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Oral health and vulnerability indicators in institutionalized older adults: a cross-sectional study

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ABSTRACT

Introduction: Population ageing represents an increasing public health challenge, with oral health constituting a determinant component of healthy ageing. Among institutionalized older adults, high levels of edentulism, bacterial plaque accumulation, and prolonged use of ill-fitting prostheses may reflect clinical frailty and social vulnerability. Although the literature suggests that poor oral health conditions may be associated with neglect, such findings should be interpreted cautiously, as they do not constitute direct evidence of mistreatment. Accordingly, the assessment of oral status and dental prostheses may constitute a clinically relevant indicator in the early detection of at-risk situations and in the promotion of dignified ageing.
Objectives: To evaluate oral health status and prosthetic use and maintenance in institutionalized older adults, and to explore their association with clinical indicators and oral health-related quality of life, as potential markers of vulnerability.
Methodology: The literature review was conducted using PubMed, B-On, and Science Direct databases. The search included studies published between 2016 and 2026, using keywords such as “oral health”, “elderly”, “prostheses”, “vulnerability”, and “quality of life”. Studies were selected based on relevance to institutionalized older populations and oral health outcomes. A cross-sectional observational study was conducted involving 67 older adults (≥65 years) institutionalized across three-day care centers in the greater Porto area. Objective clinical indicators were assessed, comprising the Decayed, Missing, and Filled Teeth Index, the O'Leary Plaque Index, the Oral Health Impact Profile-14, and prosthetic usage habits, hygiene practices, and prosthetic adaptation. Non-parametric statistical analysis was applied, with a significance threshold of $p<0.05$.

Contributions: Conceptualization: AS, SG and MIG; Formal Analysis: AS, SG and MIG; Investigation: FV, AS, BG, SG and MIG; Methodology: FV, AS, BG, SG and MIG; Supervision: AS, SG, and MIG; Validation: FV, AS, BG, SG and MIG; Visualization: FV, AS, BG, SG and MIG; Writing – original draft: FV, AS, BG, SG and MIG; Writing – review & editing: FV, AS, BG, SG and MIG.

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Additionally, a bibliographic review was carried out across the PubMed, B-On, and Science Direct databases, encompassing articles published between 2016 and 2026 in Portuguese or English. Participants were selected according to predefined inclusion and exclusion criteria, and examiner calibration procedures were conducted to ensure consistency of measurements. The bibliographic review was performed to contextualize the findings and followed a structured search strategy with defined inclusion criteria.

Results: The sample, predominantly female (73.10%), had a mean age of 80.06 years (SD=7.65). The mean Decayed, Missing, and Filled Teeth Index score was 24.40, and the mean O'Leary Plaque Index was 65.23%. A positive correlation was observed between poorer dental conditions and a greater negative impact on quality of life (ρ=0.418; p=0.02). Of the participants, 56.7% wore dental prostheses, whether removable or fixed. Although 90.3% reported performing daily brushing, 34.6% did not employ any disinfection method, resulting in 35.8% of prostheses being inadequately cleaned. With regard to prosthetic fit, 10.53% had never had adjustments carried out, and 34.21% had not undergone any adjustment over three years. It was found that poorer hygiene habits were associated with greater plaque accumulation (p=0.001) and higher Decayed, Missing, and Filled Teeth Index scores (p=0.020).

Discussion: The Decayed, Missing, and Filled Teeth Index presents recognized limitations in elderly populations, as it does not differentiate between causes of tooth loss nor reflect current disease activity. Furthermore, although poor oral conditions may be associated with vulnerability, they should not be interpreted as direct indicators of neglect without the use of validated assessment tools specifically designed for this purpose. Cognitive status was considered during data collection to ensure the reliability of Oral Health Impact Profile-14 responses.