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Research Paper

Oral health of institutionalized and non-institutionalized Elders.

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ABSTRACT

Background: There is a strong prediction that population aging is established, and it is expected to reach its peak in 2020, resulting in a greater participation of the elderly in the society. The institutionalization grows along with the increase of life expectancy, significantly increasing the need for care. Poor oral health in elders is commonly found in developed and developing countries. Research on elders' oral health is necessary for appropriate planning in Geriatrics. Therefore, the objective of this study was to analyze the oral health of institutionalized and non-institutionalized elders.

Methods: This is a quantitative study utilizing a questionnaire and clinical examination with institutionalized and non-institutionalized elders, aged 60 or older. This study evaluated the dental caries index (DMFT), Community Periodontal Index – CPI and Dental Insertion Loss – DIL. Data were analyzed and compared by SPSS Software 15.0 (SPSS Inc, Chicago, IL, USA), considering statistically significant results with $p < 0.05$.

Results: 118 elders participated (52 institutionalized and 66 non-institutionalized ones) with an average age of 71.5 years (SD \pm 9.6). There was statistical significance between education and being institutionalized or not ($p = 0.0001$), were institutionalized individuals had lower educational levels than the non-institutionalized ones. In the total sample ($n = 118$) the mean DMFT was 27.6 (\pm 6.2), with 24.9 missing components. There was statistical significance between the variables missing component, filled component, healthy component, CPI and being institutionalized or not ($p < 0.05$).

Conclusion: It's observed a poor oral health in both groups of elders, although it was found that, except for missing teeth, non-institutionalized elders had better DMF-T values: greater number of teeth; higher value of filled and healthy components, what shows a probable easy access to dental care and also a better schooling.

Key Words: Epidemiology; Aging; Oral health; Institutionalization.

INTRODUCTION

There is a strong prediction that population aging is established, and it is expected to reach its peak in 2020^[1], resulting in a greater participation of the elderly in the society^[2]. It is said, however, that the growth of demographic data and the estimated aging of the world population have greater consequences in developing countries. The configuration of morbidity and mortality in Brazil has changed over the last thirty years and its profile, typical of a developing country, with a young population, changed to chronic and degenerative diseases, very common in older age groups^[3]. The last population census in 2010 shows a population of 190,755,799 Brazilians, among which are 20,590,599 (10.8%) persons aged 60 years and older (considered elders by Brazilian law)^[4]. At this juncture, it is very important to explore health issues more commonly experienced in the daily living of the elderly, since, despite the increase in life expectancy of this population, there are no signs of improvement in many health conditions lived by elders^[5].

It is shown, therefore, that practical implementations in the health system are needed in order to meet this increasing demand. However, to do so, it is necessary a better understanding of the vulnerable groups' health. In this context, it is important to include oral health, which in the elderly population, especially in the Brazilian and in other developing

countries, is poor, with a large rate of edentulism and low masticatory capacity [6, 7]. In the results of the SB Brazil epidemiological survey in 2003 [7] the oral health of older people is highlighted by the high prevalence of caries, based on the number of decayed, missing and filled teeth (DMF-T). The highest value for this index is 32, which means that all teeth in the person’s mouth are decayed, missing or filled (or else, that none of the teeth are healthy or present in the individual’s mouth). The mean DMF-T of 27.8 in this survey shows the high degree of action of dental caries and/or dental intervention in the elderly, in which the component missing tooth is responsible for 93.0% of the index. Also, the high DMF-T mode value of 32 (most frequently found value), observed at the ages 65-74, indicates a poor oral health condition for this age group.

In 2010, another survey called SB Brazil 2010 [8] was conducted indicating an improvement in oral health of Brazilians in these seven years. However, this improvement was not observed in the elderly people because the results of the SB Brazil 2010 shows that DMFT in this age group has remained practically unchanged, being 27.1 in 2010 versus 27.8 in 2003, and the component “missed” still prevailed, indicating a great need for prosthetic oral rehabilitation. Poor oral health in elders is commonly found on developed and developing countries [9-14], being important to study this situation in various realities in order to provide information necessary for action planning in these different settings. In view of these findings on the oral health of the elderly and the growth of this population, there are concerns and challenges to be overcome regarding the geriatric oral health. At the individual level, it is possible to point out: decrease of chewing ability, difficulty in swallowing, phonation decrease, reduced salivary flow, changes in taste, and loss of vertical dimension [15], factors that directly affect the psychological and social aspects of this age group, decreasing self-esteem and influencing social life.

Additionally, at the collective level, there is a need for a better planning of public services for this age group. These services should include higher offer of health promotion, preventive and curative services, which need to be offer to institutionalized and non-institutionalized elders, as the demand for shelters, that is, geriatric institutions for older people has increased over the years [16]. The institutionalization grows along with the increase of life expectancy, significantly increasing the need for care [17]. Unfortunately, this care is not always properly carried out, leaving many institutionalized elders without appropriate health follow-up, what leads to concern and debate on the elders’ health, showing the increasing need to promote health, prevent and rehabilitate oral health injuries in both institutionalized and non-institutionalized elders [16]. Although studies point out that non-institutionalized elderly have a better oral health than the institutionalized ones [1, 15], there are others works which stress the importance of conducting new and detailed research on their oral health [18], showing the deficiency in this field throughout developing countries, including Brazil and its northeastern part [16]. Considering this problem, this study aimed to compare the oral health of institutionalized and non-institutionalized elders.

MATERIALS AND METHODS

Quantitative research was performed in six social spaces, including: three long-stay institutions for elderly - LSIE (Lar Torres de Melo, Casa de Nazaré and Casa de São Vicente de Paula), two elderly groups (Cabelos Brancos do Dendê – NAMI, Trabalho Social com Idosos - SESC) and an Educational Institution for elders (University without borders), all located in Fortaleza, capital of Ceará state (Northeast part of Brazil). The LSIE are references to Ceará state, providing comprehensive assistance to needy and/or abandoned elderly. The study population included institutionalized or non-institutionalized individuals aged 60 years old or older. According to the World Health Organization (WHO) [18] guidelines for developing countries, elder person is someone 60 years or older.

The equation for sample calculation of the t test (equation 1) was used in order to calculate the sample for each group, institutionalized or non-institutionalized.

$$n = 2 \left[\frac{(Z_{\alpha} + Z_{\beta})\sigma}{\Delta} \right]^2 \text{----- Equation 1}$$

The sample size calculation was based on the DMF-T, considering d (the ratio between Δ , σ equals to 0.6, α =0.05 and β =0.10) obtaining the sample size of 48 individuals per group. Considering the social spaces, there was a random, stratified sample with proportional affixation. However, the researcher decided to interview a larger number of elderly people (118 elders, 52 institutionalized ones and 66 non-institutionalized ones), minimizing the margin of error.

Data collection, characterized by assessing sociodemographics (age, sex, schooling and income level) and clinical examination was performed by one of the authors (DOB), trained and calibrated by applying 10 questionnaires and 10 clinical exams. For calibration, we considered the kappa values ≥ 0.8 for intra-examiner, at different times, and in relation to the gold standard, the co-author APFGV.

Examination was made according to the WHO methodology [19] and the following was observed: 1. DMF-T (mean number of decayed, missing and filled teeth) to measure the prevalence of caries; 2. Periodontal condition through the Community Periodontal index (CPI) and Dental insertion Loss (DIL). The CPI allows to evaluate the periodontal status such as healthiness, bleeding and presence of calculus or pocket, following the codes: 0 - healthy sextant, 1- sextant with bleeding, 2 - presence of calculus, 3 – pocket of 4 to 5 mm, 4 - pocket of 6mm or more, X - represents excluded sextants and 9 - unexamined sextant.

The PAL allows the evaluation of the periodontal insertion condition, based on the visibility of the cement enamel junction (CEJ) classified by codes: 0 - insertion loss between 0 and 3 mm; 1 - insertion loss between 4 and 5 mm; 2 - insertion loss between 6 and 8 mm; 3 insertion loss between 9 and 11mm; 4 - insertion loss between 12 mm or more; X represents excluded sextant; and 9 - no information. The elders were examined in the institutions reported under natural light conditions and with the intra-oral mirror, periodontal probe Trinity brand (type 621) recommended by WHO, wooden tongue depressors and gauze. The periodontal probe is characterized by having an area of 0.5 mm diameter in its active tip, avoiding, then, excessive trauma in the periodontal pocket. It allows the identification of pockets of 3.5 to 5.5mm and more through its system of measurement represented by a colored line between 3.5 mm to 5.5mm. For the periodontal examination, the mouth was analyzed in six sextants. As recommended by WHO, it was placed at the active tip of the probe parallel to the long axis of the tooth, and with minimal pressure, covering the sulcus of all teeth.

Data relative to the two groups of elders (institutionalized and non-institutionalized) were compared regarding DMF-T, CPI, DIL, considering statistically significant the results with $p < 0.05$. During the research, older people who showed the need for treatment were referred for care at the Faculty of Dentistry Clinic in the University of Fortaleza.

Data were computed and analyzed through the statistical program SPSS 15.0 for Windows (SPSS Inc., Chicago, IL, USA). The study was approved by the Ethics in Research Committee of UNIFOR- COÉTICA, No. 310/2006. Participants were informed in advance through the Consent Form. It was considered as exclusion criteria, elders who did not have physical and/or mental conditions to response to the interview (e.g., immobility).

RESULTS

The research assessed 118 individuals, 52 (44%) institutionalized and 66(56%) non-institutionalized, with a mean age of 71.5 years ($SD \pm 9.6$). The predominance of females (89.0%), low income (salary \pm \$250 USA) and education level (incomplete primary school) were socio-demographic characteristics of the condition. There was statistical significance between education and being institutionalized or not ($p = 0.0001$), were institutionalized individuals had lower educational levels than the non-institutionalized ones. In the total sample ($n=118$) the DMF-T was 27.6 ($SD \pm 6.2$), with 24.9 missing components.

The table 1 shows the inferential relationship between the average of the findings and the two groups of elderly people, where there is a prevalence of older age and higher value of DMF-T in institutionalized elders. There was statistical significance among the variables missing component, filled component, healthy component, CPI and being institutionalized or not ($p = 0.001$; $p = 0.001$; $p = 0.001$; $p = 0.019$ respectively).

Table 1: Comparison of DMF-T, CPI and DIL of institutionalized and non institutionalized elderly. Fortaleza-Ceará, 2009.

Variable	Groups	N	%	Mean (SD)	Mann-Whitney Test*
Age	Institutionalized	52	44.0	76.60(10.48) 67.50(6.51)	p=0.001
	Non institutionalized	66	56.0		
	Total	118	100		
DMF-T	Institutionalized	52	44.0	31.07(2.22) 24.86(6.86)	p=0.001
	Non institutionalized	66	56.0		
	Total	118	100		
Decayed Component	Institutionalized	52	44.0	0.51(1.16) 0.60(1.17)	p=0.542
	Non institutionalized	66	56.0		
	Total	118	100		
Missing Component	Institutionalized	52	44.0	30.19(3.54) 20.72(10.07)	p=0.001
	Non institutionalized	66	56.0		
	Total	118	100		
Filled Component	Institutionalized	52	44.0	0.365(1.32) 3.409(4.37)	p=0.001
	Non institutionalized	66	56.0		
	Total	118	100		
Healthy Component	Institutionalized	51	43.6	1.01(2.31) 7.18(6.82)	p=0.001
	Non institutionalized	66	56.4		
	Total	117	100		
CPI	Institutionalized	11	19.2	2.00(0.00) 1.50(0.72)	p=0.019
	Non institutionalized	46	80.8		
	Total	57	100		
DIL	Institutionalized	11	19.2	0.90(0.83) 0.69(0.55)	p=0.436
	Non institutionalized	46	80.8		
	Total	57	100		

*p value<0.05.

DISCUSSION

The literature focused on the oral health of the elderly population has appeared to be precarious, showing then the importance of this study. The predominance of females, shown in the results, leads us to new data from the Brazilian Institute of Geography and Statistics [4] pointing to the feminization of old age when showing that there are 11.434.487 women to 9.156.112 men among people aged 60 years or older.

Additionally, it was observed a low income and education level in the institutionalized group, which probably interferes with oral health. Within this context, the low status of oral health in the elderly, may also occur due to the common belief that losing teeth and using dental prosthesis is part of normal aging, pointing to the influence of subjectivity as an important factor in this process, highlighted in a research in which the authors found little influence of perception on real clinical conditions in which high percentages of missing teeth and dentures disclose the way of how the elders perceived this aspect of their health [20, 21]. Still, people tended to be fairly satisfied with their oral health and the care they had been provided with [22]. The clinical examinations concerning the DMFT demonstrate the precariousness of oral health in institutionalized and non-institutionalized groups (DMF-T equals to 31.07 and 24.86, respectively). It was expected the new Brazilian cohort of elderly people to present a better oral health condition, just like the United States of America [23], considering that better education and living conditions, should provide the maintenance of their natural teeth. In general, this improvement was neither identified in this study nor in the results of SB Brasil 2010 [8], in which the DMFT of 27.1 is still very high and it is aggravated by the predominance of the missing tooth component. However, non-institutionalized elderly had a better level of literacy, which may have contributed to the improvement of their oral health in relation to the institutionalized ones.

It is worth noting that the non-institutionalized elders had a lower average of missing teeth in the DMF-T index regarding the institutionalized ones, which probably influenced on the findings of this research by causing limitations in relation to knowledge and performance of basic rights of citizens generating a less favorable lifestyle. There was no statistical significance between decayed teeth and institutionalized or non-institutionalized elders, which may be due to the greater number of teeth in the non-institutionalized ones.

In this context, Moriya et al. [24] found in their study that the non-institutionalized elderly presented the intellectual function as a significant indicator for a better oral health condition. The research of Gil-Montoya et al. [1], corroborates this study once it shows the poor oral health of institutionalized elderly, who were identified with a small amount of

healthy teeth (mean 6.3), weakness in oral rehabilitation, once only 13.2% of its interviewees used some type of dental prosthesis, and more than half had oral problems such as dry mouth and changes in soft tissues of the mouth. Concerning the periodontal status in both groups, these can be supported by the results obtained by Okeigbemen et al.^[25], highlighting the presence of calculus and shallow periodontal pockets as the most prevalent problems in institutionalized elderly. However, a study in Bulgaria found that most elderly participants (88%) had severe periodontal disease^[26], in contrast to the current study. Meanwhile, there was no significant difference between the two groups of elders regarding DIL, probably because of the small number of teeth present in the Brazilian elders^[8]. Once that with few teeth, there is no periodontal enough to record the periodontal status.

The findings of this study are corroborated by others that found that the prevalence of missing teeth in the DMF-T index, with a high rate in Brazilian elderly^[7, 27, 28], is what justifies the predominance of edentulism^[8, 29]. Thus, it is assumed there is real need for researches to provide more concise information about dental care in the elderly population, aimed at promotion, prevention and intervention in oral treatments^[17, 21], in order to reach a better oral health status in old age. The condition of the geriatric oral health is usually quite precarious and the one detected in this study does not differ from studies of other Brazilian regions, regarding institutionalized elderly or residents in nursing homes^[16, 30]. The long-stay institutions for the elderly (LTCF) are the oldest and most traditional option for senior care. This type of housing keeps the elderly out of their family life, producing isolation, physical and mental inactivity, reducing the quality of life. Besides that, it requires adaptation to routines of the institution by the elderly, nullifying habits and daily activities. Many elderly have reported loneliness, abandonment and unproductiveness as the main problem regarding quality of life and also as triggers for disease occurrence^[31]. These factors may directly or indirectly influence on the self-care hygiene in this age group, what would limit even more its general and oral health. Corroborating this, it is known that oral hygiene has also been described as poor in this group and that institutionalized people tend not to receive health promotion and prevention actions^[32].

The factors and the oral health conditions presented by the Brazilian elders are probably present in other developing and underdeveloped nations, especially because on those countries, the health systems and shelters are fragile in the health promotion and preventive strategies. The exchange of knowledge among those nations may be an important strategy to overcome such problems. The Brazilian National Oral Health Policy reinforces the priority for the elderly in primary care, including oral health, for it directly affects systemic health and the social ambit^[33]. In the long-term institutions such deficiency is worse and needs a better health planning directed to this institutionalized population that has its right as citizens, although it is often disrespected.

The public Brazilian service is still deficient regarding proper dental care in old age people, demonstrating urgency in getting an effective^[30] geriatric dentistry. What it is observed, even with the policy for providing the citizens with free oral health, offered by the Brazilian National Health System, is the discrepancy between the normative level, that ensures the right to the provision of oral health care for the elderly, and the effective offer of this health service^[29]. Thus, it is clear the need for effective public policies for this population in oral health, especially for the institutionalized elderly group.

CONCLUSION

It's observed a poor oral health in both groups of elders, although it was found that, except for missing teeth, non-institutionalized elders had better DMF-T values: greater number of teeth; higher value of filled and healthy components, what shows a probable easier access to dental care and also a better schooling. Poor oral health of the elderly population points out to the need for better planning in primary dental care focused on geriatric oral health.

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