DOI: 10.1590/1413-812320152111.08802015

Factors associated with negative self-perception of oral health among institutionalized elderly

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Abstract *The aim of this study was to determine self-perception of oral-health in institutionalized elderly, and look into the sociodemographic and clinical aspects associated with negative self-perception. One hundred and sixty-six elderly were assessed by answering a self-perception question that predicts the GOHAI (Geriatric Oral Health Assessment Index). Sociodemographic data was obtained from a previously validated questionnaire and clinical data taken from the WHO file and QST-TMD used to check the existence of TMD (temporomandibular disturbance). The data gathered was submitted to Mann-Whitney, Fisher's Exact and Chi-squared tests with a 5% significance level. The average age of the study population was 80.5, and 75.9% were women. The mean DMFT (decayed, missing, and filled teeth in permanent teeth) was 28.9, the majority of the sample subject (65%) reported good to excellent teeth, gums and prostheses (dentures and bridges). Three questions in the TMD questionnaire (QST-DTM) were associated with negative self-perception. Those claiming that their jaws "lock" when they open or close their mouth, who always have pain at the front or side of their jaw, or whose jaws get tired during the course of the day are less satisfied with their oral health. We conclude that clinical and sociodemographic conditions have little influence on self-perception of oral health, possibly because pain is the main factor associated with negative self-perception in these individuals.*

Key words *Self-perception, Elderly, Oral health*

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Introduction

Populating aging is an increasingly global phenomenon, often associated with more developed regions[1]. Unlike more developed nations that achieved economic stability before population aging, Brazil is facing this problem with no time for social or economic reorganization[2,3].

A higher percentage of the elderly and longer life expectancy result in an exponential increase in the demand for institutions dedicated to serving the population over 60, and in the need for healthcare[4]. The limited supply of family care givers is associated with increased institutionalization of the elderly in care facilities, known as Long-Term Residential Institutions for the Elderly (LTRI or ILPI used throughout this document), which provide support for daily activities and some form of healthcare when necessary[5].

Studies show that oral health is worse among the institutionalized elderly than in those not consigned to this type of facility[6-8]. The vast majority of the elderly living in ILPIs have no teeth, which has consequences such as dietary restrictions, loss of the pleasure of eating and consequent weight-loss and malnutrition[9,10].

Identifying the determinants of health self-perception will allow us to assess individual behaviors and needs[7]. In the case of oral health, finding out how individuals view their oral health is an important requirement to increase adherence to healthy behaviors, which could have a positive impact on quality of life (QoL)[8,11-13].

The main reason those aged 60 or more do not seek dental treatment is the belief that they do not need oral care[14]. The literature shows that among the elderly, oral health is number 14 on a list of the 20 complaints most often presented by these individuals[15].

Although some studies show an association between oral health self-perception and sociodemographic[14,16] and clinical[17,18] factors, the literature shows that such associations are controversial[14]. The aim of this study was to determine oral health self-perception among the institutionalized elderly, and look into the sociodemographic and clinical aspects associated with this negative self-perception. This knowledge will enable guiding public policies to improve the health and quality of life of this population segment.

Methods

This was an individual, observational, cross-sectional study where the elderly is the unit of observation and analysis. This study was submitted to the Federal University of Rio Grande do Norte Research Ethics Committee (REC), and approved.

This study was conducted between August and December 2013 at residential care facilities for the elderly in Natal, in the state of Rio Grande do Norte, registered as such with the city of Natal Health Surveillance agency. The study population included elderly men and women living in these facilities.

In this study, elderly was defined based on chronology. In other words, people 60 years of age or older were selected according to the legal standards of the National Health Policy for the Elderly[19].

The study population was made up of 318 elderly individuals, or the total residing in the 12 facilities available at the time of the study. Of this total, 155 responded how they assess their oral health, and thus became the study sample. The remaining elderly had significant physical or mental limitations. We collected their socioeconomic data and excluded them from the study.

Data was collected by applying sociodemographic and assessment of oral health condition questionnaires to the elderly in the study. Both the intra-oral exam and the questionnaire were applied by previously trained and calibrated examiners.

The variables in the questionnaire applied to describe the sociodemographic profile of the respondents were "age" categorized based on the median of the data, "gender", "type of facility" and "degree of dependence for daily activities", were taken from SABE, the Health, Well-Being and Aging project[20], and from a study conducted in Caxias do Sul entitled Institutionalized Elderly: identity and reality[21]. Data on oral health was based on the World Health Organization (WHO) clinical file for oral assessment. This study looked at the presence or absence of radicular caries, molars (no molar or at least 1 molar), occluding pairs (no pair or at least 1 pair), mouth sores (present or absent) and the use (yes or no) and need (yes or no) for dental prosthesis. Self-perception was measured based on the following question: "How do you view your teeth, gums or prostheses?", with five possible answers: "Very Poor", "Poor", "Fair", "Good" and "Excellent". Self-perception was then classified as "Fair, Poor

Ciência & Saúde Coletiva, 21(11):3339-3346, 2016

or Very Poor", or "Good or Excellent" for data analysis purposes. This question is capable of individually predicting the Geriatric Oral Health Assessment Index (GOHAI)[22], a tool that is widely used to assess if in the past three months the elderly individual had any functional, psychological or pain issues due to oral problems.

Furthermore, to measure Temporomandibular Dysfunction (TMD), and seek any association between TMD and self-perception we applied a simplified questionnaire to screen patients with temporomandibular dysfunction (QST/TMD). This tool was validated using the gold standard Research Diagnostic Criteria for Temporomandibular Disorders *(*RDC/TMD) to diagnose TMD[23]. QST/TMD is a seven-question questionnaire: "Do you have any pain or difficulty opening your mouth?", "Do you hear pops or other noises in your joints?", "Does your jaw lock when you open or close your mouth?", "Do you an earache or pain around your ears?", "Do you have pain in the front or at the side?", "Do you have pain in around your cheeks?", "Do your jaws get tired during the course of the day?". Possible answers were "never", "sometimes" or "all of the time".

The questionnaire and epidemiological survey were analyzed using the Statistical Package for the Social Sciences (SPSS) 20.0 program. Tables were created using the frequency distribution of all of the study variables. Finally, to check the association between sociodemographic and clinical variables and oral health self-perception we used non-parametric tests - Fisher's Exact and Chi-squared. Mann-Whitney was used to compare groups with self-perception classified as fair, poor or very poor, or good or excellent against the QST-TMD domains. The level of significance for all tests was 5%.

Results

One hundred and sixty-six elderly aged 63 to 98, averaging 80.5 (SD ± 8.1), were assessed. Study subjects were living in one of 12 care facilities - 6 for-profit and 6 non-profit ILPIs. 75.9% of the sample was made up of women. Most (55.6%) were white, and dependent for their day-to-day activities (DDA) (72.9%).

According to the data gathered from the epidemiological survey, the status of oral health is quite precarious. Only 6% of the sample had 20 or more teeth. The average number of decayed, missing, or filled permanent teeth (DMFT) was 28.9 (SD ± 4.7). Regarding the need for dental prostheses, 66.9% of the elderly required at least full upper or lower dentures. Of those using upper (40.9%) or lower (20.1%) dentures, most of the upper (64.1%) and lower (71.0%) denture had some sort of displacement or tipped teeth.

Regarding subjective data, self-perception of oral health shows that most (65%) reported their teeth, gums and prostheses to be good or excellent, despite their poor oral health condition.

Table 1 shows how the sample was split in terms of self-perception of oral health. Two groups were created - one made up of those considering their oral health to be fair, poor or very poor, and the other made up of those considering their oral health to be good or excellent.

Data analysis shows that oral health self-perception was not very influenced by the clinical and sociodemographic conditions of this population. The age of the individuals was at the limit of significance ($p = 0.055$) in terms of its association with self-perception, with the older individuals rating their teeth, gums and prosthesis as fair, poor or very poor 40% less often than the more long-lived.

The results of this study are presented in Table 2, and show that three of the questions in the QST-TMD were significantly different ($p < 0.05$). Those claiming that their jaws "lock" when they open or close their mouth, who always have pain at the front or side of their jaw, or whose jaws get tired during the course of the day are less satisfied with their oral health.

Discussion

This cross-sectional study looked at oral health self-perception among the institutionalized elderly, seeking associations with clinical and sociodemographic conditions. The results obtained are representative of the institutionalized elderly in the city of Natal, RN, and may be extrapolated to the rest of Brazil, as by and large this segment of the population has similarly poor oral clinical conditions and sociodemographic characteristics across the country[24].

Understanding perception of oral health is extremely important to guide public policies to improve health and quality of life[12]. This is particularly important in the case of the elderly in ILPI care facilities, as they tend to be rather frail and as a result are major users of public healthcare services[25,26]. Furthermore, most of the epidemiology studies available refer to elderly individuals liv-

Table 1. Sociodemographic and oral health conditions of the elderly, and their association with categorized self-perception of oral health.

Variable	Fair, poor or very poor n(%)	Good or excellent n(%)	RP	CI 95%	p
Age					
Over 83	15 (25.4%)	44 (74.6%)	0.602	0.365-0.992	0.055
83 or younger	38 (42.2%)	52 (57.8%)			
Gender					
Male	19(47.5%)	21(52.5%)	1.535	1.011-2.329	0.850
Female	39(31%)	87(69%)			
Type of care facility					
Non-profit	47 (37.6%)	78 (68.4%)	1.401	0.806-2.438	0.286
For-profit	11 (26.8%)	30 (73.2%)			
Degree of dependence for performing daily activities					
Independent	12 (31.6%)	26 (68.4%)	0.976	0.566-1.685	1.000
Dependent	33 (32.4%)	69 (67.6%)			
Radicular caries					
Present	12 (37.5%)	20 (62.5%)	1.099	0.662-1.826	0.878
Absent	44 (34.1%)	85 (65.9%)			
Molars present					
No molar	34 (31.5%)	74 (68.5%)	0.721	0.479-1.086	0.174
At least 1 molar	24(43.6%)	31(56.4%)			
Occluded pairs					
No pair	43(35.5%)	78(64.5%)	0.995	0.621-1.594	1.000
At least 1 pair	15(35.7%)	27(64.3%)			
Mount sore					
Absent	13(28.9%)	32(71.1%)	0.745	0.446-1.243	0.321
Present	45(38.8%)	71(61.2%)			
User of upper prosthesis (denture)					
Yes	37 (39.4%)	57 (60.6%)	1.347	0.855-2.120	0.252
No	19 (29.2%)	46 (70.8%)			
User of lower prosthesis (denture)					
Yes	49(38.6%)	78(61.4%)	1.764	0.884-3.518	0.118
No	7(21.95)	28(78.1%)			
Requires upper prosthesis					
Yes	53(35.8%)	95(64.2%)	1.074	0.469-2.461	1.000
No	4(33.3%)	8(66.7%)			
Requires lower prosthesis					
Yes	56(36.1%)	99(63.9)	1.445	0.261-7.992	1.000
No	1(25%)	3(75%)			

ing alone or with family members, in particular the larger studies conducted by the Ministry of Health, which were household based[27,28].

The characteristics of the sample in this study reveal elderly individuals with poor oral health conditions. The targets set by the World Health Organization (WHO) and the International Dental Federation (IDF)[29] are that at least 50% of individuals aged 65 to 79 should have at least twenty functioning teeth in their oral cavity. However, this study found a percentage well below this recommendation, as only 6% of the sample had twenty or more functioning teeth, reflecting the mutilating dental practices these elderly were submitted to in the past[30,31].

Data from SB Brasil[27], the most recent epidemiological survey conducted in 2010, shows that the average DMFT among the elderly 65 to 79 is 27.53, and that 23.9% require full upper and/or lower dentures. When we compare this to the results of this study, we find poorer oral health among the institutionalized elderly, with a mean

Table 2. Association between the QST-TMD domains and categorized self-perception of oral health.

QST-TMD	Do you have pain or difficulty opening your mouth?	Do you hear popping or other noises in your joints?	Does your jaw lock when you open or close your mouth?	Do you have earache or pain around your ears?	Do you have pain in front or to the side?	Do you feel pain around hour cheeks?	Do your jaws get tired during the course of the day?
Categorized self-perception	**Median (Q25-Q75)**	**Median (Q25-Q75)**	**Median (Q25-Q75)**	**Median (Q25-Q75)**	**Median (Q25-Q75)**	**Median (Q25-Q75)**	**Median (Q25-Q75)**
Fair, poor or very poor	0.0(0.0-0.0)	0.0(0.0-1.0)	0.0(0.0-0.0)	0.0(0.0-0.5)	0.0(0.0-1.0)	0.0(0.0-0.0)	0.0(0.0-1.0)
Good or excellent	0.0(0.0-0.0)	0.0(0.0-0.0)	0.0(0.0-0.0)	0.0(0.0-0.0)	0.0(0.0-1.0)	0.0(0.0-0.0)	0.0(0.0-0.0)
p	0.324	0.455	0.003*	0.303	0.013*	0.343	0.039*

* statistically significant

DMFT of 28.9, and a larger percentage (66.9%) requiring full upper and/or lower dentures. This data shows that the elderly in Brazil, whether or not living in care facilities, are a toothless population requiring special oral healthcare.

Regarding the self-perception of oral health among the elderly, a number of studies show that measuring self-perception can predict the need for care. Furthermore, this can be a screening method and contribute to planning dental services[32]. In order to facilitate the diagnosis of oral health, the initial hypothesis of this study was that self-perception could precede epidemiological tests, facilitating the diagnosis.

However, self-referred oral health among the elderly is not consistent with the reality of the clinical conditions found in this study. Most (65%) of the respondents reported good or excellent teeth, gums and prosthesis, despite poor oral health. This corroborates the findings in existing literature. Country-wide studies of institutionalized elderly by Piuvezam and Lima[24] and Abud et al.[33] show that self-perception is predominantly positive, which is opposite to the actual findings of oral health, which is predominantly poor.

Another study conducted in Hong Kong found low percentages of negative-self-perception among the institutionalized elderly, although a different method was used - the Oral Health Impact Profile (OHIP). The authors found that other factors influenced self-perception of oral health among the elderly, including social and cultural factors[34]. In order to check these hypotheses, this study checked for an association between self-perception of oral health and the sociodemographic characteristics of institutionalized elderly. Thus, clinical and sociodemographic conditions had little influence on the self-perception of oral health among these individuals. The only factor that was at the limit of significance (0.055) was age, with a smaller percentage (40%) of the older population considering their teeth, gums and prosthesis as fair, poor or very poor, compared to the younger elderly.

The paradox between the clinical reality and self-perception of oral health measured in this and other studies, shows that reported self-perception is not enough to predict and identify oral health condition in the study population. One of the explanations for the weak association between oral health self-perception and clinical and sociodemographic factors is that "oral health problems are considered secondary" to other physical, psychological and social problems[9]. The National Healthcare Policy for the Elderly (PNSPI) considers those living in care facilities (ILPI) to be more fragile and at greater risk of social exclusion and of certain health problems[19]. This being the case, in light of so many other problems, oral health has become irrelevant for the institutionalized elderly, which may lead to positive self-perception, even in the presence of unfavorable clinical and sociodemographic conditions.

Another factor to consider is that the study participants lived in a time in which loss of teeth, poor oral health and disease were considered natural part of the aging process[24]. Furthermore, the majority of poor clinical conditions are asymptomatic and hence unknown to the individuals. The elderly tend to self-refer to poor health when

they experience painful or limiting problems with their mouths, rather than chronic and irreversible problems leading to loss of teeth.

This is one of the findings of this study, based on a simplified questionnaire - QST-TMD, designed to screen patients with TMD[23]. Those claiming that their jaws "lock" when they open or close their mouth, who always have pain at the front or side of their jaw, or whose jaws get tired during the course of the day are less satisfied with their oral health. The results show that elderly with painful or limiting oral conditions report a negative self-perception of their oral health.

It is important to reiterate the importance of using simplified tools in epidemiological surveys to assess the self-perception of oral health and the presence of TMD, especially in studies using the elderly as the unit of observation and analysis. This study used a single question to measure self-perception: "How to you assess your teeth, gums and prostheses?" According to Silva[22], this question is capable of individually predicting GOHAI. To identify individuals with TMD we used a questionnaire with seven questions, QST-TMD, which is a validated instrument compared to the gold standard (RDC/TMD)[23]. We found 95% sensitivity (91-99 CI 95%), and 85% specificity (81-92 CI 95%) when validating the questionnaire. Applied simultaneously, GOHAI and RDC/TMD become long questionnaires that may tire the elderly to the extent they give up, or result in complacency and damage the study results. The results found using these tools corroborate findings from similar studies in the literature[24,33,34], demonstrating the reliability and reproducibility for future studies.

The results of this study make it clear that it is important to develop further effort to create public policies that reformulate public dental services, enabling better oral health conditions among the elderly. Also, in addition to educational and preventive actions, measures are required that focus on rehabilitation among this segment of the population. Finally, given the limited impact of clinical conditions on self-perception of oral health, we recommend that area professionals carefully analyze the complaints of their elderly patients, and especially bear in mind their frail status and comorbidities.

Conclusions

We find that clinical and sociodemographic conditions have little influence on oral health self-perception, possibly because pain is the main factor associated with negative self-perception in these individuals.

Collaborations

LA Melo gathered and interpreted the data and helped with study design and the final draft of the manuscript. MM Sousa worked on data interpretation and helped draft the manuscript. AKB Medeiros worked on study methodology and helped draft the manuscript. AFP Carreiro worked on the critical analysis and wording of the manuscript. KC Lima helped guide the study, data analysis, critical analysis and helped draft the manuscript.

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Article submitted 15/06/2015
Approved 03/09/2015
Final version submitted 05/09/2015