

Socioeconomic characterization and oral health condition of the elderly served in a clinical dental school

Caracterização socioeconômica e condição de saúde oral de idosos atendidos em uma clínica-escola de odontologia

Caracterización socioeconómica y condición de salud oral de ancianos atendidos en una clínica-escuela de odontología

Received: 10/04/2016

Approved: 18/08/2016

Published: 01/09/2016

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This study aim to characterize socioeconomically and identify the conditions of health oral and habits of elderly patients attended in a clinical dental school of Odontology. It's performed a study in 126 records of elderly patients in clinical dental school of University Center of João Pessoa-PB, Brazil. The mean age was 67.3 years, with 72.2% female, 61.1% white. 43.7% were smokers; 28.6% consumed alcohol and 0.8% drug user. It was observed that 49.2% of records had lesion/alteration in the oral mucosa. The use of dental prosthesis was observed in 54.8% and the need to use in 65.9%. This study revealed the health conditions, as well as the needs of care required by the elderly looking for Dentistry service, and must look to this demand, as well as the peculiarities involving elderly care, in order to serve him fully, in order to provide an increase in the quality of life.

Descriptors: Oral health; Aged; Mouth mucosa.

Este estudo tem como objetivo caracterizar socioeconomicamente e identificar as condições de saúde oral e os hábitos de pacientes idosos atendidos em uma clínica-escola de Odontologia. Realizou-se um estudo quantitativo com dados secundários de 126 prontuários de pacientes idosos na clínica-escola do Centro Universitário de João Pessoa-PB. A média de idade foi de 67,3 anos; com 72,2% do gênero feminino; 61,1% brancos; 43,7% eram tabagistas; 28,6% etilistas e 0,8% usuário de drogas. Observou-se que 49,2% dos prontuários tinham registro de lesão/alteração na mucosa oral. O uso de prótese dentária foi verificado em 54,8% e a necessidade do uso em 65,9%. Esse estudo revelou as condições de saúde, bem como as necessidades de cuidado requeridas pelos idosos que procuram o serviço de Odontologia, sendo necessário olhar a essa demanda, bem como às peculiaridades que envolvem o atendimento ao idoso, no intuito de atendê-lo de forma integral, visando proporcionar um aumento na qualidade de vida.

Descritores: Saúde bucal; Idoso; Mucosa bucal.

Este estudio tiene como objetivo caracterizar socioeconómicamente e identificar las condiciones de salud oral y los hábitos de los pacientes ancianos tratados en una clínica universitaria de Odontología. Se realizó un estudio cuantitativo con datos secundarios de 126 historias clínicas de ancianos de la clínica-escuela del Centro Universitario de João Pessoa-PB, Brasil. La edad promedio fue de 67,3 años, con el 72,2% de mujeres, 61,1% de blancos, 43,7% eran fumadores, 28,6% usuarios de alcohol y 0,8% de drogas. Se observó que el 49,2% de los registros médicos mostró lesión / cambio en la mucosa oral. Se observó que el uso de prótesis dentales en un 54,8% y la necesidad de utilizar en un 65,9%. Este estudio reveló las condiciones de salud, así como las necesidades de cuidado requeridas por los ancianos que buscan el servicio de Odontología siendo necesario prestar atención a esta demanda, así como las particularidades que implican el cuidado de los ancianos, para brindarles un servicio completo, con el objetivo de proporcionarles un aumento en la calidad de vida.

Descriptores: Salud bucal; Anciano; Mucosa bucal.

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INTRODUCTION

The changes that occur in contemporary society indicate an increase in the population's life expectation, and it is estimated that advances in medicine and the implementation of ample policies that aim at the elders' health are changes that allow for this increase^{1,2}. The 2014 Human Development Report, released by the United Nations Development Program (UNDP) shows that life expectancy in Brazil has increased 17.9% in Brazil from 1980 to 2013, growing from 62.7 to 73.9 years of age, an increase of 11.2 years. It is estimated that in 2020, the part of the population older than 60 years of age will reach 30 million people, that is, 13% of the total².

In dentistry, attending an elder person requires a previous evaluation of their oral health history, with a survey of previous treatments and evaluations of rehabilitation needs, aiming at improving their self-esteem and quality of life. In addition, it is paramount for the dentist to know all the systemic alterations, as well as the habits the elder patient has acquired. All these factors brought together (oral health history, systemic alterations, and acquired habits) provide important information for the prognostic of a potential treatment, as well as indicate the cause of lesions and/or changes which may be more frequently observed in this age group³.

This study aimed at conducting a social and economic characterization, as well as identifying oral health conditions and acquired habits of elderly patients cared for at the school-clinic of Dentistry at the University Center of João Pessoa, PB.

METHOD

This study was approved by the Committee of Human Research Ethics under the protocol 194.077, from 2/6/2013. It is an applied field research quantitative, with exploratory, descriptive and inferential procedures, adopting an inductive approach and indirect observation techniques⁴.

This study was conducted at the Teaching Clinic of Stomatology at the Dentistry Course at the University Center of João Pessoa-PB (UNIPÊ), and its scope was all the medical records of patients who were received in that clinic in the period from August, 2009 to May 2012. The records of patients over 60 years old of both genders were chosen in order to select a sample, being that children, adolescents and patients under 60 years of age were excluded, not to mention those whose records did not have all the information needed. Thus, the sample was composed of 126 medical records of patients who were according to the criteria of inclusion in the aforementioned period of time.

The data were collected by through the analysis of the medical records and filling out charts prepared for the following variables of interest: socioeconomic and demographic data (gender, age, ethnicity, family income, city of origin); data regarding their habits (smoking, alcoholism and drug use), as well as the DMF index (number of Decayed, Missing and Filled teeth in the permanent dentition), injuries and/or changes in the oral mucous, and dental prosthesis need/use.

The data were entered into an Excel spreadsheet and analyzed by IBM SPSS software (version 20.0) and R (version 2.15.1), and the following reviews were conducted: frequency and percentage values to each variable and their categories, and Chi-square test or Fisher's Exact Test to evaluate the existence of dependency between the different genres (male and female) and the variables of interest, and also to evaluate the relationship between the use of dental prosthesis and the presence of lesions and/or changes in the oral mucosa. For the analysis of continuous quantitative variables, such as age and DMF index, the normal distribution analysis of the data was tested through the Kolmogorov-Smirnov test. It was verified that, for both variables, the distribution of the values was "not-normal" ($p=0.000$), which led to the conduction of the Mann-Whitney test for checking the difference between age and DMF

index both between genders and between patients who had or not injuries and/or changes in the oral mucosa. At last, the Kruskal-Wallis was conducted in order to check for differences in the distribution of the DMF among the different ages of the patients. A significance level of 5%.

RESULTS

From the 126 medical records evaluated, it could be observed that the average age of patients was 67.3 (± 6.2), with a minimum of 60 and a maximum of 86 years of age. 35 (27.8%) were male and 91 (72.2%) were female. 77 (61.1%) declared themselves to be white, while 49 (38.9%) declared not to be. 81 (64.3%) had a monthly income of up to two minimum wages (MW's) and 45 (35.7%) had an income of three or more MWs. 101 (80.2%) of the records belonged to people who reside in Paraíba, while 25 (19.8%) stated to reside in another State.

Regarding their habits, 55 (43.7%) of the patients were smokers; 36 (28.6%) drank, and one (0.8%) was a drug user.

From the 126 patients, it was observed that 62 (49.2%) had a record of injury/change in the oral mucosa, being: 26 (20.6%) compatible with lingual varicosities, 14 (11.1%) with prosthetic stomatitis, 7 (5.6%) with fibrous inflammatory hyperplasia and 15 (11.95) with other types not specified.

The use of dental prosthesis was verified in 69 (54.8%) of the patients and the need for its use in 83 (65.9%).

The average DMF of patients was 26.0 (± 5.6), with a minimum of 9 and a maximum of 32.

The age average for males was 67.14 (± 5.8) years and for females it was 67.43 (± 6.34), being that statistically significant differences were not found ($p=0.930$); that also happened regarding the DMF ($p=0.326$), being the average of the index 25.43 (± 5.6) to males and 26.33 (± 5.6) to female.

However, a statistically significant difference was detected between the DMF presented by patients of different ages ($p=$

0.029), and that difference was verified for ages between 60 and 67 years old, who obtained the highest values when compared to other age groups.

The Table 1 shows the patient distribution by gender for the variables under study. Table 2 shows the distribution of patients according to the record of injuries in the oral mucosa regarding the variables of interest.

DISCUSSION

The University Center in João Pessoa has a dental teaching-clinic that receives patients of all ages for free. These patients become linked to the institution upon inscription through the opening of a medical record followed by its archiving. After that record they have their treatment guaranteed, since the screening, at the clinic of Stomatology, until the end of their treatment, and are referred to other clinics if necessary.

This study is limited as it cannot extend its results to all the elderly population of the region, since it does not have a probability sample to represent it. Thus, the data obtained can characterize only the elderly cared for in the aforementioned teaching-clinic between 2009 and 2012, regarding their socioeconomic and oral health conditions.

As with other similar epidemiological surveys, the demand for dental care in this study was higher among the female genre⁵⁻⁹, as well as among people who declared to have a white skin color^{5,8} and income above one minimum wage⁷.

However, some studies show that public services, such as those offered at the clinic, are sought primarily by people with low income (less than or equal to one minimum wage)^{9,10} who come from places where they can't easily have access to health services, especially the specialized ones, as those that can be found in the disciplines of Dentistry and Prosthodontics.

Possibly, that was the reason for the greater access to the service found among patients from any city in the State of Paraíba.

Table 1. Distribution (frequency and percentage values) by gender of the patients regarding the variables of interest from 2009 to 2012. João Pessoa, PB, 2014.

Variables	Categories	Gender				Significance
		Male		Female		
		n = 35	%	n=91	%	
Ethnicity	White	35	100.0%	42	46.2%	0.000 *
	Not-white	0	0.0%	49	53.8%	
Family income	Up to 2 MW '	35	100.0%	46	50.5%	0.000 *
	3 or more MW's	0	0.0%	45	49.5%	
City of origin	Paraíba	35	100.0%	66	72.5%	0.000 *
	Another State	0	0.0%	25	27.5%	
Smoking	Yes	35	100.0%	20	22.0%	0.000 *
	No	0	0.0%	71	78.0%	
Drinks	Yes	30	85.7%	6	6.6%	0.000 **
	No	5	14.3%	85	93.4%	
Drug use	Yes	1	2.9%	0	0.0%	0.105 *
	No	34	97.1%	91	100.0%	
Injury and/or change in the oral mucosa	Yes	20	57.1%	42	46.2%	0.269 **
	No	15	42.9%	49	53.8%	
	Lingual varicosities	11	31.4%	15	16.5%	
	Prosthetic Stomatitis	1	2.9%	13	14.3%	
Type of injury	Inflammatory Fibrous Hyperplasia	2	5.7%	5	5.5%	0.115 *
	Other	6	17.1%	9	6.6%	
Use of prosthesis	Yes	32	91.4%	37	40.7%	0.000 *
	No	3	8.6%	54	59.3%	
Need for prosthesis	Yes	33	94.3%	50	54.9%	0.000 *
	No	2	5.7%	41	45.1%	

* Comparisons made through the use of Fisher's exact test; ** Comparisons made using the Chi-square test; □=5%.

Table 2. Patients (frequency and percentage values) according to the presence of oral mucosa injury regarding the variables of interest, with their respective *Odds Ratio* (OR) and confidence intervals (CI) from 2009 to 2012. João Pessoa, PB, 2014.

Variables	Categories	Injury and/or change in the oral mucosa				OR	CI (95%)	Significance
		Yes n=62	%	No n=64	%			
Gender	Male	20	32.2%	15	23.4%	-	-	0.269 **
	Female	42	67.7%	49	76.6%			
Ethnicity	White	45	72.6%	32	50.0%	1.452	1.087-1.938	0.009 **
	Not-white	17	27.4%	32	50.0%			
Family income	Up to 2 MW'	48	77.4%	33	51.6%	1.501	1.143-1.973	0.002 **
	3 or more MW's	14	22.6%	31	48.4%			
City of origin	Paraíba	54	87.1%	47	73.4%	1.186	0.995-1.414	0.055 **
	Another State	8	12.9%	17	26.6%			
Smoking	Yes	34	54.8%	21	32.8%	1.671	1.101-2.536	0.013 **
	No	28	45.2%	43	67.2%			
Drinks	Yes	23	37.1%	13	20.3%	1.826	1.019-3.273	0.037 **
	No	39	62.9%	51	79.7%			
Drug use	Yes	1	1.6%	0	0.0%	-	-	0.308 *
	No	61	98.4%	64	100.0%			
Use of prosthesis	Yes	46	74.2%	23	35.9%	2.065	1.442-2.955	0.000 **
	No	16	25.8%	41	64.1%			
Need for prosthesis	Yes	51	82.3%	32	50.0%	1.645	1.255-2.157	0.000 **
	No	11	17.7%	32	50.0%			

* Comparisons made through the use of Fisher's exact test; ** Comparisons made using the Chi-square test; $\alpha=5\%$. No statistically significant differences were observed between patients who had or had not records of injuries and/or changes in the oral mucosa for their average age ($p = 0.762$) and DMF index ($p = 0.765$).

When assessing the population of this study, it is possible to identify some statistically significant differences when we divide it by gender ($p \leq 0.05$), regarding the behavior of some variables of interest. Regarding the variable "ethnicity", for instance, there was no male patient who declared himself to be non-white, while 49 female patients were included in this category, the same happened to the variable "family income", with no male patient in the subcategories "3 or more minimum wages" and "4 or more minimum wages", while 22 and 23 participants of the female gender were in those categories, respectively. Cardoso et al.¹⁰ found that, in a population in Manaus, the per-capita income among seniors was greater in the masculine gender, in disagreement with the results of the study presented here.

Knowledge about the dental history of the population cared for in a reference center such as the teaching school is of fundamental importance for collecting the data needed to understand how the demand for different areas of dentistry varies among the age groups studied, and acquiring that information would make it much easier to plan care which is being offered by the clinics. That being so, the data observed in this study reveal a population of people over 60 years of age with a DMF index considered to be too high (26.0 ± 5.6)¹¹ and similar to that found by Cardoso et al. (29.0 ± 4.3)¹⁰. In this study, no significant differences were found between the genders regarding the average DMF index, while Cardoso et al.¹⁰ found that difference, with a higher DMF among males.

It can also be observed that 65.9% of patients in this study require some type of prosthesis, as a replacement of dental elements lost along their lives. Those findings are common in studies involving the elderly, as the studies conducted by Ribeiro, Veloso e Souza¹², in which edentulous and partially edentulous patients made up a total of 63.6% of the elders, and 78% needed some type of prosthesis. In the study by Moura et al.⁷, in which 61.5% of

patients were partially or completely edentulous and 46.9% needed prosthesis. These data reflect both the scarce access and the forms of intervention used by dental treatments which used to occur some years ago, when priority was given to the removal of teeth, as opposed to interventions aimed at restoring and preventing¹³.

Still considering the use and necessity for dental prosthesis, in this study, there was a different distribution of such use and needs among the genders, being that 91.4% of males use prosthesis, while 94.2% still need some type of prosthetic element. Cardoso et al.¹⁰ also noticed a difference between the genders when it comes to the use/need of prosthesis. However, they identified females as those who need more and need more prostheses, both for the upper arch and the lower.

To Miotto, Barcellos and Velten¹⁴, the absence of teeth and the necessity for prosthesis are the factors that impact the most the quality of life and the perception of the impact caused by oral problems, which is greater in individuals over 40 years old, being that the OR (Odds Ratio) for the stated necessity of partial removable prosthesis was of 2.77, while the OR for total removable prosthesis was of 2.29. Melo et al.¹⁵ indicate that this is changing as the years pass, since the adult population is living in another moment of health assistance, in which specialized services are available and assistance is decentralized, offering greater access and quality to its users.

Habits acquired over one's life, especially those related to consuming tobacco derivatives, have been with the elder population for a long time, and are recognized as some of the biggest health problems among the elderly¹⁶, and also as habits which endanger the health of the oral tissues¹⁷. Also, this habit is hard to control among people of this age group, thanks to different degrees of dependency that tobacco derivatives can promote in the organism^{18,19}. In this research, both the habits of "smoking" and "drinking" have been differently distributed among the

genders ($p < 0.05$), and were also considered to be risk factors for the development of oral lesions, with an OR of 1.67 and 1.82, respectively, which is on pair with the numbers found by Santrain et al.¹⁷, which were of 1.7 for smokers and 1.6 for users of alcoholic beverages, considering the association of these with oral lesions in elders in the Brazilian northeast.

The lesions or alterations in the oral mucosa are commonly found among the elderly^{5,9,17}. In this study, 74.2% of these lesions were associated to the use of prosthesis, being that people who use them had a chance 2.06 times greater of developing lesions than people who do not. Santrain et al.¹⁷ found that 40% of oral lesions observed in the elderly (stomatitis, fibrous hyperplasias, traumatic ulcers, proliferations in the suction chamber) were present in prosthesis users. Santrain et al.⁹ also found the association between the presence of lesions in the oral mucosa and the use of prostheses ($p = 0.039$) in a study in a community in northeastern Brazil, with mucosal lesions located mainly on the palate (67.3%) and gums (14.8%). In a study conducted in the University of São Paulo with 2250 biopsies, Corrêa et al.⁵ found that 35.01% of non-malignant lesions were inflammatory alterations of the oral mucosa, 65.34% were inflammatory fibrous hyperplasias, and only 0.72% were vascular disorders. Similarly, in an analysis of 534 Brazilian patients' biopsies performed by Carvalho et al.⁸ it was found that one of the 5 most common injuries diagnosed was the fibrous hyperplasia, representing 28.9% of benign lesions found, most of which were located in the gingival alveolar mucosa (19.1%).

The results of this study show the health conditions, as well as care needs of the elders who look for the Dentistry service of the University Center, and it is necessary to give more attention to those necessities, as well as to the peculiarities which involve caring for the elderly, in order to offer a proper and integral service to them, and as such provoke an

improvement in the quality of life of the users of this age group.

CONCLUSION

It is concluded, therefore, that the patients cared for in the teaching-clinic of Dentistry of the University Center of João Pessoa are mainly of the female gender, declare themselves to be white, to have an income of up to two minimum wages and to live in Paraíba; they are also mostly smokers, and have lesions/alterations in their oral mucosa, not to mention high DMF indexes and high necessity of dental prosthesis.

REFERENCES

1. Omran AR. The Epidemiologic Transition: A Theory of the Epidemiology of Population Change. *Milbank Memorial Fund Quarterly* 2005; 4:731-57.
2. Ministério da Saúde (Br). ONU registra aumento da expectativa de vida no Brasil. 2014. Available in: http://portalsaude.saude.gov.br/index.php/cid_adao/principal/agencia-saude/13999-onu-registra-aumento-da-expectativa-de-vida-no-brasil. Access in: 29.07.2014.
3. Henrique PR, Bazaga Júnior M, Araújo VC, Junqueira JLC, Furuse C. Prevalência de alterações da mucosa bucal em indivíduos adultos da população de Uberaba, Minas Gerais. *RGO* 2009; 57(3):261-7.
4. Gil AC. Métodos e técnicas de pesquisa social. 6 ed. São Paulo: Atlas, 2006.
5. Corrêa L, Frigerio MLMA, Sousa SCOM, Novelli MD. Oral lesions in elderly population: a biopsy survey using 2250 histopathological records. *Gerodontology* 2006; 23(1):48-54.
6. Costa EHM, Saintrain MVL, Vieira APGF. Autopercepção da condição de saúde bucal em idosos institucionalizados e não institucionalizados. *Ciênc Saúde Coletiva* 2010; 15(6):2925-30.
7. Moura C, Cavalcante FC, Catão MHCV, Gusmão ES, Soares RSC, Santillo PMH. Fatores relacionados ao impacto das condições de saúde bucal na vida diária de idosos, Campina Grande, Paraíba, Brasil. *Pesquisa Brasileira em*

- Odontopediatria e Clínica Integrada 2011; 11(4):553-9.
8. Carvalho MD, Iglesias DPP, Nascimento GJF, Sobral APV. Epidemiological study of 534 biopsies of oral mucosal lesions in elderly Brazilian patients. *Gerodontology* 2011; 28(2):111-5.
9. Santraine MVL, Almeida CB, Naruse TMO, Gonçalves VP. Oral lesions in elderly patients of a community in Brazilian Northeast. *Gerontology* 2013; 30(4):283-7.
10. Cardoso EM, Parente RCP, Vettore MV, Rebello MAB. Condição de saúde bucal em idosos residentes no município de Manaus, Amazonas: estimativas por sexo. *Rev Bras Epidemiol* 2011; 14(1):131-40.
11. Ministério da Saúde (Br). Projeto SB Brasil 2010. Available in: <http://bvsmis.saude.gov.br/bvsmis/publicacoes/pesquisa_nacional_saude_bucal.pdf>. Access in: 12.11.2013.
12. Ribeiro ILA, Veloso HHP, Souza KC. Caracterização da saúde bucal de idosos em uma instituição beneficente de longa permanência de João Pessoa-PB, Brasil. *Revista Cubana de Estomatología* 2012; 49(3):193-203.
13. Pinheiro RS, Torres TZG. Access to oral health services between Brazilian States. *Ciênc Saúde Coletiva*. 2006; 11:999-1010.
14. Miotto MHMB, Barcellos LA, Velten DB. *Ciênc Saúde Coletiva*. 2012; 17(2):397-407.
15. Melo ALSF, Andrade SR, Moysés SJ, Erdmann AL. Saúde bucal na rede de atenção e processo de regionalização. *Ciênc Saúde Coletiva*. 2013; 18(1):205-14.
16. Marinho V, Laks J, Coutinho ESF, Blay SL. Tobacco use among the elderly: a systematic review and meta-analysis *Cad Saúde Pública*. 2010; 26(12):2213-33.
17. Santraine MVL, Holanda TG, Bezerra TMM, Almeida P. Prevalence of soft tissue oral lesion in elderly and its relations with deleterious habits. *Gerodontology* 2012; 29:130-4.
18. Yildiz D. Nicotine, its metabolism and an overview of its biological effects. *Toxicol* 2004; 43:619-32.
19. Ribeiro ILA, Veloso HHP. Influência do Tabagismo nas alterações pulpares. *ROBRAC* 2012; 21(58):570-5.

CONTRIBUTIONS

Isabella Lima Arrais Ribeiro was responsible for the conception, analysis and interpretation of data, and for the writing of the article. **Eduardo Dias Ribeiro** worked in the conception and critical revision **Waldemir Gonçalves de Abrantes** was responsible for outlining the writing of the article. **Celso Koogi Sonoda** developed the critical review of the article.

How to cite this article (Vancouver):

Ribeiro ILA, Ribeiro ED, Abrantes WG, Sonoda CK. Socioeconomic characterization and oral health condition of the elderly served in a clinical dental school. *REFACS* [Online]. 2016 [cited in (insert day, month and year of access)]; 4(3):177-184. Available in: (access link). DOI: (insert DOI number)

How to cite this article (ABNT):

RIBEIRO, I.L.A.; RIBEIRO, E.D.; ABRANTES, W.G.; SONODA, C.K. Socioeconomic characterization and oral health condition of the elderly served in a clinical dental school. *REFACS*, Uberaba, MG, v. 4, n. 3, p. 177-184, 2016. Available in: (access link). Access in: (insert day, month and year of access). DOI: (insert DOI number)

How to cite this article (APA):

Ribeiro I.L.A, Ribeiro E.D, Abrantes W.G & Sonoda C.K. (2016). Socioeconomic characterization and oral health condition of the elderly served in a clinical dental school. *REFACS*, 4(3), 177-184. Recovered in (insert day, month and year of access). (access link). DOI: (insert DOI number).