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Geriatrics: Assessment of the Quality of Life related to Oral Health Clinical decision support

Augusta Silveira[1,2], Inês Castro[3], Maria Inês Aguiar[3], Maria João Aguiar[3], Beatriz Lopes[3], Beatriz Loibl[3], Sandra Gavinha[3], Francisco Veiga[1], Teresa Sequeira[3], Maria Teresa Moreira[1,4], Pedro Lopes Ferreira[2,5], Maria Inês Guimarães[1,2,6]

1- RISE-Health, Faculty of Health Sciences, Fernando Pessoa University, FP-I3ID, FP-BHS, Fernando Pessoa Teaching and Culture Foundation, Rua Carlos da Maia 296, 4200-150 Porto, Portugal
2- CEISUC, Centre of Investigation in Technologies and Centre for Health Studies and Research of the University of Coimbra, 3004-512 Coimbra, Portugal
3- DeleQOL, Saúde UFP
4- FP-I3ID, Institute of Investigation, Innovation and Development, FP-BHS, Biomedical and Health Sciences, University Fernando Pessoa, 4249-004 Porto, Portugal
5- Universidade de Coimbra
6- INMLCF, I. P., North Delegation - National Institute of Legal Medicine and Forensic Sciences, I. P., Jardim Carrilho Videira 4050-167 Porto, Portugal
Corresponding author: augusta@ufp.edu.pt

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ABSTRACT

Introduction: Aging with quality of life and health is a societal challenge, including oral health. Common concerns among the elderly include dental caries, periodontal disease, temporomandibular dysfunctions, chronic myofascial pain, and edentulism. This study aimed to characterize oral health status and self-perception in an elderly population. **Methods**: Twenty-one elderly individuals from a Social and Parish Center were evaluated. Questionnaires on oral hygiene habits and the OHIP-14 index were applied, along with intra/extra-oral clinical assessments. **Results**: The "physical pain" dimension of Oral Health-Related Quality of Life showed a significant positive correlation (r_s=0.445, p=0.043), indicating that a higher number of compromised teeth is associated with increased pain. Social disability correlated with the DMFT index (r_s=0.442, p=0.045), suggesting that greater oral impairment is linked to a higher perception of social disability. Worse oral health conditions were associated with more pronounced negative impacts on Oral Health-Related Quality of Life, particularly in physical pain, psychological discomfort, and social disability. **Discussion**: Preventive and educational strategies are essential for promoting oral health in geriatric populations, particularly institutionalized individuals. Oral Health-Related Quality of Life assessment is crucial in guiding clinical decisions in geriatric dentistry. **Conclusion**: Systematic evaluation of Oral Health-Related Quality of Life, as a "Patient-Reported Outcome," integrates the geriatric patient's self-perception into clinical decision-making, optimizing person-centered care.

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INTRODUCTION

The World Health Organization (WHO) considers that ageing should be lived in a safe and healthy way, in which all people should have the same opportunities, whether in terms of access to health or social care services, housing, hygiene or social participation. These factors can influence ageing positively or negatively, making it favorable or not (World Health Organization, 2015).

The United Nations (UN) estimates that the number of elderly people aged 65 and over will reach 1.5 billion, 1 in 6 of our population by 2050 (Nations et al., 2019). Recognizing the relevance of this scenario, the WHO has designated the period 2021-2030 as the decade of active ageing, stressing the need to involve various sectors to promote healthy ageing, in addition to healthcare, and assigning countries and their governments the responsibility of leading these efforts. In Portugal, for every 100 young people there are 182 elderly people, placing the country among those with the highest ageing rates in the world, and it is also the fourth fastest ageing country (Presidency of the Council of Ministers, 2024).

Ageing with quality of life (QoL) and health is currently a significant challenge for society (Silva, 2023). Historically, the concept of health has often been limited to a negative definition, such as the mere absence of disease. This view implies drawing a line between normal and pathological, which is imprecise and inadequate, considering that the notion of normality is fluid and changes over time (van der Linden & Schermer, 2024).

Oral health (OH), however, is often not given due attention when addressing the health problems of the elderly, being a section of the population that faces several comorbidities, especially cardiovascular and neoplastic diseases, which severely impact QoL (Wong et al., 2019).

Currently, the main health problems center on chronic diseases, often associated with increased life expectancy, which require prolonged and complex treatments. Among the most common concerns of the elderly population are dental caries, periodontal disease, dysfunction of the temporomandibular joint (TMJ), chronic myofascial pain and edentulism (Di Spirito, 2022).

Among the elderly, OH is a significant concern, as it is closely linked to general health (GH) and QoL. Common risk factors drive the development and worsening of OH problems and non-communicable diseases, which eventually lead to the inability to self-care. The global relevance attributed to OH stems from its direct impact on individuals' OH and QoL (Azami-Aghdash et al., 2021).

Self-perception of inadequate OH predicts self-assessment of poor GS, self-esteem and life satisfaction, indicating the conscious and psychological link between OH, GS and psychological well-being (Janto et al., 2022; Wong et al., 2019).

Thus, the systematic assessment of QoL (patient self-perception) has been highlighted as an important element in supporting clinical decision-making, but critical success factors have been identified for

this assessment to take place routinely. It involves the organization of multi-professional teams, patients, families and caregivers. Institutional involvement, buy-in from the first-line care provider, ongoing training for the team (training and support), the design of clear workflows, ongoing monitoring and real-time data analysis are crucial for implementing this assessment in daily practice. Obtaining these patient-reported results facilitates clinical decision-making and the practice of person-centered medicine (Silveira, A. et al, 2022; Silveira, A. et al, 2018).

The main aim of this study was to characterize OH status and self-perception in an elderly population. In addition, the aim was to investigate the associations between OH status and QoL in this sample, using indices and assessment instruments such as the decayed, missing and filled teeth index (DMFT index), the O'Leary plaque index and the OHIP-14. In order to understand the relationships and identify potential determining factors for this research, it is proposed to explore the interrelationships between OH status and participants' QoL.

METHODS

A preliminary bibliographic search was carried out of scientific articles published in the Pubmed, SciELO and B-On electronic databases using the keywords: "Odontogeriatrics"; "Oral health"; "Aging"; "Quality of life"; "Longevity"; "Community Oral Health". Articles published between 2014 and 2024 were considered. To carry out this research and prior to the start of the study, authorization and approval of the research project was obtained from the Ethics Committee of Fernando Pessoa University. The sample for this study consisted of 21 users from a social center. The following inclusion and exclusion criteria were used to select the participants: Inclusion: users (women and men) who attend institutions for the elderly; users of both sexes; users over the age of 65; elderly people of any nationality; elderly people with their own signed informed consent. Exclusion: elderly people who do not cooperate, who do not consent to their participation in writing, who have conditions that prevent clinical assessment and the collection of complete data and questionnaires. This research project was structured in several phases. The Consulting phase consisted of assessing each participant's OHRQoL using the OHIP-14 questionnaire, the prevalence of caries lesions using the DMFT index, the O'Leary plaque index, and finally the assessment of oral hygiene practices. At this stage, data collection was carried out by a group of students from Fernando Pessoa University, coordinated by a teaching team, in a systematic way and following previously established protocols. The second phase of the project, called the training phase, included theoretical training sessions, the main aim of which was to impart fundamental knowledge for improving oral hygiene and to enable participants to identify pathologies at an early stage, making preventive intervention possible. The aim was to promote oral health literacy among the participants, with a view to improving their OHRQoL. The topics selected were the biology of ageing; dental prostheses: a problem or a solution; the management of lesions in the oral cavity; warning signs in oral oncology; examination of the oral cavity and motivation for oral hygiene.

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Essential materials for oral hygiene were provided, including toothbrushes, toothpastes, fixatives and denture disinfection brushes. These resources were carefully selected with the aim of significantly improving participants' oral hygiene and encouraging greater motivation to maintain a regular oral care routine. The focus was not just limited to distributing the materials, but also included practical and educational guidance to ensure correct use and thus promote sustainable and effective hygiene habits.

Four main instruments were used to collect data: OHIP-14, CPO-D index, O'Leary plaque index and oral hygiene practices. Data was collected using the longevity form, which includes the informed consent form filled in by the participants. The forms were delivered in paper format and some users needed help filling them in.

The data collected was entered into a database prepared using the Excel® program (Microsoft Office Professional Plus 2021) and the statistical analyses were carried out using the IBM SPSS Statistics vs. 29.0 software (Statistical Package for the Social Sciences, IBM, USA), using descriptive and inferential analysis techniques to identify significant correlations between the variables.

The qualitative variables were described using frequency and percentage statistics (n and %), while the quantitative variables were described using the mean (M), standard deviation (SD) and median (Md) (due to the lack of normality of the variables verified using the Kolmorov-Smirnov test).

RESULTS

This study's sample consisted of 21 participants, 61.90% female (n=13) and 38.10% male (n=8)aged between 70 and 89 (M=79.57; SD± 6.79).

With regard to residence, 85.70% (n=18) lived in urban areas and 14.30% (n=3) in rural areas. As for marital status, the group with the highest incidence was widowers, corresponding to 47.60% of the sample (n=10), followed by married people, with 23.80% (n=5), and single and divorced people, each representing 14.30% (n=3).

With regard to level of education, around 71.40% (n=15) had completed elementary school, 23.80% (n=5) had completed secondary school and 4.80% (n=1) had higher education (see Table 1).

Table 1 - Sample characterization (n=21)

		N	*M*	*DP*	Minimum	Maximum
Age		21	79.57	6.79	70	89
		n			%	
Sex						
	Female	13			61.90	
	Male	8			38.10	
Residence						
	Urban	18			85.70	
	Suburban	0			0	
	Rural	3			14.30	
Marital status						
	Single	3			14.30	
	Married	5			23.80	
	Widowed	10			47.60	
	Divorced	3			14.30	
Training Level						
	Basic	15			71.40	

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	Secondary	1	4.80
	Superior	5	23.80

With regard to the assessment of QoL in the various dimensions, a mean score of 1.10 (SD±1.37) was obtained for functional limitations related to OH, suggesting that, in general, the participants reported few functional limitations. The dimension most affected was physical pain, with a mean of 2.10 (SD±1.73) and scores ranging from 1 to 6, indicating that physical pain was a significant issue for the participants. Psychological discomfort also had a relevant impact, with a mean of 1.95 (SD±1.86), ranging from 0 to 8, reflecting the emotional impact of OH. The physical and psychological disability dimensions had lower averages (0.52 and 0.48, respectively), while social disability had an average of 0.29 (SD±0.64). The dimension of disadvantage was the least affected, with an average of 0.10 (SD±0.44).

The average total OHIP-14 score was 6.52 (SD± 5.34), with physical pain and psychological discomfort being the most affected dimensions, while social disability and disadvantage were the least impactful (see Table 2).

Table2 - *Distribution of scores in OHIP-14 dimensions (n=21)*

	M	*DP*	Minimum	Maximum
OHIP-14 dimensions				
Functional Limitation	1.10	1.37	0.00	4.00
Physical Pain	2.10	1.73	1.00	6.00
Phsycological discomfort	1.95	1.86	0.00	8.00
Physical disability	0.52	0.81	0.00	3.00
Phsycological disability	0.48	1.03	0.00	4.00
Social Incapacity	0.29	0.64	0.00	2.00
Disadvantages	0.10	0.44	0.00	2.00
OHIP-14 Total	6.52	5.34	1.00	21.00

Analysis of the data in Table 2 revealed correlations between the DMFT index and the various dimensions of the OHIP-14, providing a detailed overview of significant and non-significant associations. With regard to functional limitation, there was a moderate positive correlation with the DMFT index (r_s= 0.494; p=0.023), indicating a significant association between OH deterioration and a greater perception of functional limitation. Physical pain also showed a significant positive correlation (r_s=0.445, p=0.043), indicating that an increase in the number of compromised teeth is associated with a greater report of physical pain. However, when analyzing psychological discomfort (rs=0.210; p=0.362), physical disability (r_s=0.243; p= 0.289) and psychological disability (rs=0.274; p=0.230) no significant correlations were observed. On the other hand, social disability showed a significant correlation with the DMFT index (r_s=0.442; p=0.045), indicating that greater OH impairment is associated with a greater perception of social disability. The dimension of disadvantage (r_s=0.161; p=0.486) did not show a significant correlation with the DMFT index.

When considering the OHIP-14 total score, there was a moderate and significant correlation with the DMFT index (r_s=0.435; p=0.049), indicating that an increase in the

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DMFT index is associated with an increase in the OHIP-14 score and consequently a lower OHRQoL (see Table 3).

Table3 - *Relationship between DMFT and OHIP-14*

	DMFT Index	
	r_s	*p*
OHIP-14 dimensions		
Functional Limitation	0.494*	0.023
Physical Pain	0.445*	0.043
Psychological discomfort	0.210	0.362
Physical disability	0.243	0.289
Psychological disability	0.274	0.230
Social Incapacity	0.442*	0.045
Disadvantages	0.161	0.486
OHIP-14 Total	0.435*	0.049

When considering the total OHIP-14 score, a moderate and significant correlation was observed with the DMFT index (r_s=0.435; p=0.049), indicating that an increase in the DMFT index is associated with higher OHIP-14 scores and, consequently, a worse OHRQoL.

DISCUSSION

This study also identified a moderate correlation between the DMFT index and the OHIP-14 score, indicating that worsening oral condition is related to a worse QoL. Similar results were observed in the study by Su et al. (2021), which used the OHIP 14 to measure the impact of different dental conditions on OHRQoL and found a significant association between worsening OH and higher scores on the index. This convergence of results suggests that interventions that improve OH, whether preventive or curative , have a direct positive effect on patients' perception of well being.

When compared with the narrative review by D'Elia et al. (2023), which highlighted the role of educational interventions in reducing plaque indices, the results of this study point to the continued need for educational programs, especially among more vulnerable populations such as the elderly. The positive correlation between plaque indices and DMFT found in this study reflects the importance of ongoing preventive strategies, in line with the literature that highlights education and the promotion of consistent oral hygiene practices as essential measures for maintaining OH.

This study suggests the need to implement targeted educational and preventive programs that encourage consistent and adequate oral hygiene practices. These measures are essential for reducing the O'Leary plaque index and the DMFT index, since poor hygiene care results in the accumulation of plaque and, consequently, the development of caries lesions and tooth loss. Programs should include assessment of OHRQoL as a clinical decision support tool.

To improve the OHRQoL of the elderly, it is essential that policies facilitate access to regular dental care. This includes educational interventions, logistical support for dental appointments and the provision of educational materials adapted to the needs of this population. Caregiver training

programs are also vital, ensuring that professionals understand the importance of daily care and have the necessary tools to maintain good OH.

A practical proposal would be to include dental professionals in day care centers and nursing homes, who could help with oral hygiene and promote good practices among the geriatric population. The active presence of these professionals would help to ensure that care is carried out properly and consistently, as well as providing ongoing education and support, which could have a significant impact on preventing oral diseases and improving OHRQoL.

Routine assessment of OHRQoL, combined with ongoing training programs, could enrich preventive strategies and strengthen elderly-centered dentistry, taking their self-perception into account when making clinical decisions.

CONCLUSION

OH directly affects OHRQoL, with the greatest negative impact associated with a deterioration in OH being the following dimensions: physical, psychological discomfort and social incapacity.

This highlights the importance of implementing preventive and educational strategies to promote OH in the geriatric community, especially the institutionalized, guaranteeing them primary oral health care, oral rehabilitation and motivation programs for oral hygiene and maintenance of dental prostheses.

Systematic assessment of OHRQoL is essential to guide clinical decision-making in dentistry. We therefore recommend this systematic assessment of OHRQoL, which as a "Patient Reported Outcome" makes it possible to include the geriatric patient's self-perception in clinical decision-making about their health, optimizing person centred medicine.

REFERENCES

Azami-Aghdash, S., Pournaghi-Azar, F., Moosavi, A., Mohseni, M., Derakhshani, N., & Kalajahi, R. A. (2021). Oral Health and Related Quality of Life in Older People: A Systematic Review and Meta-Analysis. Iranian journal of public health, 50(4), 689–700. https://doi.org/10.18502/ijph.v50i4.5993

D'Elia, G., Floris, W., Marini, L., Corridore, D., Rojas, M. A., Ottolenghi, L., & Pilloni, A. (2023). Methods for Evaluating the Effectiveness of Home Oral Hygiene Measures-A Narrative Review of Dental Biofilm Indices. Dentistry journal, 11(7), 172. https://doi.org/10.3390/dj11070172

Di Spirito, F. (2022). Oral and Systemic Health in the Elderly. Applied Sciences, 12(22), 11718. https://doi.org/10.3390/app122211718

Janto, M., Iurcov, R., Daina, C. M., Neculoiu, D. C., Venter, A. C., Badau, D., Cotovanu, A., Negrau, M., Suteu, C. L., Sabau, M., & Daina, L. G. (2022). Oral Health among Elderly, Impact on Life Quality, Access of Elderly Patients to Oral Health Services and Methods to Improve Oral Health: A Narrative Review. *Journal of Personalized Medicine*, *12*(3), 372. https://doi.org/10.3390/jpm12030372

World Population Ageing 2019. (2020). UN. https://doi.org/10.18356/6a8968ef-en

Organização Mundial da Saúde. (2015). Relatório mundial sobre envelhecimento e saúde. https://sbgg.org.br/wp-content/uploads/2015/10/OMS-ENVELHECIMENTO-2015-port.pdf

Presidência do Conselho de Ministros. (2024). Plano de ação do envelhecimento ativo e saudável 2023-2026. [Diário da República]. https://files.diariodarepublica.pt/1s/2024/01/00900/0003100078.pdf

Silva, S. (2023). Envelhecer Ativamente em Contexto de Centro de Dia [Dissertação de Mestrado em Gerontologia Social, Instituto Superior de Serviço Social do Porto]. https://comum.rcaap.pt/entities/publication/63f6733a-3846-4777-8692-1c39934ece0f

Silveira, A., Monteiro, E., & Sequeira, T. (2018). Head and Neck Cancer: Improving Patient-Reported Outcome Measures for Clinical Practice. Current treatment options in oncology, 19(11), 59. https://doi.org/10.1007/s11864-018-0578-1

Silveira, A., Sequeira, T., Gonçalves, J., & Lopes Ferreira, P. (2022). Patient reported outcomes in oncology: changing perspectives-a systematic review. Health and quality of life outcomes, 20(1), 82. https://doi.org/10.1186/s12955-022-01987-x

Su, N., van Wijk, A., & Visscher, C. M. (2021). Psychosocial oral health-related quality of life impact: A systematic review. Journal of oral rehabilitation, 48(3), 282–292. https://doi.org/10.1111/joor.13064

van der Linden, R. R., & Schermer, M. H. N. (2024). Exploring health and disease concepts in healthcare practice: an empirical philosophy of medicine study. BMC medical ethics, 25(1), 38. https://doi.org/10.1186/s12910-024-01037-9

Wong, F. M. F., Ng, Y. T. Y., & Leung, W. K. (2019). Oral Health and Its Associated Factors Among Older Institutionalized Residents-A Systematic Review. International journal of environmental research and public health, 16(21), 4132. https://doi.org/10.3390/ijerph16214132