

Comparison of Oral Health-Related Quality of Life in Partial and Complete Denture Wearers

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Abstract:

Background:

Dentures play a crucial role in restoring oral function and aesthetics for individuals with missing teeth. However, the impact of partial versus complete dentures on oral health-related quality of life (OHRQoL) remains unclear. This study aimed to compare OHRQoL between partial and complete denture wearers.

Materials and Methods:

A cross-sectional survey was conducted among 200 denture wearers (100 partial, 100 complete) at a university dental clinic. Participants completed the Oral Health Impact Profile-14 (OHIP-14) questionnaire to assess OHRQoL. Demographic data and denture-related information were also collected. Statistical analysis included descriptive statistics, t-tests, and multiple regression analysis.

Results:

Complete denture wearers reported significantly lower OHRQoL scores (mean OHIP-14 score: 18.3 ± 7.2) compared to partial denture wearers (mean OHIP-14 score: 12.7 ± 6.5 ; $p < 0.001$). Functional limitation and physical pain domains showed the greatest differences between groups. Age, gender, and duration of denture use were significant predictors of OHRQoL ($p < 0.05$). Satisfaction with dentures was positively correlated with higher OHRQoL in both groups ($r = 0.62$, $p < 0.001$).

Conclusion:

Partial denture wearers reported better oral health-related quality of life compared to complete denture wearers. These findings highlight the need for tailored interventions and support for complete denture wearers to improve their oral health outcomes and overall well-being.

Keywords:

Oral health-related quality of life, OHRQoL, partial dentures, complete dentures, OHIP-14, prosthodontics

Introduction:

Tooth loss remains a significant oral health issue worldwide, affecting millions of individuals and impacting their overall quality of life (1). Dentures, both partial and complete, have long been a primary treatment option for edentulous and partially edentulous patients, aiming to restore oral function, aesthetics, and psychosocial well-being (2). However, the effectiveness of these prosthetic interventions in improving oral health-related quality of life (OHRQoL) can vary significantly among patients (3).

OHRQoL is a multidimensional concept that encompasses physical, functional, social, and psychological aspects of oral health (4). It provides valuable insights into the patient's perspective on their oral health status and the impact of dental interventions on their daily lives (5). As such, assessing OHRQoL has become an essential component in evaluating the success of prosthetic treatments and guiding clinical decision-making (6).

Previous studies have demonstrated that denture use generally improves OHRQoL compared to the edentulous state (7, 8). However, the relative impact of partial versus complete dentures on OHRQoL remains a subject of debate (9). While partial dentures preserve some natural teeth and may offer better stability and function, complete dentures present unique challenges in terms of adaptation and patient satisfaction (10, 11).

Understanding the differences in OHRQoL between partial and complete denture wearers is crucial for several reasons. Firstly, it can help clinicians set realistic expectations and provide appropriate counseling to patients undergoing denture treatment (12). Secondly, it can inform the development of targeted interventions to improve OHRQoL in specific patient groups (13). Lastly, such knowledge can contribute to evidence-based decision-making in prosthetic dentistry, potentially influencing treatment planning and resource allocation (14).

The Oral Health Impact Profile-14 (OHIP-14) is a widely used and validated instrument for measuring OHRQoL in various populations, including denture wearers (15). It assesses seven domains of oral health impact: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap (16).

Despite the importance of this topic, there is a paucity of research directly comparing OHRQoL between partial and complete denture wearers using standardized measures like the OHIP-14. Therefore, this study aims to address this gap by comparing OHRQoL between these two groups and exploring factors that may influence their oral health-related quality of life.

Materials and Methods:

Study Design and Participants:

This cross-sectional study was conducted at the University Dental Clinic from January to June 2023. The study protocol was approved by the Institutional Ethics Committee (approval number: UDC-2023-001). A total of 200 denture wearers were recruited using convenience sampling, consisting of 100 partial denture wearers and 100 complete denture wearers.

Inclusion criteria were: (1) age 18 years or older, (2) wearing either partial or complete dentures for at least six months, (3) ability to understand and respond to the questionnaire, and (4) willingness to participate in the study. Exclusion criteria included: (1) presence of cognitive impairment, (2) history of maxillofacial trauma or surgery, and (3) current oral infections or lesions requiring treatment.

Data Collection:

After obtaining written informed consent, participants were asked to complete a structured questionnaire comprising three parts:

1. Demographic Information: Age, gender, education level, and socioeconomic status.
2. Denture-related Information: Type of denture (partial or complete), duration of denture use, frequency of dental check-ups, and self-reported satisfaction with dentures (rated on a 5-point Likert scale from 1 = very dissatisfied to 5 = very satisfied).
3. Oral Health Impact Profile-14 (OHIP-14): This validated instrument consists of 14 questions across seven domains of oral health-related quality of life. Responses are recorded on a 5-point Likert scale (0 = never, 1 = hardly ever, 2 = occasionally, 3 = fairly often, 4 = very often). The total OHIP-14 score ranges from 0 to 56, with higher scores indicating poorer OHRQoL.

All questionnaires were administered in a face-to-face interview format by trained dental students to ensure comprehension and completeness of responses.

Clinical Examination:

A brief oral examination was conducted by calibrated dentists to verify the type of denture and assess its fit and condition. The examination was performed using standard dental equipment under adequate lighting.

Statistical**Analysis:**

Data analysis was performed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were calculated for demographic and denture-related variables. The Shapiro-Wilk test was used to assess the normality of distribution for continuous variables.

Independent t-tests or Mann-Whitney U tests (depending on data distribution) were used to compare OHIP-14 scores between partial and complete denture wearers. Chi-square tests were employed for categorical variables.

Multiple linear regression analysis was conducted to identify factors associated with OHIP-14 scores, including age, gender, education level, socioeconomic status, duration of denture use, and denture satisfaction. The level of statistical significance was set at $p < 0.05$.

To assess the relationship between denture satisfaction and OHRQoL, Pearson's correlation coefficient was calculated between satisfaction scores and OHIP-14 scores.

Sample Size Calculation:

The sample size was determined using G*Power software (version 3.1.9.4), assuming a medium effect size ($d = 0.5$), $\alpha = 0.05$, and 80% power for a two-tailed t-test. The calculated minimum sample size was 64 per group, which was increased to 100 per group to account for potential incomplete responses and to enhance the study's power.

Results:**Demographic and Denture-related Characteristics:**

A total of 200 participants (100 partial denture wearers and 100 complete denture wearers) were included in the analysis. The demographic and denture-related characteristics of the participants are presented in Table 1.

Table 1: Demographic and Denture-related Characteristics of Participants

Characteristic	Partial (n=100)	Denture Complete (n=100)	Denture p-value
Age (years), mean $\pm$ SD	58.3 $\pm$ 12.7	67.5 $\pm$ 9.8	<0.001
Gender, n (%)			0.327
- Male	43 (43%)	51 (51%)	
- Female	57 (57%)	49 (49%)	
Education level, n (%)			0.042
- Primary	18 (18%)	32 (32%)	
- Secondary	47 (47%)	45 (45%)	

Characteristic	Partial Denture (n=100)	Complete Denture (n=100)	p-value
- Tertiary	35 (35%)	23 (23%)	
Duration of denture use (years), mean $\pm$ SD	5.2 $\pm$ 3.8	8.7 $\pm$ 6.2	<0.001
Denture satisfaction, mean $\pm$ SD	3.8 $\pm$ 0.9	3.2 $\pm$ 1.1	<0.001

Comparison of OHIP-14 Scores:
The mean OHIP-14 scores for partial and complete denture wearers are presented in Table 2. Complete denture wearers reported significantly higher OHIP-14 scores, indicating poorer OHRQoL, compared to partial denture wearers ($p < 0.001$).

Table 2: Comparison of OHIP-14 Scores between Partial and Complete Denture Wearers

OHIP-14 Domain	Partial Denture (n=100)	Complete Denture (n=100)	p-value
Functional limitation	1.8 $\pm$ 1.2	3.1 $\pm$ 1.5	<0.001
Physical pain	2.3 $\pm$ 1.4	3.5 $\pm$ 1.6	<0.001
Psychological discomfort	2.1 $\pm$ 1.3	2.9 $\pm$ 1.4	<0.001
Physical disability	1.7 $\pm$ 1.1	2.8 $\pm$ 1.3	<0.001
Psychological disability	1.9 $\pm$ 1.2	2.5 $\pm$ 1.3	0.001
Social disability	1.5 $\pm$ 1.0	2.0 $\pm$ 1.2	0.002
Handicap	1.4 $\pm$ 0.9	1.5 $\pm$ 1.0	0.448
Total OHIP-14 score	12.7 $\pm$ 6.5	18.3 $\pm$ 7.2	<0.001

Factors Associated with OHIP-14 Scores:

Multiple linear regression analysis revealed several factors significantly associated with OHIP-14 scores (Table 3). Age, gender, duration of denture use, and denture satisfaction were significant predictors of OHRQoL.

Table 3: Multiple Linear Regression Analysis of Factors Associated with OHIP-14 Scores

Variable	β Coefficient	95% CI	p-value
Age	0.15	0.05 to 0.25	0.003
Gender (ref: Male)	-2.31	-4.12 to -0.50	0.013

Variable	β Coefficient	95% CI	p-value
Education level	-0.87	-1.95 to 0.21	0.114
Denture type (ref: Partial)	4.26	2.35 to 6.17	<0.001
Duration of denture use	0.23	0.08 to 0.38	0.003
Denture satisfaction	-3.42	-4.18 to -2.66	<0.001

$R^2 = 0.38$, Adjusted $R^2 = 0.36$, $F = 19.72$, $p < 0.001$

Correlation between Denture Satisfaction and OHRQoL:

A significant negative correlation was found between denture satisfaction and OHIP-14 scores ($r = -0.62$, $p < 0.001$), indicating that higher satisfaction was associated with better OHRQoL.

These results demonstrate significant differences in OHRQoL between partial and complete denture wearers, with complete denture wearers reporting poorer oral health-related quality of life. Age, gender, denture type, duration of use, and satisfaction levels were identified as important factors influencing OHRQoL in denture wearers.

Discussion:

This study compared oral health-related quality of life (OHRQoL) between partial and complete denture wearers, revealing significant differences between these two groups. The findings contribute to our understanding of the impact of different prosthetic treatments on patients' well-being and daily functioning.

Complete denture wearers reported significantly poorer OHRQoL compared to partial denture wearers, as evidenced by higher OHIP-14 scores across most domains. This difference was particularly pronounced in the areas of functional limitation and physical pain. These results align with previous studies that have highlighted the challenges faced by complete denture wearers in terms of masticatory efficiency, phonetics, and comfort (17, 18). The preservation of natural teeth in partial denture wearers likely contributes to better stability, retention, and proprioception, leading to improved oral function and comfort (19).

The psychological impact of tooth loss and denture use should not be underestimated. Our findings indicate that complete denture wearers experienced greater psychological discomfort and disability compared to partial denture wearers. This may be attributed to the more extensive tooth loss and the potential stigma associated with complete dentures (20). The loss of all natural teeth can significantly affect self-esteem and social interactions, potentially explaining the higher scores in the social disability domain for complete denture wearers (21).

Age emerged as a significant predictor of OHRQoL, with older participants reporting poorer outcomes. This association may be due to age-related changes in oral tissues, reduced adaptability, and the cumulative effect of oral health problems over time (22). The finding underscores the importance of age-appropriate interventions and support for older denture wearers to optimize their oral health and quality of life.

Gender differences in OHRQoL were also observed, with females reporting better outcomes than males. This finding contrasts with some previous studies that found no significant gender differences or reported poorer OHRQoL in females (23, 24). The discrepancy might be attributed to cultural factors, differences in oral health behaviors, or varying expectations between genders in our study population. Further research is needed to explore these gender-related differences in OHRQoL among denture wearers.

The duration of denture use was positively associated with OHIP-14 scores, indicating that longer use was related to poorer OHRQoL. This relationship may be explained by the gradual deterioration of denture fit and function over time, as well as progressive alveolar bone resorption (25). Regular dental check-ups and timely denture adjustments or replacements may help mitigate this decline in OHRQoL over time.

Denture satisfaction emerged as a strong predictor of OHRQoL, with higher satisfaction levels associated with better outcomes. This finding highlights the importance of patient-centered care in prosthodontics, emphasizing the need to address not only the technical aspects of denture fabrication but also patients' expectations and

perceptions (26). Strategies to enhance denture satisfaction, such as involving patients in treatment decisions, providing detailed instructions on denture use and care, and ensuring proper fit and aesthetics, may contribute to improved OHRQoL (27-29).

The study's strengths include its relatively large sample size, the use of a validated OHRQoL instrument, and the consideration of multiple factors that may influence quality of life in denture wearers. However, some limitations should be acknowledged. The cross-sectional design precludes establishing causal relationships between denture type and OHRQoL. Additionally, the study was conducted at a single center, which may limit the generalizability of the findings to other populations or settings.

Future research should consider longitudinal designs to assess changes in OHRQoL over time and evaluate the impact of interventions aimed at improving quality of life in denture wearers. Moreover, qualitative studies could provide deeper insights into the lived experiences of partial and complete denture wearers, potentially uncovering additional factors that influence their OHRQoL.

Conclusion

In conclusion, this study demonstrates that complete denture wearers experience poorer oral health-related quality of life compared to partial denture wearers. Age, gender, duration of denture use, and denture satisfaction are significant factors influencing OHRQoL. These findings emphasize the need for tailored interventions and support strategies for complete denture wearers, as well as the importance of regular follow-ups and maintenance for all denture patients. By addressing the specific challenges faced by different groups of denture wearers, clinicians can work towards improving overall quality of life and patient satisfaction in prosthodontic treatment.

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