of life (OHRQoL) in completely edentate individuals from North Gujarat, India.

Purpose of Study: The psychological traits of an edentulous patient may impact their oral health-related quality of life (OHRQoL) but are insufficiently considered while rendering treatments. The evaluation of patient's perceptions regarding the interventions they receive has been profoundly influenced by the assessment of oral health-related parameters and their impact on quality of life (QoL).

Materials and Method: An evaluation was conducted on 66 edentulous individuals, aged 50 to 70, who were treated by postgraduate students at Narsinhbhai Patel Dental College and Hospital. A specialized questionnaire, the Oral Health Impact Profile for edentate patients (OHIP-EDENT), was employed to collect data on oral health-related quality of life (OHRQoL). In addition, inquiries regarding the patient's satisfaction with their complete prosthesis were recorded. The patients underwent assessments at baseline, one month, and six months following the placement of new complete dentures.

Result: Statistically significant improvements in OHRQoL were noted at both one and six months following the insertion of complete dentures. The degrees of dysfunction, distress, and disability related with oral issues at baseline and one month later showed no statistically significant variation. All parameters of the OHIP-EDENT demonstrated substantial improvements following rehabilitation with new complete dentures. Furthermore, patient satisfaction experienced a substantial rise following complete denture insertion.

Conclusion: The study prove the effectiveness of complete denture therapy in improving overall health-related quality of life (OHRQoL) and highlight the significance of long-term follow-up in determining the complete effects of dental therapies. As a consequence, conventional complete dentures remain a feasible choice for rehabilitating edentulous individuals.

Keywords: Edentulism, dentures, oral health-related quality of life (OHRQoL), OHIP-EDENT

Introduction

Oral and general health can profoundly influence the quality of life among elderly individuals [1].Dental issues can hinder with vital functions like mastication, aesthetics and phonation apart from causing embarrassment due to affected appearance. This leads to irritability and mental instability[2].

The burden of oral disease in developing countries is anticipated to increase as a result of diets high in sugar, and the elderly population is anticipated to grow as a result of enhanced life expectancy. Therefore, it is imperative to implement strategies that enhance their quality of life[3].The quality of life related to oral health (OHRQoL) is an essential element of overall well-being and health. The WHO considers it a crucial component of the Global Oral Health Program[4], encompassing an individual's assessment of the impact of functional, psychological, social, and pain or distress factors on their well-being within the context of their oral health. The Oral Health Impact Profile (OHIP) questionnaire is a sophisticated tool for evaluating OHRQoL which is developed by Slade and Spencer originally, its shorter version, the OHIP-EDENT, is suitable for edentate individuals [5, 6].

The OHIP-EDENT is designed to evaluate how complete edentulism affects a patient's quality of life related to oral health. It is a validated and reliable tool for evaluating functional restrictions pain, psychological distress, physical impairment, and handicap caused by edentulism [7, 8].This makes it an important tool for doctors to evaluate how complete tooth loss affects their patients, perhaps guiding treatment decisions and measuring treatment outcomes.Complete dentures can play a crucial role in improving the overall well-being for edentulous patients by restoring oral function and aesthetics. Ideally, complete dentures should be comfortable, allow for normal speech, and provide occlusal support for chewing in addition to maintaining a pleasing profile [9, 10].Nevertheless, the efficacy of these treatments can be dependent upon a variety of individual factors, such as the patient's age, personality, previous denture-wearing experience, expectations, aesthetics, residual ridge form and anatomy, denture quality, construction method, dentist experience, and dentist-patient relationships [11, 12].

This study investigates the influence of complete dentures on oral health-related quality of life (OHRQoL) among fully edentulous individuals in North Gujarat, India, by examining their unique problems. The study aims to lay down specific dental care strategies that can improve the overall well-being of edentulous individuals in North Gujarat. The null hypothesis was that there would be no difference in Oral Health-Related Quality of Life (OHRQoL) and patient satisfaction at baseline, 1 month, and 6 months after treatment with complete dentures.

Methodology

A prospective, comparative research investigation has been carried out to determine the effect of complete dentures on Oral Health-Related Quality of Life (OHRQoL) in completely edentate individuals. The study recruited 66 participants for a duration of 12 months who visited Narsinhbhai Patel Dental College and Hospital seeking complete denture treatment due to functional limitations, aesthetic concerns, worn-out dentures, or fractured dentures depending on their inclusion or exclusion criteria (TABLE 1).

TABLE 1:LISTS THE INCLUSION AND EXCLUSION CRITERIA FOR THE RESEARCH

Inclusion Criteria	Exclusion Criteria
Completely edentulous subjects of either sex from North Gujarat aged 50-70 years, with or without systemic diseases (e.g., diabetes, hypertension)	Subjects with terminal illness or debilitating disease
Patients who were classified into Class I Prosthetic Diagnostic Index	Uncooperative patients
Participants requiring dentures due to functional or aesthetic limitations regardless of the gender	Patients with acute illness
Participants requiring new dentures due to worn-out dentures regardless of their gender	Patients with Temporomandibular Joint issues
Participants of both genders requiring dentures due to fractured or broken dentures	Patients with a history of alcohol or drug abuse
	Patients who have undergone radiotherapy
	Subjects who are not willing to participate

Postgraduate students were supervised as they rehabilitated the selected patients with conventional complete dentures.

New dentures were fabricated following proper clinical protocols: including primary and secondary impressions, recording of jaw relationships, trial insertion, and denture fitting. After the initial insertion, the patient's entire dentures were inspected and adjusted as appropriate. A questionnaire with 12 items was used to evaluate the attitude of edentate patients regarding their new complete dentures. This tool consisted of ten concerns regarding OHRQoL and two questions regarding patient satisfaction.

The research design employed a three-armed, single-center approach. Participants were randomized using a computerized randomization method to receive an OHRQoL assessment (using a translated and validated OHIP-EDENT questionnaire) at the time of denture insertion (baseline) and were evaluated 1 month and 6-month post-insertion complete dentures. The responses were recorded using a three-point Likert-type scale, where a lower score indicated better OHRQoL: 0 = never, 1 = sometimes, and 2 = almost always. A single calibrated examiner carried out the evaluations.

Data analysis involved descriptive statistics to understand the distribution of OHRQoL impacts across groups and over time. Additionally, statistical tests were planned to compare OHRQoL scores between groups and determine what impact of complete denture treatment on OHRQoL at different time periods. This comprehensive approach revealed significant insights regarding how dentures affect edentulous individuals and their quality of life.

Results

In this study, 66 participants who were completely edentulous at the time of complete denture placement responded to the questionnaire. A total of six participants were classified as dropouts due to their failure to return. All of the remaining participants completed the OHIP-EDENT questionnaire on three separate occasions. Therefore, the study was completed by 60 participants. This study utilized a repeated measure analysis of variance (ANOVA) with Bonferroni post-hoc test to investigate the changes in quality of life (QoL) following the complete denture treatment. Changes in QoL measures (functional limitations, physical impairment, psychological discomfort, physical pain, social disability, and satisfaction) were assessed over three time points (baseline, one month, and six months) considering potential correlations between repeated measurements from the same participants (TABLE 2 and Table 3). Data was acquired using SPSS VERSION 20.0 software.

Statistically significant improvements ($p \leq 0.05$) in all QoL measures at six months were noticed as comparison to the baseline indicating that participants experienced a measurable improvement in their QoL across all domains following treatment as depicted in Table 3.

While some QoL measures showed improvements at 1 month compared to baseline, these changes were not statistically significant for dysfunction, discomfort, and disability measures using the Bonferroni post-hoc test. The significant improvements observed between 1 and 6 months for all QoL measures suggest continued progress in QoL after the initial treatment period. (TABLE 2 and Table 3). This finding highlights the potential benefits of the treatment in promoting long-term improvements in the overall health of patients.

TABLE 2: QUALITY OF LIFE OUTCOMES AFTER TREATMENT (MEAN ± SD)

Parameters	Time period	Number	Value		P Value
			Mean	SD	
Functional limitation	**Baseline**	60	3.05	1.19	≤ 0.001*
	1 Month	60	2.60	0.71	
	6 Month	60	1.00	0.73	
Physical Pain	**Baseline**	60	2.02	0.87	≤ 0.001*
	1 Month	60	1.67	0.79	
	6 Month	60	0.60	0.61	
Psychological discomfort	**Baseline**	60	1.65	0.89	≤ 0.001*
	1 Month	60	1.47	0.89	
	6 Month	60	0.60	0.49	
Physical disability	**Baseline**	60	1.55	1.04	≤ 0.001*
	1 Month	60	1.67	0.95	
	6 Month	60	0.67	0.60	

Social Disability	**Baseline**	60	0.82	0.72	≤ 0.001*
	1 Month	60	0.67	0.60	
	6 Month	60	0.33	0.47	
Satisfaction	**Baseline**	60	4.87	1.47	≤ 0.001*
	1 Month	60	2.90	1.57	
	6 Month	60	1.92	1.27	

Level of Significance P ≤ 0.05, * Significant, ** Non-Significant.

Note: Sample size (n=60) is assumed to be the same for all time points based on the provided data.

P-values reflect the significance of change between baseline and 6 months using repeated measures ANOVA with Bonferroni post-hoc test.

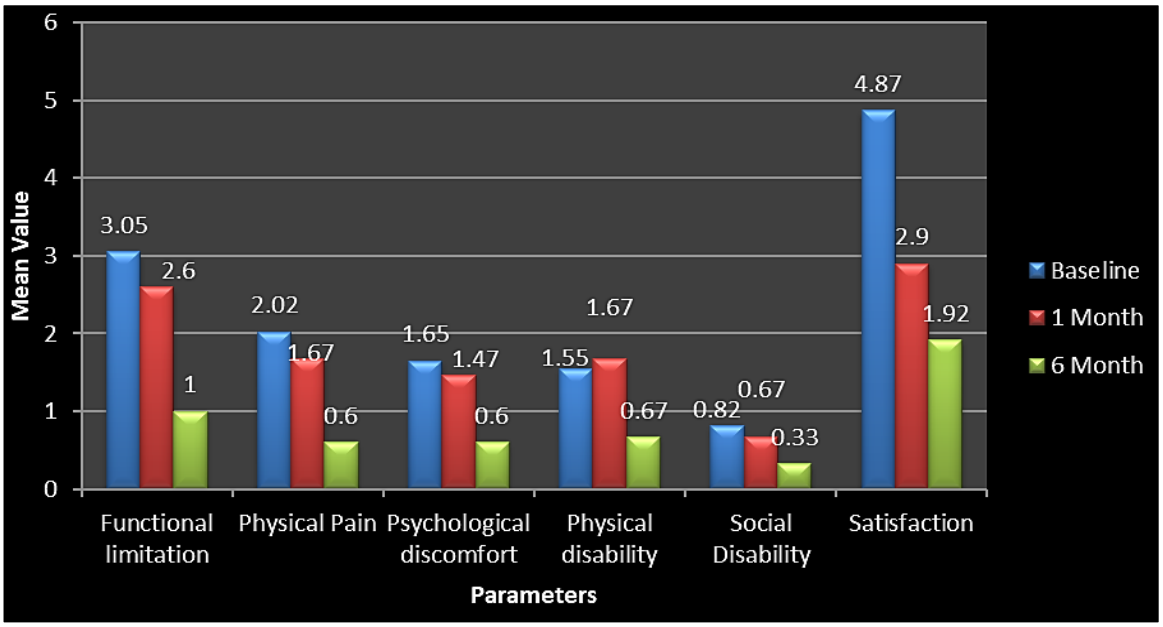

TABLE 3: PARAMETERS WISE DISTRIBUTION (PAIR WISE)

Parameters	**Time period**		**P Value**
Functional limitation	Baseline	1 Month	0.043*
		6 Month	≤ 0.001*
	1 Month	6 Month	≤ 0.001*
Physical Pain	Baseline	1 Month	0.085**
		6 Month	≤ 0.001*
	1 Month	6 Month	≤ 0.001*
Psychological discomfort	Baseline	1 Month	0.832**
		6 Month	≤ 0.001*
	1 Month	6 Month	≤ 0.001*
Physical disability	Baseline	1 Month	1.000**
		6 Month	≤ 0.001*
	1 Month	6 Month	≤ 0.001*
Social Disability	Baseline	1 Month	0.734**
		6 Month	≤ 0.001*
	1 Month	6 Month	0.002*
Satisfaction	Baseline	1 Month	≤ 0.001*

		6 Month	≤ 0.001*
	1 Month	6 Month	≤ 0.001*

Level of Significance $p \leq 0.05$, *Significant, **Non-Significant.

Discussion

The present research critically examined at how complete dentures can enhance their quality of life for people who are toothless. Statistically substantial gains were observed in all quality-of-life indicators after only six months of wearing complete dentures, which is impressive. This study investigated the effects of complete dentures on the oral health-associated quality of life (OHRQoL) in 60 edentate individuals. Participants were assessed at three time points: baseline (immediate denture insertion), 1-month post-insertion, and 6-month post-insertion. OHIP-EDENT, a validated tool, was used at every point in time to evaluate OHRQoL. While some improvements in QoL measures were observed at 1 month, statistically significant improvements in all QoL domains (functional limitation, physical pain, psychological distress, physical impairment, social impairment, and satisfaction) were discovered only at six months compared to the baseline ($p \leq 0.001$) (TABLE 2 and Table 3). This demonstrates that while dentures may require an adjustment period, they will eventually result in an enormous improvement in the patient's dental health-related quality of life once the patient becomes accustomed to their new denture. Similar outcomes were seen in an earlier study where over two-thirds (62%) of denture wearers adapted to their complete dentures (CDs) within a month but this initial success rate was significantly lower than the 85.9% adaptation seen after 6 months. Authors highlight the challenge of early adjustment, with factors like prior experience, mouth ulcers, and a reduced jaw ridge contributing to initial difficulties [13].These findings were also seen in other similar studies [14, 15].

Similar to our study, Shrestha et al. investigated the effects of complete dentures on oral health-associated quality of life (OHRQoL) in one hundred edentulous patients. They employed the OHIP-EDENT-N scale at baseline and eight weeks after the insertion of the dentures. This study is similar to ours. This investigation demonstrated substantial enhancements in all OHRQoL domains, with the exception of physical pain and social disability, subsequent to denture treatment. It suggests that for older edentulous people, complete dentures may enhance their overall quality of life in relation to oral health [5].

Various instruments, such as the Oral Impacts on Daily Performances (OIDP), Dental Impacts on Daily Living (DIDL), and Geriatric Oral Health Assessment Index (GOHAI), evaluate OHRQoL. Nonetheless, the OHIP distinguishes out for its comprehensive and verified methodology [16-21].We used the OHIP-EDENT score from a previous study by Nada El-Osta, who determined that the OHIP-EDENT surpassed other comparison measures in detecting edentulous individuals with oral and prosthetic challenges as well. This tool can be utilized by professionals to educate patients about the potential benefits of complete dentures and to manage patient expectations regarding the adjustment period [6].

This study employed repeated measure ANOVA with Bonferroni post-hoc test to assess the changes in quality of life (QoL) over time. This approach is ideal for longitudinal studies as it accounts for the repeated measures from the same participants. The Bonferroni post-hoc test, specifically, helps pinpoint the exact time points where statistically significant improvements occurred in QoL parameters like functional limitation, physical pain, and social impairment ($p \leq 0.05$) [22].

The observed time-dependent improvement in QoL highlights the importance of finding treatments with the potential for long-term benefits**.** While complete dentures may require an initial adjustment period, this study demonstrates a substantial and progressive impact on patients' quality of life concerning their oral health. These results are supported by comparable prior investigations conducted in this field [2, 5, 11].

Considering the psychological profiles of the patients was crucial in our study, as the importance of this factor is substantiated by the extant literature. Dahnded*et al*.,in a study of 284 complete denture wearers examined the impact of psychology and satisfaction on denture adaptation utilizing OHIP-EDENT and concluded that philosophically inclined and exacting patients adapted better than those who were hysterical or indifferent. Additionally, patients who were very or totally satisfied had significantly lower OHIP-EDENT scores across all domains, indicating enhanced overall oral health-related quality of life (OHRQoL). Overall, OHIP-EDENT scores decreased significantly (p=0.043) after 6 months in their study, suggesting enhanced quality of life for denture wearers [7].This is similar to our study findings where a significant improvement ($p \leq 0.001$) was seen in psychological discomfort however contrary to this our patients showed a significant fall in satisfaction scores overtime ($p \leq 0.001$) (Table 2& 3). This may be connected with elements that have previously been discussed in the literature, such as initial unrealistic expectations at the beginning of the treatment or concerns with denture fit [23-25].

Regarding patient satisfaction (Tables 2 and 3), the mean number of dissatisfied patients was higher during denture insertion, likely attributable to stability issues with the dentures. However, the patients reported increased satisfaction with

both their maxillary and mandibular dentures six months following placement (Table 2 and Table 3). These findings indicate that the new complete dentures were effectively fitted and adjusted to the oral tissues, thereby mitigating functional impairments associated with discomfort. Furthermore, the satisfaction or dissatisfaction with new dentures may be influenced by the neuromuscular adaptation and individual comfort thresholds [21].Forgie *et al*. discovered that the replacement of dentures, particularly the lower one, increased patient satisfaction. This was due to the fact that patients had to replace their previous dentures due to fitting issues with the mandibular complete denture [26].

Our study's strength lies in its longitudinal design with a validated tool (OHIP-EDENT) and robust statistical analysis revealing progressive QoL improvements. However, a small sample size and potential bias are limitations. Future research could address these limitations for a more comprehensive understanding and explore additional factors that may influence patient's experiences with dentures, such as socioeconomic status with treatment outcomes. Overall, our study aims to close the gap between patient-centered care and clinical practice will eventually benefit patients who require dental care.

Conclusion

After six months, the patient's oral health-related quality of life (OHRQoL) was significantly improved by the use of complete dentures. Although some initial adjustment may be anticipated, all aspects of OHRQoL, including function, pain, and social aspects, demonstrated significant improvement over time. These results underscore the long-term advantages of dentures for edentulous patients, necessitating additional research to investigate variables such as socioeconomic status. Furthermore, the research illustrated that patient's satisfaction with both maxillary and mandibular prostheses was enhanced. These results substantiate the efficacy of complete denture therapy in enhancing the overall health-related quality of life (OHRQoL) and underscore the importance of long-term follow-up in determining the comprehensive impacts of dental therapies. As a result, conventional complete dentures continue to be a viable alternative for the rehabilitation of edentulous patients.

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