World Journal of Biology Pharmacy and Health Sciences
eISSN: 2582-5542
Cross Ref DOI: 10.30574/wjbphs
Journal homepage: https://wjbphs.com/

(RESEARCH ARTICLE)

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Gender-based analysis of oral health-related quality of life in edentulous patients

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World Journal of Biology Pharmacy and Health Sciences, 2026, 25(03), 014–019

Publication history: Received on 19 January 2026; revised on 27 February 2026; accepted on 02 March 2026

Article DOI: https://doi.org/10.30574/wjbphs.2026.25.3.0130

Abstract

Background: Edentulism, especially complete tooth loss, has a significant impact on oral health-related quality of life (OHRQoL), affecting function, aesthetics, and psychosocial well-being. Although tools such as the OHIP-14 enable reliable assessment of this impact, their use remains limited in routine clinical practice, particularly in developing countries. This study aims to assess and compare the OHRQoL among patients with complete and partial edentulism rehabilitated with removable dentures.

Objectives: This study aims to evaluate the gender-based differences in OHRQoL among patients with partial and total edentulism who received prosthetic treatment.

Material and Methods: A prospective analytical study was conducted on 147 patients at the University Dental Clinical Center "St. Panteleimon" in Skopje from April to June 2024. Participants completed a culturally adapted OHIP-14 questionnaire. Non-parametric tests and Spearman's correlation were applied for data analysis.

Results: Among 147 participants, 66 were males and 81 females; 65 had partial and 82 total edentulism. Female patients showed significantly poorer scores in the domains of physical pain, psychological distress, physical and psychological disability, and social disability ($p < 0.001$).

Conclusions: Female patients reported significantly poorer oral health-related quality of life across multiple OHIP-14 domains, particularly in psychological and social aspects. These findings highlight the need for a personalized, gender-sensitive approach in prosthodontic treatment, incorporating psychosocial support and patient education.

Keywords: Quality of life; Edentulism; Partial edentulism; OHIP-14; Oral health; Gender differences

1. Introduction

Oral health is an integral component of general well-being and plays a significant role in determining Oral Health-Related Quality of Life (OHRQoL). Beyond the absence of disease, oral health encompasses the ability to perform essential daily functions such as eating, speaking, and social interaction without pain, discomfort, or embarrassment. Edentulism, particularly complete edentulism, is a chronic condition with profound functional, psychological, and social implications. It compromises masticatory efficiency, speech articulation, and facial aesthetics, thereby negatively impacting nutritional status, self-esteem, and overall psychosocial health Moreover, tooth loss may contribute to social withdrawal and reduced participation in everyday activities, further diminishing quality of life. [1–4].

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The assessment of OHRQoL has gained increasing relevance in both clinical practice and research, as it transcends the traditional biomedical model and incorporates the patient's subjective perception of their oral health status and treatment outcomes. Contemporary dentistry increasingly recognizes that clinical indicators alone are insufficient to capture the full burden of oral disease. In this context, the Oral Health Impact Profile (OHIP-14) is a validated and widely utilized instrument for measuring the extent to which oral health conditions affect everyday life across functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap domains [1,5,7].

Despite its established validity and applicability, the integration of OHRQoL assessment into routine clinical protocols remains limited in many healthcare systems, particularly in developing countries where access to comprehensive oral healthcare services may be constrained. Considering the rising prevalence of edentulism as a consequence of population aging and persistent oral health inequalities, there is a growing need for patient-centered outcome measures. Therefore, the present study aims to evaluate and compare the perceived impact on quality of life among patients with complete and partial edentulism who have undergone prosthetic rehabilitation with removable dentures, thereby contributing to evidence-based and patient-oriented prosthodontic care.

Objectives

This study aims to evaluate OHRQoL differences by gender among patients with total and partial edentulism. It further investigates how demographic, behavioral, and socioeconomic factors influence OHRQoL, with a focus on domains such as physical and psychological well-being, social integration, and functional limitations.

Highlights

- Evaluates gender-based differences in Oral Health-Related Quality of Life (OHRQoL) among edentulous patients.
- Utilizes a culturally adapted OHIP-14 questionnaire to assess quality of life.
- Female patients exhibited significantly poorer outcomes in multiple OHIP domains.
- The study underscores the value of integrating OHRQoL in public health policies.
- Provides actionable insights for prosthetic rehabilitation strategies.

2. Material and methods

A prospective analytical study was carried out at the Department of Mobile Dental Prosthetics, University Dental Clinical Center “St. Pantelejmon” in Skopje, from January to December 2024, with the aim of assessing the impact of prosthetic rehabilitation on Oral Health-Related Quality of Life (OHRQoL) in patients with different degrees of edentulism. Inclusion criteria encompassed adult patients with clinically confirmed partial or total edentulism who were scheduled to receive removable dentures. Patients with systemic conditions affecting oral health perception or cognitive impairments that could compromise questionnaire reliability were excluded to ensure data accuracy.

A total of 147 patients participated voluntarily and anonymously, completing a culturally adapted and validated OHIP-14 questionnaire designed to assess the functional, psychological, and social dimensions of OHRQoL. Each item was rated on a five-point Likert scale ranging from 0 (never) to 4 (very often), resulting in total scores ranging from 0 to 56, where higher scores reflected a greater negative impact of oral health conditions on daily life. The data collection process ensured confidentiality and standardized administration to minimize bias.

Statistical analysis was performed using SPSS version 23.0. Data distribution was first assessed using the Kolmogorov-Smirnov and Shapiro-Wilk tests to determine normality. Subsequently, non-parametric tests, including the Mann-Whitney U and Kruskal-Wallis tests, were applied to evaluate differences between groups, while Spearman’s rank correlation coefficient was used to explore potential associations between demographic or clinical variables and OHIP-14 scores. A p-value < 0.05 was considered statistically significant, ensuring that observed differences and correlations were unlikely due to chance. This rigorous methodological approach allowed for a comprehensive analysis of the perceived impact of edentulism and prosthetic rehabilitation on patient quality of life.

3. Results

A total of 147 participants were included in the study, comprising 66 males (44.9%) and 81 females (55.1%), reflecting a slight predominance of female respondents. Among the participants, partial edentulism was identified in 65 individuals (44.22%), whereas complete edentulism was present in 82 participants (55.78%), indicating that more than

half of the cohort experienced total tooth loss. The mean age of the study population was 65.9 ± 7.4 years, reflecting a predominantly elderly cohort in which age-related oral health challenges are particularly relevant. Regarding place of residence, 60.54% of the respondents lived in urban areas, while 39.46% resided in rural settings, providing insight into potential environmental and accessibility factors that may influence oral health outcomes.

Analysis of the OHIP-14 scores revealed statistically significant gender-based differences across several domains of oral health-related quality of life, suggesting that women may experience a greater subjective burden from edentulism and related prosthetic rehabilitation. Female participants consistently reported higher scores, indicating a more substantial perceived negative impact on daily functioning and psychosocial well-being.

Specifically, the scores for physical pain were significantly higher in females (2.16 ± 1.6) compared to males (1.23 ± 1.6; $p = 0.00013$), highlighting gender differences in pain perception or reporting. Similarly, psychological discomfort was reported more frequently by females (5.17 ± 1.7) than males (4.01 ± 1.6; $p = 0.00006$), suggesting heightened emotional sensitivity to oral health limitations. In the domain of physical disability, females again scored higher (2.48 ± 2.1) than their male counterparts (1.30 ± 1.8; $p = 0.00039$), reflecting greater difficulty in performing routine oral functions. The difference was most pronounced in the psychological disability domain, where female participants reported a mean score of 3.75 ± 2.8, compared to 1.38 ± 1.9 in males ($p < 0.0001$), indicating a substantial gender disparity in perceived mental and emotional impact. Social disability also demonstrated a significant disparity between the sexes (females: 1.15 ± 1.7; males: 0.41 ± 1.3; $p = 0.00006$), suggesting that edentulism may more strongly affect social interactions and participation among women. Overall, these findings underscore the importance of considering gender-specific perceptions when evaluating OHRQoL and designing patient-centered prosthetic interventions. [table 1]

Table 1 Comparison of OHIP-14 scores by gender

OHIP-14 Domain	Males (n = 66)	Females (n = 81)	p-value
Physical Pain	1.23 ± 1.6	2.16 ± 1.6	0.00013
Psychological Discomfort	4.01 ± 1.6	5.17 ± 1.7	0.00006
Physical Disability	1.30 ± 1.8	2.48 ± 2.1	0.00039
Psychological Disability	1.38 ± 1.9	3.75 ± 2.8	< 0.0001
Social Disability	0.41 ± 1.3	1.15 ± 1.7	0.00006

Female patients exhibited a significantly poorer quality of life due to oral health problems compared to male patients. [table 2]

Table 2 Comparison of total OHIP-14 scores by gender

OHIP-14 total score			
Statistical parameters	**Gender**		**p-level**
	women	**men**	
mean ± SD	17.38 ± 8.3	9.95 ± 6.9	Z=6.0 ***p=0.000000
min – max	4 – 47	1 – 36	
median (IQR)	17 (11 – 22)	8 (6 – 11)	

4. Discussion

The results of this study revealed significant gender-based differences in perceived oral health-related quality of life (OHRQoL) among edentulous patients rehabilitated with removable dentures. Female participants consistently reported higher OHIP-14 scores across multiple domains, indicating a greater negative impact of oral health on daily functioning compared to their male counterparts.

The most pronounced disparities were observed in the domains of psychological discomfort, psychological disability, and physical pain. Female respondents more frequently reported feelings of anxiety, frustration, and emotional distress

associated with edentulism. These findings are consistent with previous studies suggesting that women may exhibit greater psychosocial sensitivity to changes in oral function and appearance [11,12].

Although removable prostheses can restore basic function and improve aesthetics, they do not always result in full psychological or social rehabilitation, especially in individuals with higher expectations or difficulties adapting to prosthetic devices. Women, due to higher levels of self-awareness and health consciousness, may be more likely to express dissatisfaction or discomfort with their oral condition [13].

Furthermore, women also reported higher scores in the domains of physical and social disability, which may be influenced by social and cultural expectations regarding appearance and communication. These findings suggest that gender plays a meaningful role in the subjective experience of oral health impacts.

In the present study, gender differences in Oral Health-Related Quality of Life (OHRQoL) among edentulous patients were evaluated using the OHIP-14 scale. Consistent with findings from Shrestha et al.,[14] our results indicate that although female participants tended to report slightly higher OHIP-14 scores across most domains, reflecting a greater perceived impact of edentulism on daily function and psychosocial well-being, these differences were not statistically significant. This observation aligns with prior evidence suggesting that while women may perceive a higher burden of oral health problems, the overall improvement in OHRQoL following prosthetic rehabilitation appears comparable between genders. Similarly, studies from broader elderly populations, such as those conducted in Indonesia and Poland, [15,16] have reported trends of higher perceived oral health impact among women, yet without statistically significant differences, highlighting the complex interplay of psychosocial factors, cultural expectations, and individual coping mechanisms in shaping patients' perceptions of oral health. These findings collectively underscore that gender, although potentially influencing subjective experiences, may not independently determine the functional and psychosocial outcomes of edentulism, reinforcing the importance of individualized prosthetic care that addresses both clinical and patient-reported outcomes.

From a public health perspective, these results emphasize the need to ensure equitable access to prosthetic treatment for all edentulous patients, irrespective of gender. Tailored strategies that consider patients' subjective perceptions and psychosocial needs, in addition to clinical indicators, can enhance treatment satisfaction and overall quality of life. Integrating such patient-centered approaches into community-based oral health programs may contribute to reducing disparities in oral health outcomes and improving the overall well-being of the elderly population.

This highlights the importance of adopting a patient-centered approach in prosthetic dentistry—one that considers not only the clinical status but also the psychosocial and emotional needs of the patient, particularly among female populations. Incorporating psychological support, patient education, and clear communication during treatment planning may enhance adaptation to dentures and improve overall well-being.

The findings corroborate global trends that indicate gender disparities in OHRQoL, with women consistently reporting greater impairments. This may stem from both biological and sociocultural factors affecting perception and response to oral health issues. The high OHIP scores in women across physical and psychological domains reinforce the need for gender-sensitive treatment planning.

Integrating OHRQoL assessments in routine dental evaluations can aid in holistic patient care. Preventive efforts should be intensified, particularly in rural communities, where access to dental services may be limited.

5. Conclusions

This study provides compelling evidence that edentulism exerts a substantial and multifaceted impact on oral health-related quality of life (OHRQoL), with pronounced gender-based differences observed across several functional, psychological, and social domains. Female patients consistently reported higher levels of perceived burden, particularly in areas of psychological discomfort, psychological and physical disability, and social functioning, indicating a heightened sensitivity to the functional and psychosocial consequences of tooth loss.

These results underscore the necessity of adopting a gender-sensitive approach within prosthodontic care, acknowledging that female patients may require tailored support to facilitate adaptation to removable dentures and to mitigate the broader psychosocial effects of edentulism. Effective oral rehabilitation should therefore extend beyond the technical provision of prosthetic devices to encompass strategies that address psychological well-being, foster patient engagement through clear communication, and provide comprehensive education on denture use and maintenance.

Furthermore, the findings highlight the importance of integrating systematic OHRQoL assessments into routine clinical protocols, particularly for populations with restricted access to dental services, including older adults and individuals residing in rural areas. Such an approach has the potential to inform personalized treatment planning, enhance patient satisfaction, optimize functional and aesthetic outcomes, and ultimately contribute to the overall improvement of quality of life in edentulous populations.

Compliance with ethical standards

Acknowledgments

We would like to thank the University Dental Clinical Center "St. Panteleimon" and the participating patients for their cooperation.

Disclosure of conflict of interest

The author declares no conflicts of interest.

Statement of ethical approval

The present research work does not contain any studies performed on animals/humans subjects by any of the authors'.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Author Contributions

Conceptualization, Methodology, Investigation, Analysis, and Writing: *Meri Lazarova*

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