



RESEARCH ARTICLE

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ASSESSING THE ORAL HEALTH CONDITION OF ELDERLY INDIVIDUALS WITH ALZHEIMER DISEASE

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ARTICLE INFO

Article History:

Received 14th June 2020
Received in revised form
20th July 2020
Accepted 29th August 2020
Published online 30th September 2020

Key Words:

Alzheimer Disease.
Geriatric Dentistry.
Oral Health.

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ABSTRACT

Aim: Comparing the oral health condition of elderly individuals diagnosed or not with Alzheimer Disease (AD), based on the DMFT index. **Methods:** Descriptive and comparative study conducted with a convenience sample comprising 15 elderly individuals with AD and 25 without the disease, in the age group 60-85 years. Participants' general data and health information were collected through the analysis of medical records and interviews. Their oral condition was analyzed based on the DMFT index, by taking into account the use of dental prostheses. ANOVA test was used to compare DMFT means between groups; Bonferroni adjustment was used, whenever necessary. **Results:** High mean DMFT values were recorded for elderly individuals with AD and individuals without the disease - 21.73 and 25.48, respectively. The difference in DMFT values between groups was statistically significant based on adjustments in the effects of participants' income and schooling ($p = 0.0351$). The M component (missing teeth) prevailed among elderly individuals without AD, which indicated larger number of fully edentulous individuals in this group. However, the frequency of prosthesis use was similar among elderly individuals with AD and individuals without the disease. High blood pressure was the most prevalent disease in both groups. **Conclusion:** High DMFT values recorded for elderly individuals with AD and individuals without the disease reflect the prior history of tooth loss in society. Socioeconomic factors interfered in the prevalence and distribution of DMFT components among elderly individuals with AD and individuals without the disease.

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Citation: Alexandre Franco Miranda, Tatiane Maciel de Carvalho, Juan Pablo Loyola Rodriguez, Fernando Luiz Brunetti Montenegro et al. "Assessing the oral health condition of elderly individuals with alzheimer disease", International Journal of Development Research, 10, (09), 40717-40721.

INTRODUCTION

An aging population causes biopsychosocial changes related to quality of life, the way of dealing with the elderly population and the need for professionals trained to contribute to health guidance, promotion and maintenance (Mendes, 2014; Miranda, 2016). Many specific diseases, systemic and neurodegenerative conditions can emerge with aging. Therefore, there is the need for greater professional training and integral knowledge about the elderly population, based on

planning and interdisciplinary caregiving management (Placideli, 2020; Veras, 2018) Among these diseases, dementia and namely Alzheimer's disease (AD) had an exponential increase related to aging (Amado, 2018). Alzheimer Disease is the most common type of dementia (Martins, 2019), it reaches approximately 50% of dementia cases in Western countries. Elderlies with Alzheimer Disease have global, progressive and irreversible worsening of the intellectual functions that, consequently, leads to the emergence of impairments in language, judgment, cognition and in motor, spatial and

perceptual skills that directly interfere in their daily lives, and that have impact on the satisfactory maintenance of their oral health (Chalmers, 2002; Friedlander, 2006; Lee, 2019; Miranda, 2010). Oral problems such as infectious and inflammatory processes, pain inflicting injuries and tooth loss, directly interfere in the systemic condition and quality of life of elderlies in general (Placideli, 2020; Miranda, 2010; Gabardo, 2013; Martins, 2014). The aim of the current study was to compare the oral health condition of elderly people with and without the diagnosis of AD through based on the DMFT index.

METHODS

Descriptive and comparative study carried out with a convenience sample of 15 elderlies with AD and 25 elderlies without the disease, aged from 60 to 85 years. The experiment was conducted in a University Hospital in Brasilia (Brazil), which is reference in interdisciplinary care provided to the elderly population due to the extension project of continuous action. The Research Ethics Committee (CEP) of the Medical School of Brasilia University approved the study before the beginning of the research (protocol 043/2008). The research project is associated with an extension and continuous action program, launched in 2008 and with its clinical, teaching and research objectives. The adopted protocol followed all current ethical considerations. Every elderly without AD and the legal guardians of individuals with AD signed the Free Consent Form (TCLE) and agreed in participating in the study. A single examiner performed the oral health condition assessment of the elderlies on a weekly basis, in pre-established days and times, for 10 months, according to the logistical organization and activities of the reference center. The current research contains the general data and clinical exams of 15 elderlies with AD and 25 elderlies without dementia (control group) Participation criteria comprised elderly people diagnosed with AD by the geriatric medical team at the reference center based on the Mini-Mental State Examination (cognitive assessment), Clinical Dementia Rating scale (CDR) and the Comprehensive Geriatric Assessment (CGA) (Nitrini, 2005; Caramelli, 2011). Participants were in the age group 60 to 85 years and were users of continuous medication.

Participation criteria set for the control group comprised elderlies without AD (dementia) diagnosis, in the same age group as the group of elderlies with AD, and to be patient of the outpatient clinic of the reference center. Elderlies with Sjogren Syndrome, subjected to head and neck radiotherapy and patients with advanced or moderate AD were excluded from it, since they did not collaborate with research activities focused on assessing oral health conditions. General data collection instruments were based on the assessment of medical records for medical history and socioeconomic inquiry through a questionnaire. Intraoral examinations followed the DMFT (Decayed, Missing, and Filled Teeth) index and the assessments of dental prosthesis use. Clinical examination was carried out on an outpatient basis, in the dental office of the reference center. The protocols were in compliance with all biosafety standards for examinations and sterilization procedures for dental instruments. The clinical examination used the following items: gauze, cotton rolls, wooden spatulas to remove the tongue and cheek, manufactured mouth openers, mouth expander, mouth mirror, forceps and explorer probe. Data obtained were transcribed into a standardized form in separate.

They were organized in Excel spreadsheets and later sent for statistical analysis. SAS 9.2 statistical software for Windows was used to data assessing. ANOVA test was used to compare the mean DMFT index values between groups (group with AD and group without AD) regarding co-variables "income" and "schooling". Multiple comparisons to Bonferroni adjustment were used when differences between groups were detected.

RESULTS

Table 1 show the distribution of research participants by comparing elderlies with AD and without the disease according to the assessed variables of interest. The comparison of mean values recorded for the DMFT index between elderlies with AD and the ones without the disease showed that variables "family income" and "schooling" were associated with statistically significant difference ($p=0.0351$). The assessment of the individual components of the DMFT index showed that patients with AD had more filled teeth and less missed teeth than elderlies without AD (Table 2). Health condition examination showed that high blood pressure was the most frequent associated systemic change, both in elderlies with and without Alzheimer Disease (AD). The mean number of medicines used by patients was 3.48 for individuals without Alzheimer Disease and 3.6 for elderlies with AD. The use of cholinesterase inhibitors (for mood and behavior control) by 100% of the elderlies with AD was a different aspect noticed in this topic.

DISCUSSION

Overall, elderly healthcare must be based on interdisciplinary assessments that aim at elaborating an individualized well-being and quality of life program, similar to that implemented in the reference hospital of the current study. The inclusion of oral health as effective part of elderly healthcare allows the creation of educational, preventive and interventional measures carried out by dentists who are trained to serve this special group¹⁵. Health professionals and family members need to have better understanding and knowledge about the oral health condition of elderlies with Alzheimer Disease (AD). Such situation motivated the current research. In addition, studies assessing the oral health condition of the Brazilian population with AD, from a gerontological point of view and focused on Geriatric Dentistry, are scarce (Miranda, 2010; Ferreira, 2014). The current study was carried out in an elderly healthcare reference center, with a convenience sample, due to the easy access to medical treatment and interdisciplinary activities, including activities suggested for oral healthcare. However, because of the difficulty in collaborating, responding to commands and of the possible need of using the protective stabilization technique to assess the oral health condition of elderly people with diagnoses of AD in more advanced stages (moderate and final), we chose to only include people with a diagnosis of mild AD, who are more participatory and collaborative in the study. Different from what was observed in elderly people without a diagnosis of AD, it is important highlighting that elderly patients with AD present a neurological and behavioral condition that requires using continuous medication and alternative therapies (Friedlander, 2006; Vale, 2011) to control symptoms and balance possible interpersonal relationships. The current study identified high mean DMFT values for both elderly groups (patients diagnosed with AD: 21.73; patients without the disease: 25.48). Such values did not differ from values observed in previous research with the Brazilian population.

Table 1. Distribution of elderlies assessed according to the assessed variables.

Variables	Without AD diagnosis		With AD diagnosis		Total
	N	%	N	%	
Personal features	-	-	-	-	-
Sex	-	-	-	-	-
Women	16	61.54	10	38.46	26
Men	09	64.28	05	38.72	14
Age	-	-	-	-	-
60 – 69	09	69.23	04	30.77	13
70- 79	13	56.52	10	43.48	23
> 80	03	75	01	25	04
Schooling	-	-	-	-	-
Illiterate	02	66.67	01	33.33	03
Incomplete basic education	10	71.42	04	28.58	14
Complete basic education(complete Elementary School+ incomplete high school)	06	54.55	05	45.45	11
Complete High School	05	71.42	02	28.58	07
Complete higher education	02	40	03	60	05
Income (minimum wage)	-	-	-	-	-
≤ 2	11	84.62	02	15.38	13
Between 2 and 5	12	70.58	05	29.42	17
≥ 5	02	20	08	80	10
Oral health conditions	-	-	-	-	-
Mean DMFT / 28 teeth	25.48	91	21.73	77.60	-
Use of complete dental prostheses(“dentures”)	-	-	-	-	-
Use the pair of prostheses(superiorand inferior)	12	70.58	05	29.42	17
Use only one prosthesis (superior)	04	80	01	20	05
Do not use prostheses	02	100	-	-	02
Use of partial dental prosthesis:	-	-	-	-	-
Do not use it	04	50	04	50	08
Usefixed or removable (PDP)	03	37.5	05	62.5	08
Frequency of oral hygiene	-	-	-	-	-
Once	04	50	04	50	08
Twice	09	60	06	40	15
3 times	11	73.33	04	26.67	15
> 3 times	01	50	01	50	02

Table 2. Distribution of the components of the DMFT index between elderlies with Alzheimer Disease (AD) and without the disease

	Damaged	Missed	Filled	Mean DMFT (total)
With AD diagnosis	0.8	16.33	4.6	21.73
Without AD diagnosis	0.52	24.4	0.56	25.48

Source: Prepared by the authors.

The latest research published by the Brazilian Health Ministry reports that the mean DMFT value for individuals aged 60 years or more is 27.79 (Brasil, 2012). Therefore, data herein collected showed that the Brazilian elderly population has high rate of damaged, missed and filled teeth, regardless of the AD diagnosis. Such an outcome results from a more interventional (dental extractions) and mutilating dental practice followed in the past and from the access to services based on low health training, rather than from nowadays more educational and preventive behaviors (Agostinho, 2015; Barbosa, 2011; Dutra, 2015).

Although the DMFT value was high either for elderly with or without AD, elderlies without AD diagnosis recorded higher mean score for this variable. Based on variables that could interfere in such outcome, family income and education were associated with the difference in the DMFT value. Some studies point out that socioeconomic factors directly interfere in the occurrence of tooth decay and tooth loss (extractions), which result from the non-accessibility to restorative-rehabilitation treatment (Ferreira, 2013; Gibilini, 2010). The missed teeth component of the DMFT index was more prevalent in the population without AD, whereas the filled teeth component was more frequent in elderlies with AD. Such data underlines the impact of socioeconomic level on access to odontological services in both populations.

The current research also showed that edentulism was more frequent in the elderly population without Alzheimer Disease. However, a broader examination of the oral cavity of elderly participants in the current study showed that the use of partial dental prosthesis (PDP) and/or complete dental prostheses (“dentures”) was more frequent in the assessed population, both with and without AD. Such a situation is usual in Brazil, where the use of dental prosthesis is widely disseminated (Brasil, 2010). The initial hypothesis of the current study supposed that elderly patients with Alzheimer Disease, who are subjected to continuous medication (namely antidepressants), would show worse oral health conditions. However, the performed comparative analysis performed showed that only socioeconomic factors are determinant for the observed differences, a fact already elucidated in other studies (Borges, 2014). The fact that elderlies included in the current research, with and without AD diagnoses, reported high DMFT values indicates that their main dental problems occurred in the past. Therefore, there is no direct interference from factors related to the aging process, use of medication or even the presence of associated diseases, since the main difference between the two groups was the presence of the neurodegenerative condition (AD).

It is suggested that the previous dental history is more relevant to oral health conditions than factors or conditions related to age. Therefore, it is important highlighting the need for further

research in order to confirm the aforementioned hypothesis. Another important factor is lack of knowledge by the elderly population, in general, about the importance of oral health. The elderly population is apparently used to tooth loss and to the use of dentures as a natural consequence of aging, but it is not correct (Nóbrega, 2018; Bernardes, 2019). It is expected that elderlies in the future, under special conditions and vulnerable, or not, will age with a larger number of teeth due to the general improvement in the oral health conditions reached in the last decades. In addition, the presence of teeth contributes to the quality of life and biopsychosocial, functional and systemic conditions of the elderly population (Cardoso, 2010; Haikal, 2011). It is important pointing out the need for training professionals and family members to support properly possible demands related to oral health promotion in elderlies in general.

Conclusion

The high values of DMFT found for elderlies with Alzheimer Disease and without the disease reflect the history of individuals who were subjected to the mutilating treatment options prevailing in dental practice. Socioeconomic factors interfered in the prevalence and distribution of DMFT components among elderlies with Alzheimer Disease and without the disease. Such outcome can be the result from the hard time accessing trained dental care and healthcare services.

Author Contributions

Study concept and design: Miranda, Lia and Leal. Analysis and interpretation of data: All authors. Drafting of the manuscript: All authors. Critical revision of the manuscript for important intellectual content: All authors. Statistical analysis: All authors. Evaluation of patients: Miranda. Study supervision: Miranda, Lia and Leal.

Conflict of Interest: The authors declare that they have no conflict of interest.

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