Access to information on how to avoid oral health problems among elderly persons registered with the Family Health Strategy

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Abstract

Objectives: To identify the level of access to information regarding how to prevent oral health problems among the elderly, and verify if such levels were higher among members of households registered with the Family Health Strategy Program. *Methods:* An analytic cross-sectional study was conducted of a probabilistic complex sample of elderly (65-74 years old) members of the population of a large city. The level of access was estimated with adjustment for the design effect, as well as the magnitudes of association. Descriptive, bivariate and logistic regression (OR/CI95%) analysis was performed. Variables related to personal determinants, health services, health-related behavior and health outcomes were considered. *Results:* Of the 490 participants, 53.4% reported they had access to information about how to prevent oral health problems. This access was higher among elderly persons living in a household registered with the Family Health Strategy Program (2.04/1.14-3.67), and who had at least five years of schooling (2.53/1.67-3.83), regularly used dental services (1.84/1.07-3.17), did not smoke either now or in the past (1.79/1.13-2.82), did not suffer from chronic diseases (2.14/1.34-3.42) and had not suffered social impacts because of their oral health conditions (1.77/1.08-2.91). *Conclusion:* Most of the elderly persons had access to information about how to prevent oral health problems, with such access being greater among those registered with the Family Health Strategy Program.

Key words: Elderly; Health Services Accessibility; Prevalence, Epidemiology; Oral Health.

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INTRODUCTION

Despite considerable recent progress, Brazil is still considered to be a country with broad regional and social inequality.[1] In order to reduce such inequality, especially in terms of access to healthcare, the Brazilian Constitution of 1988 established the creation of the Sistema Único de Saúde (the "Unified Health System") (SUS). The functions of the SUS include health promotion and surveillance, health education and vector control, as well as ensuring the continuity of primary (or basic), secondary (or specialized outpatient), and tertiary (or hospital) care.[1] Primary or basic care is one of the most important areas of the SUS, aiming to provide universal access and comprehensive services, coordinate and expand coverage to more complex levels of care, and to implement intersectoral health promotion and disease prevention strategies. A number of organizational strategies have been used to achieve this, notably the Family Health Strategy (FHS).[1,2] One of the key features of the FHS is its emphasis on the reorganization of basic health units so that their actions are directed at families and communities, and integrating health care with health promotion and preventive actions.[1] Among the focuses of the SUS is the health of the elderly. The Ministério da Saúde ("Ministry of Health") made the health of the elderly a priority item on the health agenda of Brazil, emphasizing a healthy and active aging process based on the paradigm of functional capacity, approached in a multidimensional manner.[3]

Aging in developing countries, like Brazil, is not always accompanied by healthcare modifications that meet the needs of this age stratum.[4,5] There is an increased demand for health services among the elderly,[6] and among the various aspects of health, oral health deserves special attention, as dental services have not historically prioritized this population group. Lack of knowledge and awareness may influence the oral health condition and the self-care of this population.[7] The oral health condition of elderly persons in Brazil is poor,[8] and as such there is need to restructure society and the provision of dental services in order to contribute to prevention and care. The inclusion of programs that focus on health promotion/health education and preventative actions should be considered,[9] since oral health education measures can result in improvements in oral health behavior and conditions.[10-12]

The planning and implementation of such a health education process must consider a number of characteristics of people which are, in this study, identified as levels of health literacy, and included in the theoretical model proposed to evaluate the level of the same created by Sørensen et al.,[13] in 2012. Connected with this is the idea of empowerment, which refers to the process in which people create or are given opportunities to control their own destiny and thus influence the decisions that affect their lives.[13-15] The model of Sørensen et al.[13] features 12 dimensions of "health literacy", four in the field of health care, four in disease prevention and four in health promotion, which refer respectively to the ability to access, understand, evaluate and apply health-related information; risk factors to health and to the social and environmental context, generating informed decisions on health determinants in the social and physical environment. The model also includes factors that may be dynamically associated with health literacy: use of health services, health costs, health-related behaviors, health outcomes, participation of people, empowerment, equity and maintenance.[13]

The model proposed by Sørensen et al.[13] was used as a theoretical reference, as access to health-related information is the first condition for achieving health literacy. In this context, the present study aimed to identify the prevalence of access to information on how to avoid oral health problems among elderly persons and whether such access was higher among users registered with the Family Health Strategy than among those who were not registered.

METHOD

An analytical cross-sectional study was performed of a probabilistic complex two stage cluster sample of elderly persons (aged 65-74 years), living in a Brazilian town (Montes Claros), with a large population, situated in the north of Minas Gerais. Sample calculation considered the estimated proportion of the occurrence of events or diseases to be 50% of the population, with an error rate of 5.5%, a confidence level of 95%, a non-response rate of 20%, a guarantee of gender proportionality and a *deff* (*design effect*) of 2.0. Groups were selected by simple random sampling. It was estimated that a sample of 740 elderly was required;[16] those who comprised the study did not have cognitive problems, reported the use of dental services and answered the question on access to information about how to prevent oral health problems. The assessment of cognitive status was evaluated using the Brazilian validated version of the Mini Mental State Examination (MMSE),[17] considering the levels of education of the elderly. Data was collected in 2008 and 2009.

The study was conducted according to the methodology recommended by the World Health Organization (WHO).[18] The studies were performed by 24 dentists with the help of 24 trained and calibrated interviewers/information recorders, (Kappa inter-examiner and intra-examiner and intra-class correlation coefficient ≥0.61). The tests were carried out in natural light, using a sterile mirror and CPI probe. Data collection was conducted with the use of handheld computers with a program designed for such purpose and the simultaneous construction of databases, known as the Programa Coletor de Dados em Saúde ("Health Data Collector Program") (PCDS).[16]

The construction of the dependent variable considered "elderly persons who had access to information about how to prevent oral health problems" to be those who responded positively to the question, *"Have you received information about how to avoid oral health care problems? (Yes/No)."* In accordance with the technical model of Sørensen et al.,[13] the variables were grouped into five groups, with subcategories of: access to health information (an indispensable condition to obtaining health literacy), personal determinants, health services/health care costs, health-related behaviors and health outcomes. The personal determinants were: age in years (69-74, 65-68), self-reported ethnic background (mixed race, Afro-Brazilian, indigenous, Asian, Caucasian), gender (male/female), marital status (single/widowed/divorced, married/stable relationship), schooling (0-4 years, 5 years or more), per capita income in minimum salaries (one minimum salary or less, more than one minimum salary). The following health services/health care costs variables were used: dental service used (supplementary services/special services, services provided by SUS/charitable services), address registered with the FHS (no/yes), time since last visit to the dentist in years (one or more years, less than a year) reason for the use of dental services (treatment care, routine care).

Health-related behaviors were current or former smoker (yes/no), current or former habit of drinking alcohol (yes/no). For health outcomes, general health was described as such: presence of chronic diseases (yes/no), use of medications (yes/no). Normative and subjective oral health status was assessed. Normative conditions included mucosal disorders (yes/no), use of removable dentures (yes/no). Subjective oral health status was represented by the self-perceived need for dental treatment (yes/no), pain in teeth and gums in the last six months (yes/no), discomfort in the mouth, head or neck (yes/no) and an assessment of the impact of oral health in all its dimensions, through the Brazil validated version of the *Oral Health Impact Profile* (OHIP-14)[19] (impacted, did not impact). All individuals who responded affirmatively (rarely, sometimes, repeatedly or always) in at least one of the 14 questions of the instrument were categorized as suffering an impact.

Because the study involved complex cluster sampling, correlation for the design effect was

carried out. Descriptive analysis included relative frequency corrected for the design effect, standard error (SE) and the cluster effect (Deff) for categorical variables; and mean, SE, and Deff for the quantitative values. In the bivariate analysis and multiple associations of the dependent variable, logistic regression and correction for the design effect were used to estimate the odds ratio, with a significance level of 5% and confidence intervals of 95% (OR/CI 95%).

The ethical principles of Resolução do Conselho Nacional de Saúde (National Health Council Resolution) n°196/96 were observed. The present study was approved by the Ethics Research Committee of the Universidade Estadual de Montes Claros, under registry n° 318/06. The participants in the study each signed a Form of Free and Informed Consent (FICF).

RESULTS

Among the 804 individuals invited to participate in the study, 740 were evaluated (response rate, 92.1%). Of these, 490 elderly persons comprised the final sample, of which 261 (53.4%) reported having access to information about how to prevent oral health problems. The average age of the elderly people was 68.36 years; most were female and lived in a household registered with the FHS (Table 1).

Table 1. Access to information about health, personal determinants, use of health services/health costs, health related behavior and health outcomes (n=490). Montes Claros, MG, 2008-2009.

Access to health information	%[a]	Standard error	Deff
Access to information about how to prevent oral problems[b]			
No	46.6		
Yes	53.4	4.5	4.496
Personal determinants			
Age group (in years)			
69 to 74	41.7		
65 to 68	58.3	2.6	1.503
Self-declared ethnic background[b]			
Mixed Race	45.4	3.7	2.956
Afro-Brazilian	16.1	2.2	1.901
Indigenous	0.5	0.4	1.651
Asian	0.9	0.5	1.318
Caucasian	37.1	4.7	5.162
Gender			
Male	47.8		
Female	52.2	2.7	1.653
Marital status			
Single/widowed/divorced	30.8		
Married/stable union	69.2	3.4	2.963

Access to health information	%[a]	Standard error	Deff
Schooling (years of study)			
0 to 4 years	59.3		
5 or more	40.7	4.2	3.980
Earnings per head in minimum salaries[b,c]			
One salary or less	66.9		
More than one salary	33.1	4.0	3.848
Health services/health costs			
Dental service used[b]			
Supplementary services/private services	27.9		
Services supplied by SUS/charitable services	72.1	4.4	5.224
Household registered with FHS			
No	43.6		
Yes	56.4	8.5	15.896
Time since last visit to dentist (years)			
One or more	72.8		
Less than one	27.2	2.8	2.117
Reason for using dental service[b]			
Treatment	62.9		
Routine care	37.1	3.6	2.991
Health related behavior			
Current or former smoker			
Yes	36.2		
No	63.8	3.2	2.473
Currently or formerly has habit of alcohol abuse[b]			
Yes	39.9		
No	60.1	2.8	1.730
Health outcomes			
General health related			
Self-examination of mouth			
No	77.6		
Yes	22.4	2.9	2.603
Presence of chronic disease[b]			
Yes	79.6		
No	20.4	3.2	3.515

Access to health information	%[a]	Standard error	Deff
Use of medication			
Yes	68.8		
No	31.2	2.8	1.953
Normative oral health conditions			
Mucosal disorders[b]			
Yes	16.6		
No	83.4	2.4	2.191
Use of removable dentures			
No	17.8		
Yes	82.2	2.9	3.169
Subjective health conditions/self-perception....			
... of need for dental treatment[b]			
Yes	59.8		
No	40.2	3.9	3.481
... of pain in teeth or gums in previous six months[b]			
Yes	25.3		
No	74.7	2.8	2.233
... of discomfort in mouth, head or neck			
Yes	19.1		
No	80.9	2.6	2.374
OHIP[b]			
Impact	17.6		
No Impact	82.4	2.1	1.581

[a] estimated values with correction for design effect; [b] Variation in n=490 due to loss of information;

[c] based on 2008 minimum salary (R$ 415.00).

Bivariate analysis revealed associations between access to information on how to avoid oral health problems and variables from the following groups: personal determinants, health services/health care costs, health-related behaviors and health outcomes ($p \leq 0.20$) (table 2).

Table 2. Bivariate analysis of associations between access to information on how to avoid oral health problems and personal determinants, use of health services/health costs, health related behavior and health outcomes (n=490). Montes Claros, MG, 2008-2009.

Variables	Information about oral health problems						
	No	Yes	OR[a]	CI 95%[a]	p	Standard error	Deff
Personal determinants	%[a]	%[a]					
Age group (in years)							
69 to 74	49.6	50.4	1.00				
65 to 68	44.5	55.5	1.22	0.79-1.88	0.345	0.21	1.51
Self-reported ethnic background							
Mixed race/Afro-Brazilian/ indigenous	45.0	55.0	1.00				
White/Asian	49.4	50.6	0.83	0.50-1.39	0.481	0.25	2.05
Gender							
Male	50.9	49.1	1.00				
Female	42.7	57.3	1.39	0.88-2.20	0.142	0.22	1.73
Marital status							
Single/widowed/divorced	47.6	52.4	1.00				
Married/stable union	46.2	53.8	1.05	0.67-1.66	0.797	0.22	1.45
Schooling (years of study)							
0 to 4 years	56.4	43.6	1.00				
5 years or more	32.4	67.6	2.68	1.73-4.15	0.000	0.21	1.40
Earnings per head in minimum salaries							
One salary or less	49.3	50.7	1.00				
More than one salary	42.7	57.3	1.30	0.80-2.12	0.270	0.24	1.67
Health services/health costs							
Dental service used							
Supplementary services/ private services	47.6	52.4	1.00				
SUS/charitable services	43.7	56.3	1.17	0.57-2.38	0.656	0.35	3.36
Household registered with FHS							
No	56.8	43.2	1.00				
Yes	38.8	61.2	2.07	1.10-3.90	0.020	0.31	3.20

Variables	Information about oral health problems						
	No	Yes	OR[a]	CI 95%[a]	p	Standard error	Deff
Time since last visit to dentist (years)							
One or more	51.6	48.4	1.00				
Less than one	33.4	66.6	2.12	1.28-3.49	0.002	0.24	1.51
Reason for using dental service							
Treatment	51.5	48.5	1.00				
Routine care	38.1	61.9	1.72	1.01-2.94	0.038	0.26	2.13
Health related behavior							
Self-examination of mouth							
No	36.9	63.1	1.00				
Yes	49.5	50.5	1.67	0.82-3.39	0.149	0.35	2.75
Current or former smoker							
Yes	57.4	42.6	1.00				
No	40.5	59.5	1.97	1.29-3.02	0.001	0.20	1.34
Currently or formerly has habit of alcohol abuse							
Yes	55.0	45.0	1.00				
No	41.1	58.9	1.75	1.09-2.79	0.015	0.23	1.72
Health outcomes							
General health related							
Presence of chronic disease							
Yes	50.4	49.6	1.00				
No	32.0	68.0	2.16	1.28-3.62	0.003	0.25	1.29
Use of medication							
Yes	49.8	50.2	1.00				
No	39.7	60.3	1.50	0.99-2.27	0.047	0.20	1.20
Normative oral health conditions							
Mucosal disorders							
Yes	66.0	34.0	1.00				
No	43.0	57.0	2.57	1.32-5.01	0.004	0.33	1.81

Variables	Information about oral health problems						
	No	Yes	OR[a]	CI 95%[a]	p	Standard error	Deff
Use of removable denture							
No	52.3	47.7	1.00				
Yes	45.4	54.6	1.32	0.68-2.53	0.388	0.32	2.07
Subjective health conditions/self-perception....							
...of need for dental treatment							
No	47.2	52.8	1.00				
Yes	45.6	54.4	1.06	0.74-1.53	0.719	0.17	1.04
... of pain in teeth or gums in previous six months							
Yes	47.1	52.9	1.00				
No	46.4	53.6	1.03	0.64-1.63	0.896	0.22	1.34
... of discomfort in mouth, head or neck							
Yes	57.8	42.2	1.00				
No	44.0	56.0	1.74	0.97-3.10	0.052	0.28	1.68
OHIP							
Impact	63.9	36.1	1.00				
No Impact	43.0	57.0	2.34	1.44-3.78	0.000	0.23	1.04

Multivariate analysis found an association between access to information on how to avoid oral health problems and personal determinants, use of health services/health care costs, health-related behaviors and health outcomes (table 3).

Table 3. Multiple analysis of associations between information on how to avoid oral health problems adjusted for statistically significant variables ($p \leq 0.05$). Montes Claros, MG, 2008-2009.

Personal determinants	OR	CI 95%	p
Schooling (years of study)			
0 to 4 years	1.00		
5 years or more	2.53	1.67-3.83	<0.001
Health services/health costs			
Household registered with FHS			
No	1.00		
Yes	2.04	1.14-3.67	**0.018**
Reason for using dental service			
Treatment	1.00		
Routine care	1.84	1.07-3.17	**0.028**
Health related behavior			
Current or former smoker			
Yes	1.00		
No	1.79	1.13-2.82	**0.014**
Health outcomes			
General health related			
Presence of chronic disease			
Yes	1.00		
No	2.14	1.34-3.42	**0.002**
Subjective health conditions			
OHIP			
Impact	1.00		
No Impact	1.77	1.08-2.91	0.025

DISCUSSION

The prevalence of access to information on how to avoid oral health problems was 53.4%, and access increased among older adults living in households registered with the FHS. The theoretical model was adequate, identifying associations between the proposed variables. There was an association between access to information on how to avoid oral health problems and registration with the FHS, as well as the variables personal determinants, health services/healthcare costs and health outcomes. The prevalence of access to information in Montes Claros, Minas Gerais was higher than that recorded for elderly people in Brazil as a whole (39.0%).[20] Prevalences were higher among adults in the south of Brazil (65.0%)[21] and in a representative sample of Brazilian adults (55.3%).[22] Access to

health-related information is necessary to improve levels of "health literacy",[13] as elderly persons are considered vulnerable in this respect[23] a fact that explains why the prevalence of access to health-related information is lower among the elderly than among non-elderly adults.

The fact that more elderly respondents in Montes Claros, Minas Gerais, described having access to this information can be explained by the recent advances made in public policies implemented in Brazil, such as the inclusion of an oral health team (OHT) in the FHS.[24] Increased access to preventative information among the elderly, an age group that has poor oral health and poor access to dental services,[21] could lead to improvements in their conditions of oral health. Access to such data can result in improved awareness of the need for dental treatment[21] and of the appearance of the mouth,[25] as well as satisfaction with dental services[26] There is therefore a clear need for educational programs aimed at the provision of such information.

Educational actions can influence the perception of an individual of his or her oral condition and encourage self-care aimed at prevention.[27] The effectiveness of educational programs in improving oral health conditions among schoolchildren, for example, has been shown in a reduction in the prevalence of dental caries,[11] gingival bleeding, and the presence of visible plaque.[10] Although these studies were conducted among school children, it is believed that educational activities, such as access to information about preventing dental problems, regardless of the age group to which they are applied, can lead to the improvement of oral health conditions and related behaviors. It should emphasized that oral health promotion interventions involve complex dimensions defined by a variety of contexts, social groups and institutions, including the collaboration and participation of different sectors and social actors and the use of multiple strategies in order to ensure permanent long-term improvements.[28] However, the need to take into account the characteristics and preconditions of individuals is of paramount importance, questions that are included in the theoretical model of health literacy.[13]

Through health literacy, individuals in the health education process can be influenced to adopt, or otherwise, healthy behavior based on the use or non-use of health services, and as such, it is possible to observe the impact of access to information on health on health outcomes and health care costs in society. Health literacy can lead to greater autonomy among individuals in the search for health, and is considered part of the development of an individual to improve his or her quality of life. Such literacy can generate greater equity and sustainability of changes proposed at a public health level.[13] Therefore, it is believed that questions relating to the theoretical model of health literacy should be considered when evaluating proposed access to health-related information, as well as the understanding and application of such information relative to the health of the individual.

No previous studies identifying factors associated with access to information on how to avoid oral problems were found. The greater access of those registered with the FHS may be due to the training of dentists working in the service and/or the aims of the FHS to focus more on health promotion and education and the prevention of disease.[1] While progress has been made in public policies implemented in recent years, such as the inclusion of OHTs in the FHS, efforts are still required to create a wider policy that can reduce social inequalities in the access to and application of care and the evaluation of results in the area of oral health.[24] The interaction between the OHTs and the other parts of the FHS is essential in order to optimize care of the elderly. In the state of Minas Gerais, the interaction between such teams has been noted in a considerable portion of municipal regions.[29] The integration of principles governing the care of individuals in the FHS, associated with levels of health literacy among the elderly, could lead to SUS health actions having a greater impact, resulting in improved health related behavior and changes in the health status of this age stratum.

Education is an essential factor of health. Access to information on how to avoid oral problems was higher among older people with more education (5 years or more). Formal education (schooling) can positively influence the search for health-related information, and can generate changes in habits and oral self-treatment.[30] Elderly people with less education may have worse oral health, including edentulism.[31] More educated elderly persons may be associated with a higher prevalence of use of dental services.[32]

Access to information on how to avoid oral problems was higher among those elderly individuals who described routine care as their reason for using the dental service. Such a service is an important predictor of oral health,[33] presenting a beneficial association with oral health status,[34,35] as it focuses less on the treatment of a condition and more on the preventative approach through the provision of information on oral health care. Unfortunately, the prevalence of such usage is low among elderly Brazilians.[8]

Access to information on how to avoid oral problems was higher among elderly persons who reported not having a current or former smoking habit. Tobacco is a risk factor for many dental problems, especially mouth cancer.[36] Access to information can lead to preventive health behaviors, including non-adherence to the habit of smoking. It is worth mentioning the possibility of reverse causality in this relationship. Educational activities in oral health should consider the previous behavior of individuals, as actions may influence or be influenced by such behaviors.[13] In terms of health-related behaviors, it is noted that the practice of self-examination of the mouth was not associated with access to information about how to prevent oral health problems. Such information does not appear to include advice relating to the prevention and early diagnosis of oral cancer. It is noteworthy that educational activities can generate increased levels of knowledge, as well as greater adherence to self-care practices, including the self-examination of the mouth.[37] Therefore, information about this behavior must be considered as part of the process of health literacy with regard to oral health, especially when considering the high morbidity and mortality caused by oral cancer.[38]

There was greater access to information about how to prevent oral health problems among elderly individuals who did not have chronic health problems. The implementation of the new curriculum guidelines in undergraduate and graduate programs, the proposals of the FHS to provide comprehensive care to individuals, families and communities, as well as continuing education in the preparation of human resources in primary health care, may have a direct influence on this result, as the focus of such strategies is on the individual as a whole, placing oral health as part of overall health, and not as a separate entity.[39,40] It is noteworthy that the prevalence of chronic diseases among the elderly has increased,[41] a fact that should be considered in health strategies aimed at this population group. The fact that clinical conditions can influence the process of health literacy among the elderly should be considered.

Traditionally, in the field of health, as a result of the inheritance of the biomedical model of health, data related to the clinical status of disease is highly valued.[42] However, measuring health should consider social, environmental and psychological influences,[43] as well as the subjective aspects of oral health. Access to information on how to avoid oral problems was higher among elderly persons who had not suffered the social impact of oral health conditions in their physical and psychosocial dimensions, measured by the OHIP-14. Previous studies have identified an association between subjective questions of oral health and access to such information in elderly Brazilians.[21,25] It is believed that elderly people who revealed no impact through the OHIP-14 may have either a satisfactory state of oral health or flaws in the self-perception their conditions. Importantly, access to information on how to avoid oral health problems were associated with satisfaction with teeth among schoolchildren, a result identified in a previous study,[44] which highlights the influence of such information on subjective conditions.

The process relating to access to information and the variables investigated is dynamic. Causes and effects vary throughout life and, as this is a sectional study, a temporal relationship cannot be established between the observed associations. It should be noted that some variables considered in the theoretical model contemplated have not been evaluated in this study. Thus, it is believed that other variables that may influence or be influenced by access to information related to oral health should be taken into account in future studies, in addition to an evaluation of the quality of the information received.

CONCLUSION

Most elderly persons had access to information about how to prevent oral problems, and such access was more prevalent among older adults living in households registered with the Family Health Strategy. The provision of preventive information by dental service professionals needs to be increased, especially among residents of non-Family Health Strategy registered households, the socially disadvantaged (those with less education), those who do not routinely use dental services, smokers, those who reported the presence of chronic disease and those reporting the social impact of the dimensions of oral health. The increase in the life expectancy of Brazilians confirms the need for the provision of health services for this population stratum, and that these services should have quality guaranteed access to information on how to prevent oral problems, among other information on different health problems.

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