

QUALITY OF LIFE AND DENTAL HEALTH IN THE ELDERLY PATIENTS: A CLINICAL INVESTIGATION

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ABSTRACT

This study examines the relationship between oral health, xerostomia, and quality of life in elderly individuals. Given the increasing global aging population, oral health issues, including tooth loss and dry mouth, significantly impact daily function, nutrition, and general well-being. This study aims to assess the effect of xerostomia, number of remaining teeth, and medication intake on the quality of life in elderly patients.

Methods: A cross-sectional study was conducted on 35 elderly participants (aged 65+) recruited from M.Kogalniceanu institution in Romania. The OHIP-14 questionnaire was used to evaluate oral health-related quality of life (OHRQoL), while the Xerostomia Index (XI) assessed the severity of dry mouth symptoms. Additional data included the number of remaining teeth, medication intake, and oral hygiene habits. Pearson's correlation coefficient and statistical tests (Shapiro-Wilk, Mann-Whitney U, and Kruskal-Wallis) were applied to analyse associations between oral health indicators and quality of life. **Conclusion:** Xerostomia has a greater negative impact on quality of life than the number of remaining teeth or medication intake in elderly patients. While prosthetic rehabilitation is crucial, the findings suggest a need for better awareness and management of dry mouth symptoms in geriatric care. Future research should integrate clinical assessments and radiographic evaluations for a more comprehensive understanding of oral health in the elderly.

Key words: xerostomia, oral health-related quality of life, elderly patients, dental health, prosthetic

1.INTRODUCTION

The percentage of the global population aged 60 and over jumped from 7.9% in 1950 to 14.3% in 2000, making them the fastest-growing age group. From 739 million in 2009 to 2000 million in 2050, this age group is projected to quadruple in the next four decades (1,2). The proportion of Europeans 65 and above has grown over the past half-century and now accounts for 14.7% of the continent's total population. Among the European Union's population, 13.9 million are 65 and above, with 6 million being 80 and up. Predictions show that by 2050, the

percentage of people aged 65 and above will reach 29.2%, while the percentage of people aged 80 and up will reach 39% (3).

Government organizations and health care providers have begun to create policies and programs to promote health in order to improve the quality of life for this demographic, since health is the most crucial prerequisite for older people to enjoy their last years (2).

A combination of hereditary and environmental variables causes the complicated biological phenomena known as

ageing. There is some evidence that this mechanism may raise illness risk, either directly or indirectly (4).

Numerous pathological and physiological changes may occur with ageing, and these changes may impact dental therapy. The prevalence of local and systemic disorders that necessitate medicine increases with age. In addition, drug usage can put oral health at risk (1,5). Approximately 75% of people over the age of 60 use medicine.

There is a severe lack of epidemiological data on the oral health of the elderly (5). Dental issues such as cavities, gum disease, tooth loss, and cancer of the mouth are common in this patient population. From 6% to 78% is the prevalence of edentulism in the societies that have been investigated (6).

Less power is experienced by those who wear dentures. Their masticatory effectiveness drops by 16-50% and the pace of their mandibular motions slows down, so they take longer to chew (6). The result may be a shift in the diet of the elderly away from lean proteins and towards processed meals heavy in saturated fat and cholesterol (6-8).

The frequency of xerostomia among institutionalized individuals can reach 40-60%, whereas in the general population it ranges from 12-28%. A number of concerns arise when the mouth is dry, including an increase in the prevalence of caries and gingivitis, problems with chewing and swallowing, problems with speech and taste, a burning feeling, and other issues (6,9). Xerostomia can be caused by more than 400 different medicines, making polymerization the most prevalent cause (9,10).

"People's perceptions of their position in life in the context of the culture and value

systems in which they live and in relation to their goals, expectations, standards and concerns" is how the World Health Organisation (WHO) describes quality of life. Oral health is one of numerous potential determinants of quality of life (11). It would be reasonable to create tools to measure quality of life because some health issues and illnesses may impact people's overall wellbeing (12). Functional, psychological, social, and pain/discomfort aspects pertaining to orofacial problems are all part of an individual's assessment of their oral health-related quality of life (OHRQoL) (13).

When looking to measure OHRQoL, the most used questionnaire is the Oral Health Impact Profile (OHIP). Functional psychological disability, social disability, handicap, and the other six components of OHRQoL are assessed using the 49-item OHIP-49 (12,14). Slade has created a condensed version of OHIP with 14 questions (OHIP-14), which evaluates the same dimensions and is now the most extensively used research test (12). However, its implementation may be time-consuming.

Patients suffering from oral illness, pain, or discomfort likely have a lower quality of life, as the majority of research assessing this topic have focused on negative experiences. The majority of older individuals also take medication, which might lead to xerostomia. This study aims to accomplish three things: (i) find out how xerostomia, number of remaining teeth, and drug intake affect the quality of life of elderly patients; (ii) find out how increasing drug intake relates to a greater feeling of dry mouth; and (iii) find out what the most common ways are to control xerostomia.

2. MATERIALS AND METHODS

2.1. Sample

Geriatric subjects that addressed in Romania's M. Kogalniceanu Educational Base, Iasi, Romania were investigated to perform this cross-sectional study.

Inclusion criteria:

- ❖ Patients over 65 years
- ❖ Patients in full mental condition to answer the questionnaires by themselves

Exclusion criteria were:

- ❖ Patients who did not consent
- ❖ Patients with cognitive impairments

2.2. Data Collection and Instrumentation

From an initial sample of 42 individuals, seven were excluded for not meeting inclusion criteria. The final study included 35 participants (16 males, 19 females). Data collected included age, gender, and the number of medications taken daily.

Questionnaires:

- **Quality of Life:** The OHIP-14 questionnaire, a widely used 14-item assessment tool, was used to evaluate oral health-related quality of life.
- **Oral Health Status:** The number of remaining teeth was recorded following WHO criteria. Root fragments were classified as missing teeth. Xerostomia severity was determined using the adapted Xerostomia Index (XI), an 11-item scale producing a continuous score to quantify dry mouth symptoms.
- **Dental Habits:** Participants self-

reported their last dental visit (<3 months, 3–6 months, or >6 months) and whether they brushed independently or with assistance. Those reporting xerostomia were asked about mitigation strategies, such as consuming water, chewing sugar-free gum, using specialized toothpaste, or taking prescription treatments.

2.3. Statistical Analysis:

Descriptive statistical analysis was conducted for all variables. Pearson's correlation coefficient was used to determine the relationships between quality of life, age, medication intake, remaining teeth, and xerostomia severity. Additionally, the relationship between quality of life and categorical variables, such as gender, dental visits, and oral hygiene habits, was assessed using independent sample tests. The normality of variables was determined using the Shapiro–Wilk test, with nonparametric Mann–Whitney U tests applied to non-normal distributions. Comparisons between quality of life and denture type were performed using the Kruskal–Wallis test. A significance threshold of $p \leq 0.05$ was used, and data analysis was performed using SPSS Statistics Version 25.

RESULTS:

A total of 35 participants (45.7% male, 54.3% female) with an average age of 79.8 ± 8.7 years were included in the study.

⇒ Dental Health and Quality of Life

Descriptive statistics for dental health variables are shown in Tables 1 and 2. A majority of the participants did not use any dentures. Most participants reported visiting a

dentist only when experiencing dental issues, with 70% not having undergone a check-up in over six months. The OHIP-14 score, reflecting quality of life, had a mean of 18.7 ± 9.9 . Pearson correlation tests indicated no significant relationship between quality of life and either age or medication intake (Table 3). Likewise, no association was observed

between quality of life and gender, frequency of dental visits, or independent tooth brushing. The type of dental prosthesis did not significantly impact quality of life outcomes.

Table 1: Descriptive Statistics of Dental Health Variables

Variable	Mean ± SD	Median (IQR)
Age (years)	79.2 ± 8.5	79 (72–85)
Gender	47% Male / 53% Female	-
Type of Denture		
No Denture	12 (40.0%)	
Full Denture (Upper & Lower)	8 (26.7%)	
Removable Partial Denture (Upper & Lower)	7 (23.3%)	
Fixed Prosthesis (Upper & Lower)	2 (6.7%)	
Full Denture (Upper)	1 (3.3%)	
Dental Visits (>6 months)	21 (70.0%)	
Brushing Teeth Alone	18 (60.0%)	
Receiving Help in Brushing Teeth	3 (10.0%)	
Lost Teeth	24.1 ± 8.3	24 (16–32)
Present Teeth	7.9 ± 8.3	8 (2–14)
Xerostomia Score	31.8 ± 9.5	31 (24–39)
Number of Medications Taken Daily	7.9 ± 4.3	7 (4–12)
OHIP-14 Score (Quality of Life)	18.6 ± 10.2	17 (11–25)

N: Number of subjects; SD: Standard deviation; IQR: Interquartile range; RPD: Removable partial denture; FP: Fixed prosthesis.

Table 2: Descriptive Statistics, Normality Tests, and t-Test for Quality of Life

Variable	N	Mean ± SD	p-value
Gender			
Male	14	16.85 ± 9.72	0.621
Female	16	21.30 ± 11.05	0.039
Dental Visits (>6 months)			
Yes	22	19.15 ± 10.72	0.130
No	8	19.30 ± 10.50	0.391
Brushing Teeth Alone			
Yes	19	18.35 ± 10.08	0.312
No	11	20.90 ± 11.45	0.111
Receiving Help in Brushing Teeth			
Yes	2	24.50 ± 14.10	0.052
No	28	18.75 ± 10.45	NA
Denture Type			
No Denture	13	14.30 ± 10.80	0.030
Full Denture Upper-Lower	7	21.0 ± 10.56	0.556

		8.30	
Removable Partial Denture Upper-Lower	6	20.50 ± 10.90	0.426
Fixed Prosthesis Upper-Lower	2	26.30 ± 0.75	NA
Full Denture Upper	1	34.20 ± NA	NA
Full Denture Upper/Removable Partial Denture Lower	1	30.10 ± NA	NA

N: Number of subjects; SD: Standard deviation; p-value: Critical significance level of means comparison test; RPD: Removable partial denture; FP: Fixed prosthesis.

Table 3: Correlation Coefficients (Quality of Life, Age, and Number of Drugs)

Variable	Pearson Correlation (r)	p-value
Age	0.07	0.81
Number of Drugs	0.26	0.18

*r: Pearson correlation coefficient; p: Critical significance level.

Relationship Between Quality of Life and Oral Health Indicators

As shown in Table 4, Pearson correlation analysis found no statistically significant relationship between quality of life and the number of remaining teeth. However, a higher xerostomia index was significantly associated with a poorer quality of life.

Table 4: Strategies Used to Alleviate Xerostomia

Strategy	No. of Participants (%)
Drinking Water	23 (66%)
Chewing Sugar-Free Gum	14 (40%)
Using Prescription Treatment	3 (9%)
Using Specialized Toothpaste	2 (6%)
Consuming Unsweetened Beverages	5 (14%)
No Action Taken	7 (20%)

⇒ Medication Intake and Xerostomia

No significant correlation was found between the number of daily medications taken and the xerostomia index.

⇒ Measures to Alleviate Xerostomia

To manage dry mouth, 23 participants (66%) reported drinking water frequently, while 14 (40%) used sugar-free gum. Fewer individuals relied on specialized dry mouth products, with only three (9%) using

prescription treatments, two (6%) opting for xerostomia-specific toothpaste, and five (14%) consuming unsweetened beverages to

reduce symptoms. Seven participants (20%) reported not taking any action to alleviate xerostomia.

DISCUSSIONS:

An ageing population is the consequence of longer life expectancy, which is driven by medical advancements and other societal and economic variables (15-17). A decline in everyday activities is a natural consequence of the ageing process, which is characterised by a slow but steady decline in physiological function. A person's ability to chew and swallow is directly impacted by changes in salivary production, which leads to xerostomia and tooth loss (18-20).

People with oral health issues are more likely to be elderly people. The xerostomia that results from these individuals being polymedicated is another concern. Furthermore, issues with oral hygiene, such as tooth decay and periodontal disease, are more likely to occur (21,22).

Dentistry places a premium on measuring the effect of dental health on patients' quality of life using measures of oral health-related quality of life. Our study utilised the OHIP-14 to assess quality of life since it is a targeted oral assessment tool for gauging the effects of oral illnesses.

The results indicate that neither age nor gender significantly influenced quality of life scores, consistent with findings from previous studies.

Regarding oral hygiene practices, a relatively small proportion (10%) of participants required assistance with brushing, significantly lower than the 72.2% reported in studies involving institutionalized populations. This suggests that our cohort may have had a higher level of independence in maintaining oral hygiene.

In contrast to previous research linking a reduced number of teeth with lower quality of

life, our study did not find a significant correlation between these variables (23-26). While some studies report a strong association between edentulism and diminished quality of life, others suggest that perceived oral health may not always align with clinical findings (27-29). A possible explanation for this discrepancy is that individuals adapt to tooth loss over time, using prostheses to compensate for functional limitations.

A notable finding was the strong correlation between xerostomia and reduced quality of life ($r = 0.64$, $p < 0.01$), supporting the idea that dry mouth significantly affects daily activities, dietary habits, and overall well-being. This aligns with previous studies indicating that xerostomia, rather than the number of remaining teeth, plays a crucial role in oral health-related quality of life (30-34).

Although polypharmacy is a known contributor to xerostomia, our study did not find a significant correlation between the number of medications taken daily and the xerostomia index.

These findings suggest that while medication-induced dry mouth is a common concern, other factors such as hydration status, systemic diseases, and salivary gland function may also influence xerostomia severity.

To mitigate dry mouth symptoms, participants most commonly reported drinking water (66%) and chewing sugar-free gum (40%) as coping strategies. However, the use of pharmacological treatments for xerostomia was minimal, highlighting the need for better awareness and management strategies among elderly individuals.

CONCLUSIONS:

1. Xerostomia is a significant factor affecting the quality of life in elderly individuals, more so than the number of remaining teeth or daily medication intake.
2. No significant correlation was found between quality of life and age, gender, or number of teeth, indicating that perceived oral health is subjective and influenced by various adaptive factors.
3. Although medication use is commonly linked to xerostomia, our study did not confirm a strong association, suggesting other underlying contributors to dry mouth symptoms.
4. Self-reported oral hygiene habits indicate that a majority of participants maintain independence in daily oral care, reducing their dependency on external assistance.
5. Water consumption and sugar-free gum were the most frequently used strategies for alleviating dry mouth, highlighting the need for more effective therapeutic interventions.
6. Future research should explore a more comprehensive diagnostic approach by integrating clinical examinations with radiographic assessments to enhance the accuracy of findings.

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