medical sciences forum

MDPI

Proceeding Paper

Oral Health in Nursing Home Residents—Preliminary Results of an Exploratory Cross-Sectional Pilot Study †

Joana Pombo Lopes [1,2,*], Diogo Sousa-Catita [1,3,4], Paulo Mascarenhas [1,3], Jorge Fonseca [1,3] and José Grillo Evangelista [1,2]

1 Egas Moniz Center for Interdisciplinary Research (CiiEM), Egas Moniz School of Health & Science, Campus Universitário, Quinta da Granja, 2829-511 Almada, Portugal; diogo.rsc2@gmail.com (D.S.-C.); pmascarenhas@egasmoniz.edu.pt (P.M.); jorgedafonseca@gmail.com (J.F.); josegrillo87@gmail.com (J.G.E.)
2 Morfology Department, Egas Moniz School of Health & Science, Campus Universitário, Quinta da Granja, 2829-511 Almada, Portugal
3 PaMNEC-Grupo de Patologia Médica, Nutrição e Estudos Clínicos, Egas Moniz School of Health & Science, Campus Universitário, Quinta da Granja, 2829-511 Almada, Portugal
4 Residências Montepio–Serviços de Saúde, SA, Sede–Rua Julieta Ferrão nº 10–5º, 1600-131 Lisboa, Portugal
* Correspondence: joanampmlopes@gmail.com
† Presented at the 6th International Congress of CiiEM—Immediate and Future Challenges to Foster One Health, Almada, Portugal, 5–7 July 2023.

Abstract: This study was conducted to assess the oral status of nursing home residents diagnosed with dementia in the Lisbon region, Portugal. In this cross-sectional observational pilot study, the oral and dental status were evaluated by determining the Decayed-Missing-Filled-Tooth (DMFT) index, frequency of oral hygiene, presence of erosion lesions or mucosal lesions, presence of dentures, and Shorted Xerostomia Inventory (SXI-5). This study aims to be a starting point for a broad analysis of this population and a further determination of potential associations between oral status and anamnestic factors as well as dementia data.

Keywords: oral health; nursing home; dementia

Citation: Lopes, J.P.; Sousa-Catita, D.; Mascarenhas, P.; Fonseca, J.; Evangelista, J.G. Oral Health in Nursing Home Residents—Preliminary Results of an Exploratory Cross-Sectional Pilot Study. *Med. Sci. Forum* **2023**, *22*, 8. https://doi.org/10.3390/msf2023022008

Academic Editors: José Brito, Nuno Taveira and Ana I. Fernandes

Published: 9 August 2023

1. Introduction

According to the World Health Organization (WHO), dementia is a group of disorders that affect memory, thinking, and the ability to carry out daily activities [1]. It is the leading cause of disability, dependence, and mortality, particularly among the elderly. Few studies have attempted to establish a link between oral health and brain health [2–4]; however, evidence suggests that people with dementia are more likely to have poor oral health, such as increased dental plaque, poorer periodontal condition, more coronal and root caries, higher Decayed-Missing-Filled-Tooth (DMFT) scores, a smaller number of remaining teeth, and fewer dentures to replace lost teeth [2,5–7]. In addition, some studies have linked oral disease to the subsequent risk of developing cognitive impairment and dementia [8]. The prevalence of oral health problems increases in cognitively impaired people, particularly those with dementia, due to their declining cognitive abilities, memory loss, learning disabilities, attention deficits, and deteriorating motor skills [3]. This vulnerability is even greater in care home residents, where oral health is often overlooked. In this sense, this study aimed to evaluate the oral status of nursing home residents diagnosed with dementia in the Lisbon region, to further determine possible associations between oral health status and anamnestic factors as well as dementia data.

2. Materials and Methods

This was an exploratory cross-sectional pilot study among elderly people living in nursing homes in the Lisbon region, Portugal, conducted between March and May 2023.

The study was reviewed and approved by the Ethics Committee of the Egas Moniz School of Health and Science, Portugal (1182, 26 January 2023), and Montepio Residences. Residents or their legal guardian were informed about the study verbally and in writing and gave written informed consent. A total of nine elderly people living in three different nursing homes in Lisbon (Residência Montepio da Parede, Parque das Nações, and Montepio) were included in this study. The inclusion criteria included newly admitted residents in Montepio Residences, written informed consent, and a diagnosis of dementia by the assistant clinician. Participants who did not meet these criteria were excluded from the study. Oral examinations were performed by a single dentist (J.P.L.) using a headlamp, mouth mirror, and exploratory and periodontal probes, mostly in the resident's room, but occasionally in other designated private rooms for observation. Residents were examined in a sitting or reclining position. The examination was recorded, transcribed into the patient's medical record, and entered into the study database. The examinations included oral health questionnaires and a full-mouth examination. The DMFT index was used to assess caries experience [9]. DMFT is a numerical expression of caries prevalence obtained by summing the number of decayed (D), missing (M), and filled (F) teeth (T). The sum of these numbers gives the DMFT index value, which can range from 0 to 32, including wisdom teeth. In addition, oral hygiene frequency and the assessment of the presence of erosive lesions, mucosal lesions, and dentures were completed. The Short Xerostomia Inventory (SXI) is a sum rating scale comprising five domains, and it assigns a continuous scale score between 5 and 15, indicating the severity of chronic xerostomia [10]. The data collected were used to determine the urgency of intervention required. Data collection followed the recommendations of the World Health Organization (WHO) in Oral Health Surveys–Basic Methods, 3rd edition [9]. Cognitive impairment was assessed using the Mini Mental Status Examination (MMSE). This scale allows patients to be scored on a scale from 0 to 30 points. A person is considered to have cognitive impairment if they score 14 or less and are illiterate. If the person has 1 to 11 years of schooling, a score of 22 or less indicates cognitive impairment. However, if the person has more than 11 years of schooling, a score of 27 or less indicates cognitive impairment [11].

3. Results

A total of nine participants (77.8% female) were evaluated. The mean MMSE score was 13.1. The mean age of the participants was 83.4 years, with a range of 74–92 years. All had completed primary education, only. The mean number of comorbidities was 4.4, and the participants had a mean of 6.1 for permanent medications. The data on population characteristics are shown in Table 1.

Table 1. Characteristics of the total study population.

MMSE, mean (range)	13.1 (2–22)
Gender, n (%)	
Female	7 (77.8%)
Male	2 (22.2%)
Age in years, mean (range)	83.4 (74–92)
Education level, (n)	Basic education (9)
Number of medical conditions, mean (range)	4.4 (3–6)
Number of medications, mean (range)	6.1 (1–10)

n = number of cases.

Information regarding the oral health evaluation is presented in Table 2. Two patients were edentulous (22.2%) and, therefore, did not participate in the dental examinations. The mean number of remaining teeth was 15.3, ranging from 4 to 25 teeth still present. The mean DMFT index was 22.1, with a total of 32 decayed teeth, 111 missing teeth, and 12 filled teeth accounted for. Regarding oral hygiene, most patients reported brushing their teeth at least once a day (44.4%). Mucosal lesions were found in five patients and consisted of ulceration (n = 1), prosthetic stomatitis (n = 1), hemangioma (n = 1), fibroma (n = 2), and

a white lesion on the dorsum of the tongue referred for biopsy and differential diagnosis. Removable dentures were used by only two participants (22.2%), and both were acrylic removable dentures. SXI scale score was, on average, 9 (5–13). Regarding the urgency of intervention after the oral health study, all of the individuals are in need of treatment, and one of the patients was referred for further evaluation.

Table 2. Oral health status observed in dementia patients.

Prevalence of edentulism (%)	22.2
Number of remaining teeth among dentate patients	
1–9 (%)	22.2
10–19 (%)	22.2
20 or more (%)	33.3
DMFT index, mean (range)	22.1 (16–32)
No. Decayed Teeth (DT), n	32
No. Missing Teeth (MT), n	111
No. Filled Teeth (FT), n	12
Oral hygiene frequency, n (%)	
Never	0 (0)
Once a day	4 (44.4)
More than once a day	3 (33.3)
Presence of erosion lesions, n (%)	
No signs of erosion	2 (22.2)
Enamel lesion	2 (22.2)
Dentinal lesion	2 (22.2)
Pulp involvement	0 (0)
Presence of oral mucosal alterations, n (%)	5 (55.6)
Wearing a removable dental prosthesis (%)	
Yes	22.2
No	77.8
SXI-5, mean (range)	9 (5–13)
Intervention urgency	
No treatment needed	0 (0)
Preventive or routine treatment needed	3 (33.3)
Prompt treatment including scaling needed	3 (33.3)
Immediate (urgent) treatment needed	2 (22.2)
Referred for comprehensive evaluation	1 (11.1)

4. Discussion

The results are consistent with the literature and confirm poor oral health in people with dementia; a high prevalence of edentulism, no dentures to replace lost teeth, more coronal and root caries, higher Decayed-Missing-Filled-Tooth (DMFT) scores, and a need for intervention in all individuals were observed. The frequency of oral hygiene assessed was not consistent with the oral hygiene observed, which was generally very poor. A complete periodontal assessment is of paramount importance, as well as the determination of plaque and gingival index to provide a quantitative and comparable analysis of oral hygiene and gingival inflammation. Further studies should focus on the relationship between the patients' oral health, the type of dementia, and the severity of cognitive impairment. Moreover, exploring the carers' oral health knowledge, practices, and barriers they face when performing oral hygiene will provide a better understanding of how to improve the oral health of people with dementia.

5. Conclusions

These preliminary results are in line with the literature and can serve as a basis for further research into the oral health of people with dementia. The findings of this study should encourage patients, carers, health professionals, and dentists to ensure regular preventive dental examinations and treatments for individuals with dementia.

Author Contributions: Conceptualization, J.P.L., J.F. and J.G.E.; methodology, J.P.L. and J.G.E.; formal analysis, J.P.L.; investigation, J.P.L. and D.S.-C.; data curation, J.P.L. and D.S.-C.; writing—original draft preparation, J.P.L.; writing—review and editing, P.M., J.F. and J.G.E.; visualization, P.M., J.F., D.S.-C. and J.G.E.; supervision, J.F. and J.G.E. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of Egas Moniz School of Health and Science (protocol code 1182, dated 26 January 2023).

Informed Consent Statement: Informed consent was obtained from all subjects or their guardian involved in the study.

Data Availability Statement: All data will be provided to any interested part upon its requesting.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. WHO. Dementia: Fact Sheet. Available online: https://www.who.int/news-room/fact-sheets/detail/dementia (accessed on 18 May 2021).
2. Tran, T.D.; Krausch-Hofmann, S.; Duyck, J.; de Almeida Mello, J.; De Lepeleire, J.; Declerck, D.; Declercq, A.; Lesaffre, E. Association between Oral Health and General Health Indicators in Older Adults. *Sci. Rep.* **2018**, *8*, 8871. [CrossRef] [PubMed]
3. Foley, N.C.; Affoo, R.H.; Siqueira, W.L.; Martin, R.E. A Systematic Review Examining the Oral Health Status of Persons with Dementia. *JDR Clin. Transl. Res.* **2017**, *2*, 330–342. [CrossRef] [PubMed]
4. Zeng, L.; Zong, Q.; Xu, S.; An, F.; Ungvari, G.S.; Bressington, D.T.; Cheung, T.; Qin, M.; Chen, L.; Xiang, Y. Oral Health in Patients with Dementia: A Meta-analysis of Comparative and Observational Studies. *Int. J. Geriatr. Psychiatry* **2021**, *36*, 467–478. [CrossRef] [PubMed]
5. Delwel, S.; Scherder, E.J.A.; Baat, C.; Binnekade, T.T.; Wouden, J.C.; Hertogh, C.M.P.M.; Maier, A.B.; Perez, R.S.G.M.; Lobbezoo, F. Orofacial Pain and Its Potential Oral Causes in Older People with Mild Cognitive Impairment or Dementia. *J. Oral Rehabil.* **2019**, *46*, 23–32. [CrossRef] [PubMed]
6. Hamza, S.; Asif, S.; Bokhari, S.H. Oral Health of Individuals with Dementia and Alzheimer's Disease: A Review. *J. Indian Soc. Periodontol.* **2021**, *25*, 96. [CrossRef] [PubMed]
7. Lauritano, D.; Moreo, G.; Della Vella, F.; Di Stasio, D.; Carinci, F.; Lucchese, A.; Petruzzi, M. Oral Health Status and Need for Oral Care in an Aging Population: A Systematic Review. *Int. J. Environ. Res. Public Health* **2019**, *16*, 4558. [CrossRef] [PubMed]
8. Orr, M.E.; Reveles, K.R.; Yeh, C.; Young, E.H.; Han, X. Can Oral Health and Oral-derived Biospecimens Predict Progression of Dementia? *Oral Dis.* **2020**, *26*, 249–258. [CrossRef] [PubMed]
9. Petersen, P.E.; Baez, R.J.; World Health Organization. *Oral Health Surveys: Basic Methods*, 5th ed.; World Health Organization: Geneva, Switzerland, 2013; ISBN 978-92-4-154864-9.
10. Thomson, W.M.; Chalmers, J.M.; Spencer, A.J.; Williams, S.M. The Xerostomia Inventory: A Multi-Item Approach to Measuring Dry Mouth. *Community Dent. Health* **1999**, *16*, 12–17. [PubMed]
11. Guerreiro, M.; Silva, A.P.; Botelho, A.; Leitão, O.; Castro-caldas, A.; Garcia, C. Adaptação à População Portuguesa Da Tradução Do Mini Mental State Examination (MMSE). *Rev. Port. De Neurol.* **1994**, *1*, 9–10.