DOI: 10.1590/1413-81232017225.17362015

Dissatisfaction with the dental services and associated factors among adults

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Abstract *This study aimed to identify factors associated with dissatisfaction with dental services among adults. It analyzed 830 adult participants of an epidemiological survey of oral health. The dependent variable was dissatisfaction with the dental service, and the independent ones were selected according to the theoretical model set forth by Andersen and Davidson (1997). Estimates were corrected by the sample design effect, and Binary Logistic Regression was carried out. It was found that about 11% of adults were dissatisfied with the dental service. In the final model, dissatisfaction with dental services was lower among older adults (OR = 0.559) and among smokers (OR = 0.332). On the other hand, it was higher among adults who self-perceived their chewing as negative (OR = 2,804), who self-perceived some discomfort in the mouth and head and neck region (OR = 2.065), and among those who did not have access to information on how to avoid oral problems (OR = 3.020). Therefore, the services need to access the perceptions and expectations expressed by users, and provide information in appropriate quantity and quality, in the context of "health literacy" in order to achieve greater satisfaction among its users.*

Key words *Adult, Patient satisfaction, Access to information, Dental health services*

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Introduction

Health services' evaluation by users provides essential information for the definition of the quality standards of care provided. It has been highly recognized[1] and is an expected care outcome[2]. User satisfaction is a fundamental component of health services' evaluation and is even considered by some authors as the ultimate goal of such services[2,3].

Donabedian's[2] proposal is classically used when evaluating the quality of health services. It argues that evaluation should consider three basic components: structure (resources used by the service), process (procedures used to manage patients' problems) and outcome (whether or not the patient benefits from the health service provided). Patient satisfaction is an important outcome targeted by services[4].

User's incorporation into the evaluation has been highly valued, especially within the scope of the Unified Health System (SUS), which seeks to encourage community participation in planning and evaluation processes to strengthen social control. Thus, the user's perspective reveals essential aspects to complete and balance the quality of services[5]. The perception of users' dissatisfaction can direct health services to meet more specifically the demands of the population, as it allows complementing care quality technical assessments with a shared view of the individuals receiving treatment[6,7].

In addition, satisfaction assessment has been identified as a key element for successful treatment. Unsatisfied patients adhere less to the proposed treatment[8] and are less likely to continue using health services[1,9].

Allied to the importance of understanding what leads individuals to express dissatisfaction with services used is the collection of epidemiological data on adults' oral health, since the interest in these data has greatly increased[10]. Adults are the majority of the population; they demand dental services, decisively influence the behavior of their dependents, have specific oral health problems and epidemiological peculiarities[11]. Workers, in general, may have difficulty accessing such services during working hours, causing aggravation of the problems and reasons for work absenteism[11].

Users' dissatisfaction with dental services is still a little explored field. It certainly has many aspects to be unveiled, since it can carry particularities of each context and setting[12]. Thus, this study evaluated from a recognized multidimensional theoretical model the factors associated with adult dissatisfaction with dental services.

Methodology

This is a cross-sectional study conducted among adults participating in the epidemiological survey on oral health carried out in the city of Montes Claros, Minas Gerais, Brazil, in 2009. Montes Claros is the main urban center in the north of the State of Minas Gerais, and, for that reason, shows characteristics of regional capital, with radius of influence that covers all the north of Minas Gerais and part of the south of Bahia. Currently, the municipality has 71 Oral Health Teams (ESB) linked to the Family Health Strategy (ESF), of which 58 are modality I and 13 modality II, and a Dentistry Specialty Center (CEO) type II[13].

Sampling: Complex probabilistic samples by conglomerates in two stages (census tracts and blocks), ensuring proportionality by gender. For the population aged 35-44 years, standard group for the evaluation of oral health conditions in adults[14], the calculations evidenced the need to evaluate 762 individuals, considering the occurrence of events or diseases in 50%, 95% confidence level, sample error of 5.5%, *deff* (design effect) equal to 2.0 and non-response rate of 20%. The primary sample units were randomly selected, with 53 of the 276 urban census tracts and two of the 11 rural areas selected by draw. In a second stage, approximately seven blocks were drawn in each included urban sector. In the rural area, all households located at a distance of up to 500 meters from a reference institution were selected[15]. All households in the selected areas were sequentially visited and adults (35-44 years old) were invited to participate.

Calibration of examiners: Twenty-four trained and calibrated dental surgeons participated in data collection and achieved satisfactory Kappa agreement (Kappa inter / intra-examiner and intraclass correlation coefficient ≥ 0.60); they were accompanied by trained note takers / typists. The diagnostic criteria of the fourth edition of the Oral Health Surveys: Basic Methods, the World Health Organization (WHO) were implemented[14].

Data collection: At the households, after signing the informed consent form, interviews and intrabuccal examinations were performed. Examinations were conducted under natural light, using a mirror and a previously sterilized

probe indicated for evaluating the Community Periodontal Index (CPI), using all codes/criteria proposed by the WHO[14]. Data were recorded on handheld computers using a program specifically created for this purpose. More details about the methodology adopted are found in a previous study[16].

Analyses performed

Analyses were performed using the PASW (Predictive Analytics Software – SPSS®) version 18.0 and were conducted respecting the need for correction for the design effect since they derive from samples by conglomerates. Such correction refers to the calculation using different weights for sample elements in order to offset their unequal selection probabilities[17].

The dependent variable – satisfaction with the dental service – was obtained by answering the following question: "Were you satisfied with the dental service you used last time?" (Extremely, very, fairly, little, not satisfied, never went to the dentist). Individuals who reported never having gone to the dentist were excluded from the analyses. Answers were aggregated into two categories: satisfied (extremely and very) and dissatisfied (fairly, little and not satisfied). This aggregation allowed investigating dissatisfaction with the use of dental services.

The independent variables were grouped using the multidimensional theoretical model of Andersen and Davidson[18]. This model was the most widely used for the analysis of factors independently associated with the use of dental services[19], and it was also used to evaluate factors related to satisfaction with the use of these services, since satisfaction appears as an outcome related to the use of services. Authors[18] argue that independent variables can be gathered into three groups: primary determinants of oral health (external environment, oral health care system and personal characteristics), oral health behaviors (personal practice, formal use of dental services) and oral health outcomes (normative and subjective oral health conditions).

The exogenous variables of the theoretical model by Andersen and Davidson[18], which refer to the report of belonging to an ethnic group (self-declared ethnic group) and to an age group, were considered as personal characteristics in the group of primary determinants of oral health. The following variables were also included as personal characteristics: gender, marital status, schooling, per capita income, current employment situation and reason for the last dental visit.

The context of the external environment considered the reported general health (chronic diseases and use of drugs) and the influence of general health on quality of life, using a Brazilian version of the 12-Item Short-Form Health Survey (SF12), with weighted scores for the Physical and Mental Realms. The lower limit of the CI-95% of the estimated mean was used as the cutoff point in each realm[20], and individuals who obtained scores below the cutoff for each realm separately were considered as having a poor quality of life for the realm concerned. Satisfaction with life, while collected as a Likert scale, was dichotomized. Regarding the oral health care system, we analyzed the type of dental service used and the report of the insertion of the household in the ESF.

In the group of oral health behaviors, personal practices included information about oral hygiene, oral self-examination, and current and past smoking and alcohol habits. The formal use of dental services included access to information on preventing oral problems, oral hygiene, diet, oral cancer and how to perform oral self-examination. In addition, we analyzed the use of the dental service in the previous year.

In relation to the oral health outcomes, we evaluated normative conditions, including oral mucosal alterations, tooth count, use of dental prostheses, DMFT (decayed, missing and filled teeth) index, periodontal disease and normative need for dental treatment[14]. Periodontal patients were those with a periodontal pocket ≥ 4 mm and loss of insertion ≥ 4 mm[21] in the same sextant.

Oral health subjective conditions were represented by self-perception of oral health, chewing, the appearance of teeth and gums, speech due to teeth and gums, relationship as a result of oral condition, some discomfort in the mouth, head and neck, the need for dental treatment, the report of tooth and gum pain in the last six months and the evaluation of the impact of oral health on its physical and psychosocial realms, through the Brazilian validated version of the Oral Health Impact Profile (OHIP-14). The responses to each OHIP-14 question were dichotomized in no impact (sometimes, rarely, never) and with impact (always, often), and the individual who reported an impact on at least one item was considered to have been impacted[22].

All variables were categorically worked out. The absolute (n) and relative (% corrected for sample design) frequencies were obtained through descriptive analysis. In addition, mean

values and standard error were estimated for income and schooling variables. Bivariate analyses were performed using the Pearson chi-square test. Variables with "p value" of less than or equal to 0.2 were selected and included in the multiple model. The multiple models were adjusted through binary logistic regression, adopting the stepwise backward procedure, estimating the odds ratio and 95% confidence interval. In the final model, only the variables that showed significance level less than or equal to 0.05 ($p \leq 0.05$) were maintained. We also estimated the pseudo R-squares (R^2) in order to measure the capacity of the adjusted final model to explain the variation of the dependent variable.

Ethical Issues

This study was conducted in accordance with the ethical principles of the Resolution Nº 196/96 of the National Health Council (CNS) and was approved by the Research Ethics Committee of the State University of Montes Claros. Participants were duly informed about the research and agreed to participate by signing the informed consent form.

Results

Overall, 841 adults were evaluated as they resided in the selected census tracts. Among the adults evaluated, 11 (1.3%) were excluded from the study because they had never been to the dentist. Thus, 830 subjects were included in the analyses. Of these, 91 (10.8%) were dissatisfied with their last dental service. In the descriptive analysis, we noticed that most were female and self-declared indigenous, black or brown. The average per capita income was US$ 637.56 (EP=21.50). The investigated adults studied a mean of 9.01 years (EP=0.34). Most adults used dental services not provided by the SUS, reported living in a household inserted in ESF and had access to information on how to prevent oral problems (Table 1).

In the bivariate analysis, we observed that dissatisfaction with dental services showed a relationship ($p \leq 0.20$) with variables age group, self-declared ethnic group, gender, per capita income, current employment situation, type of dental service used, current or past smoking habit, normative need for dental treatment and with most of the variables of access to information. In addition, all variables that reported subjective oral health conditions were associated (Table 1).

In the adjusted multiple analysis, the odds of dissatisfaction with dental care were lower among older adults (borderline p-value) and among those who smoked. On the other hand, the likelihood of dissatisfaction was greater among individuals who did not have access to information on how to prevent oral problems, which negatively self-perceived their chewing (fair, poor or bad) and self-perceived some discomfort in the mouth, head and neck (Table 2). Adults who did not receive information about how to avoid oral problems were three times more likely to be dissatisfied with the dental services used (OR = 3.020) than those who received such information. The adjusted final model accounted for 16.1% of the variability of the dependent variable.

Discussion

This study revealed a lower likelihood of dissatisfaction with dental services used among older adults with a history of current or past smoking. On the other hand, dissatisfaction was greater among individuals who reported not having been informed about how to prevent oral problems, which negatively self-perceived their chewing and self-perceived discomfort in the mouth, head and neck. In general, there was a low prevalence of dissatisfaction (10.8%) with these services in the adult population. Previous studies also found a low prevalence of dissatisfaction similar to the findings of this study, considering South African families (11%)[23] and adult users in public services in Belo Horizonte (MG) (11%)[24]. On the other hand, the prevalence of dissatisfaction was lower than that observed among respondents of all ages to a telephone interview in Taiwan, China (19%)[25] and among Brazilian adults participating in the National Oral Health Survey (SB Brazil 2010) (14.7%)[26]. While it has already been shown that users feel more comfortable to report dissatisfaction[27] outside the care setting, as is the case of this study (household collection), nevertheless, the prevalence of observed dissatisfaction may be considered low. Historically, adults have been almost systematically excluded from oral health agendas at the collective level[11]. The increasing access of adults to these services[26,28] could explain, in part, the high prevalence of satisfaction, since the mere fact of obtaining care could be sufficient to predispose to a better user evaluation vis-à-vis the service used.

Among the adults investigated, only 1.3% had never been to the dentist, a prevalence lower

Table 1. Descriptive and bivariate analysis of the adult population, by dependent variable and primary determinants of oral health and oral health behaviors and outcomes. Montes Claros (MG), 2009. (n = 830).

Variables	N	%	Satisfied		Unsatisfied		p value
			n	%	n	%	
Primary determinants of oral health							
Personal characteristics							
Propensity							
Age group (in years)							
34 to 39	426	52.6	370	86.7	56	13.3	**0.039**
40 to 45	404	47.4	369	91.9	35	8.1	
Self-reported ethnic group							
White/yellow	264	31.0	229	87.3	35	12.7	**0.149**
Indigenous / black / brown	566	69.0	510	90.0	56	10.0	
Gender							
Female	457	53.9	401	87.7	56	12.3	**0.188**
Male	373	46.1	338	90.9	35	9.1	
Marital status							
In common-law marriage	610	74.6	542	88.8	68	11.2	0.778
No common-law marriage	220	25.4	197	90.4	23	9.6	
Schooling (years of study)							
11 years and over	218	25.1	196	89.7	22	10.3	0.540
5 to 11 years	505	60.6	451	89.0	54	11.0	
Below 4 years	107	14.4	92	88.9	15	11.1	
Available resources							
Per capita income*							
US$828.00 and over	175	21.3	165	94.6	10	5.4	**0.017**
Less than US$828.00	626	78.7	551	88.3	75	11.7	
Current employment status*							
Employed	605	71.7	544	90.1	61	9.9	**0.150**
Unemployed	220	28.3	190	86.5	30	13.5	
Dental treatment need							
Reason for using dental treatment services							
Routine consultation / maintenance	290	32.9	262	89.8	28	10.2	0.377
Oral problems	540	67.1	477	88.9	63	11.1	
Oral health care system							
Dental services used							
SUS	290	34.7	252	86.9	38	13.1	**0.148**
Other	540	65.3	487	90.4	53	9.6	
Household inserted in the ESF							
Inserted	429	52.9	385	89.4	44	10.6	0.500
Not inserted	401	47.1	354	89.0	47	11.0	
External environment							
Reported general health							
Chronic diseases*							
No	427	51.3	378	88.1	49	11.9	0.510
Yes	398	48.7	358	90.9	40	9.1	
Use of drugs							
No	619	74.2	548	88.1	71	11.9	0.424
Yes	211	25.8	191	92.4	20	7.6	
Physical realm of SF 12*							
Satisfactory	572	69.0	513	89.6	59	10.4	0.443
Unsatisfactory	256	31.0	255	88.5	31	11.5	

it continues

Table 1. continuation

Variables	N	%	Satisfied		Unsatisfied		p value
			n	%	n	%	
Mental realm of SF 12*							
Satisfactory	514	62.8	458	89.0	56	11.0	0.976
Unsatisfactory	314	37.2	280	89.7	34	10.3	
Satisfaction with life							
Satisfactory	708	84.8	634	89.5	74	10.5	0.256
Unsatisfactory	122	15.2	105	87.3	17	12.7	
Oral health behaviors							
Personal practice							
Oral hygiene practice							
Daily brushing frequency*							
Twice and over	526	64.2	471	89.1	55	10.9	0.603
Under twice a day	301	35.8	266	89.5	35	10.5	
Dental floss use							
Yes	432	50.2	388	88.9	44	11.1	0.454
No	398	49.8	351	89.5	47	10.5	
Other practice							
Oral self-examination*							
Yes	163	20.0	144	89.5	19	10.5	0.676
No	665	80.0	595	89.3	70	10.7	
Current or former smoker*							
No	627	75.2	552	88.0	75	12.0	**0.110**
Yes	202	24.8	186	92.6	16	7.4	
Current or former drinker*							
No	558	67.8	495	88.7	63	11.3	0.679
Yes	271	32.2	243	90.1	28	9.9	
Formal use of dental services							
Access to information on oral problems prevention							
Yes	518	60.4	489	93.8	29	6.2	**0.000**
No	302	39.6	243	82.5	59	17.5	
Access to information on oral hygiene							
Yes	698	83.6	637	91.5	61	8.5	**0.000**
No	132	16.4	102	77.4	30	22.6	
Access to information on diet							
Yes	426	51.5	389	91.7	37	8.3	**0.031**
No	404	48.5	350	86.6	54	13.4	
Access to information on oral cancer							
Yes	280	33.1	258	92.1	22	7.9	**0.041**
No	550	66.9	481	87.8	69	12.2	
Access to information on how to perform oral self-examination							
Yes	204	24.4	185	90.8	19	9.2	0.385
No	626	75.6	554	88.7	72	11.3	
Use of dental services in the last year							
Yes	379	45.7	344	90.8	35	9.2	**0.144**
No	451	54.3	395	87.8	56	12.2	
Oral health outcomes							
Oral health normative conditions							
Mucous membrane changes*							
No	717	86.6	636	88.7	81	11.3	0.473
Yes	111	13.4	101	92.3	10	7.7	

it continues

Table 1. continuation

Variables	N	%	Satisfied		Unsatisfied		p value
			n	%	n	%	
Tooth count							
28 to 32	372	45.5	331	88.3	41	11.7	0.342
20 to 27	273	32.3	248	91.2	25	8.8	
19 or less	185	22.2	160	88.0	25	12.0	
Dental prosthetics use							
No	546	65.9	489	89.8	57	10.2	0.768
One arch wire	206	25.0	182	87.4	24	12.6	
Two arch wires	78	9.1	68	90.1	10	9.9	
Decayed, missing and filled teeth (DMFT)							
0 to 15	279	36.0	253	90.6	26	9.4	0.218
16 to 21	280	32.4	252	89.8	28	10.2	
22 to 32	271	31.6	234	87.0	37	13.0	
Periodontal disease *							
No	723	90.4	647	89.1	76	10.9	0.292
Yes	76	9.6	65	88.5	11	11.5	
Normative need for dental treatment *							
No	385	48.3	354	90.7	31	9.3	**0.013**
Yes	414	51.7	358	87.4	56	12.6	
Oral health subjective conditions							
Oral health self-perception							
Excellent / good	418	48.6	390	92.1	28	7.9	**0.000**
Fair / Poor / Bad	412	51.4	349	86.4	63	13.6	
Chewing self-perception							
Excellent / good	489	58	452	93.2	37	6.8	**0.000**
Fair / Poor / Bad	341	42	287	83.6	54	16.4	
Self-perception of the appearance of teeth and gums							
Excellent / good	453	54	421	92.5	32	7.5	**0.000**
Fair / Poor / Bad	377	46	318	85.3	59	14.7	
Self-perception of speech due to teeth and gums							
Excellent / good	678	81.2	615	90.4	63	9.6	**0.001**
Fair / Poor / Bad	152	18.8	124	84.2	28	15.8	
Self-perception of relationship due to oral health							
Excellent / good	698	83	631	90.0	67	10.0	**0.004**
Fair / Poor / Bad	132	17	108	85.3	24	14.7	
Self-perception of some discomfort in the mouth, head and neck region *							
No	663	79.9	604	91.7	59	8.3	**0.000**
Yes	166	20.1	135	79.7	31	20.3	
Self-perception of the need for dental treatment *							
No	177	21.6	170	95.1	7	4.9	**0.001**
Yes	650	78.4	567	87.6	83	12.4	
Pain in teeth and gums in the last 6 months							
No	512	60.9	469	92.2	43	7.8	**0.003**
Yes	318	39.1	270	84.6	48	15.4	
OHIP*							
Did not impact	597	71.1	544	91.0	53	9.0	**0.005**
Impacted	230	28.9	194	85.2	36	14.8	

* Variation at n = 830. Due to loss of information.

Table 2. Multiple regression model of dissatisfaction with the use of dental services and determinants of oral health and oral health behaviors and outcomes. Montes Claros (MG), 2009. (n = 830)

Variables	OR (CI 95%)	p value
Primary determinants of oral health		
Age group (in years)		
34 to 39	1	0.056
40 to 45	0.559 (0.308-1.016)	
Oral health behaviors		
Current or former smoker		
No	1	**0.001**
Yes	0.332 (0.174-0.634)	
Access to information on oral problems prevention		
Yes	1	**0.000**
No	3.020 (1.734-5.258)	
Oral health outcomes		
Chewing self-perception		
Excellent / good	1	**0.002**
Fair / Poor / Bad	2.804 (1.475-5.329)	
Self-perception of some discomfort in the mouth, head and neck region		
No	1	**0.021**
Yes	2.065 (1.124-3.793)	

Constant ($\beta = 1.769$ / $p = 0.000$). Pseudo $R^2 = 16.1\%$.

than that among Brazilian adults (7.1%)[26], suggesting greater access in Montes Claros (MG) and corroborating the hypothesis that greater access would possibly contribute with greater satisfaction. In addition, the use of the routine/maintenance dental service, also known as use for review and/or prevention, was higher among adults surveyed (32.9%) when compared to Brazilian adults (21.4%)[26]. Routine use represents an important indicator of oral health[29], and thus, better oral conditions are expected in patients who use preventive and regular dental services and could contribute to higher levels of satisfaction.

While the theoretical multidimensional model of Andersen and Davidson[18] predicts a possible relationship between satisfaction with dental services and sociodemographic factors, this relationship was not found in this investigation, except for age, which was associated with dissatisfaction with the use of dental services with a probability of borderline significance ($p = 0.056$). Other studies also found no such association[25,30]. However, a study carried out among patients serviced at medical centers in Sweden aged 20 years or older revealed that individuals with lower educational level were more satisfied with the care given[31]. Ethnic group and socioeconomic status were significantly associated with satisfaction with health services in research conducted in South Africa with families in their respective households[23]. In this investigation, while the income variable was shown to be associated with dissatisfaction with the use of services in the bivariate analysis, this association did not remain in the multiple model. It is necessary to consider the highly homogeneous studied population in relation to socioeconomic factors, since most had per capita income equal to or less than US$828.00 (78.7%) and 5 to 11 years of schooling (60.6%).

It should be noted that the satisfaction of individuals was not influenced by the nature of dental services used. Public services (SUS) are ensuring high prevalence of satisfaction to their users (87%), close to that found among users of non-public services (90%), and this difference is not statistically significant. A previous study, conducted among the elderly, found greater satisfaction with dental services among users of SUS[30] services. These findings reflect the positive effects of public oral health care strategies.

On the other hand, it was observed that only 35% of the adults used SUS dental services, although 53% lived in areas covered by the ESF. In a complementary analysis using the chi-square test (data not shown), we found that, among individuals who live in areas covered by the ESF,

41.4% used dental services from SUS, while among the adults residing in areas not covered by the ESF, only 27% used SUS dental services ($p < 0.001$). Thus, it is evident that such coverage facilitates, but does not ensure the use of public services. Access problems may be difficulties that prevent higher prevalence of public service use, even in areas covered by the ESF. One should consider that younger adults have difficulty accessing health units during conventional working hours[11], and the provision of care at alternative times could contribute to the higher prevalence of use of these services.

In the final model, we observed that younger adults were more dissatisfied with dental services when compared to older adults. Since such relation evidenced borderline p-value, we chose to keep such variable in the final model. In addition, a previous study conducted on elderly people in the same region showed lower prevalence of dissatisfaction among the elderly aged 65-74 years[30]. A study conducted in Sweden with people over 20 years of age revealed that older people were generally more satisfied than younger people. A lower proportion of dissatisfied patients (10%) was observed among the elderly, especially those who reported better health status[31]. This inverse relationship between age and dissatisfaction with the use of dental services was also verified among Brazilian adults[26].

Current or past smoking habits were independently associated with dissatisfaction with dental care, with smokers being less dissatisfied than nonsmokers are. A study conducted among SUS users in the Metropolitan Region of Belo Horizonte (MG) found an inverse relationship, that is, greater dissatisfaction among current smokers[24]. However, in the quoted study, the recommendation of health care received to another person[24] was an indicator of satisfaction with the services used. In this context, the lack of standardized instruments implemented to evaluate satisfaction with the use of health services represents a difficulty that may even compromise the comparison of results of different studies conducted on the same topic[32].

The independent factor most strongly associated with dissatisfaction with health services was the lack of access to information on how to avoid oral problems from services. The likelihood of dissatisfaction among adults who did not have access to this information was about three times that observed among adults who reported access to this information, which is the main finding in this study. Such a relationship has already been demonstrated in previous studies[25,30]. However, no studies have been identified that have evaluated this relationship among some Brazilian adult population.

It has already been verified that the provision of information is a key factor among health education strategies[33]. In dentistry, health education has been an important part of health care, and health services were the setting of this practice. The impact of these educational measures can be observed in patients' health status and in user satisfaction[34,35]. The approaches used to carry out health education vary from the simple provision of information to the use of complex programs that involve behavior change strategies[34]. Although this study did not investigate the methodologies used, it was still possible to observe that the simple report of having had access to information on how to prevent oral problems had an impact on satisfaction with the health services used.

It should be noted that, although the question regarding access to information on how to prevent oral problems does not explicitly indicate the origin of such information, it was placed in the block of issues "Access to dental services", exactly as carried out in SB Brazil 2003/2004 project[36]. In this context, we asked respondents the following questions: *Have you ever been to the dentist? How long? Where at? Why? How do you rate the service? Did you receive information on how to avoid oral problems?* Thus, following the sequence of questions asked, we observed that the question was assessed within health services. The clinical environment is an important learning setting, giving users greater opportunities for clarification and seeking to ensure that all have access to the resources necessary to make dental care effectively a human right[37].

Informed individuals seem to use dental services in a timely manner, in the face of a poor or urgent dental condition[38]. Thus, by not offering information, health services end up contributing and even reproducing health inequities[39]. In this regard, we should emphasize that these services must fulfill their role of providing information in adequate quantity and quality, contributing to the strengthening of equity. In addition, more informed and consequently more satisfied users tend to become more confident about services as well as themselves, increasing their autonomy[40] and strengthening the user/professional/health service link.

Faced with the need of health services to promote the education of its users, several method-

ologies have been proposed. "Health literacy" has recently emerged as an outcome to be pursued by such strategies, as it refers to the outcomes of health education and communication activities, with a view to enhancing individuals' ability to use it in a practical and efficient way such information (empowerment)[41]. The findings of this work should be interpreted in this realm. The health services increasingly need to offer quality information, aiming to improve and increase users' capacity to tackle health difficulties. Empowering individuals via the provision of health information contributes to the process of the subject's self-transformation, providing more autonomy to individuals involved[40].

Among adults investigated, 60.4% had access to information on how to avoid oral problems. A study carried out in Taiwan to verify whether perceived clinical quality and patient education interfere with satisfaction with the health services used revealed that 76.3% had access to information on disease prevention and control[25]. This high prevalence of access to information in health services may contribute to explain the high percentage of satisfaction observed in both studies. While it is recognized that simple access to information is not decisive for inducing behavioral change, the provision of information is fundamental, as the first step, in achieving the best levels of health literacy[42].

Communication between professional and patient is a primordial aspect when it comes to the provision of health services information. The health professional becomes an essential element since he/she serves as an intermediary to the communication process[40]. A study conducted by Donabedian[2] found that the evaluation of health services addresses two main realms: technical performance and personal relationship with the patient, and most studies attribute satisfaction to humanitarian aspects of the professional-patient relationship, among which quantity and quality of information received stands out[43,44]. Therefore, satisfaction is embedded in the relational component between users and professionals[2].

In a qualitative study carried out with users of the oral health service in the municipality of Grão Mogol (MG)[45], respondents emphasized the importance of the interpersonal professional-patient relationship, which could also influence the outcome of the treatment. The patient-dentist relationship has been addressed by several studies[6], and some have revealed that aspects related to education, cordiality, gentleness and communicability play a more important role in relation to patient satisfaction than proper professional technical competence[6,45].

The normative conditions of oral health were not shown to be associated to satisfaction with the use of dental services. While this association was expected in the model of Andersen and Davidson (1997)[18], a previous study conducted among the elderly also found no such association[30]. Characteristics related to self-care conditions and dental care throughout life may influence the normative situation of oral health, which may not cause dissatisfaction with the last dental care[30].

On the other hand, subjective oral health conditions were associated with satisfaction with dental services. Adults who negatively self-perceived their chewing (fair, poor or bad) and those who self-perceived discomfort in the mouth, head and neck were more dissatisfied with the use of services. Subjective issues negatively perceived possibly reflect users' longings/expectations that were not accessed and/or met by the service and thus manifest as dissatisfaction. Other studies have already shown that individuals with worse perception of their own health are more dissatisfied with the health services provided[24,30,31]. The lower dissatisfaction among adults with a positive perception of their oral condition evidences the importance of the patients' view of their own health when they evaluate the quality of the health services used[18,19], and this view seems to be more affected by subjectively perceived symptoms than by objectively observed signs.

It should be noted that among the factors that have been shown to be associated with dissatisfaction in this research, the provision of information and the evaluation of the subjective questions of self-perception and user expectation are among the list of competencies applicable to services, that is, they are subject to be altered by it. Thus, services need to be aware of such issues in order to achieve higher levels of satisfaction for their users.

Regarding the limitations of this study, it should initially be considered that this is a cross-sectional study, thus presenting the temporal limitations inherent to this type of design. In addition, when determining the factors associated with satisfaction with the use of dental services, it would also be necessary to consider characteristics of the service, such as the physical structure of the service facilities, access to services, among others. This paper, however, addressed individual factors, that is, characteristics of the individuals and not the services that were used. Thus, pseudo R-square (R^2), while modest (16.1%), can be

considered relevant, since this investigation did not evaluate all the realms that may influence the outcome. In addition, only quantitative methods were used in this research, and a combination of quantitative and qualitative methods has been suggested as the best option to investigate satisfaction with the use of health services[46].

On the other hand, the sampling plan, calibration of examiners, data collection registered in handheld computer and the conduction of the analyses considering the correction by the design effect were strategies that ensured data validity and reliability.

Conclusion

The present study showed a low prevalence of dissatisfaction with the use of dental services among adults. Smokers and older adults were less dissatisfied with the dental care received. On the other hand, there was greater dissatisfaction among the individuals who did not receive information on how to prevent oral problems, which negatively self-perceived their chewing and which self-perceived some discomfort in the mouth, head and neck. Services must access the perceptions and expectations expressed by users, going beyond the purely normative view of the need for treatment. In addition, they need to provide information in adequate quantity and quality to the users, fulfilling their role of improving people's access to health information, having knowledge as a background to achieve equity in oral health, increasing "health literacy" of the population and increasing user satisfaction.

Collaborations

LL Roberto carried out the analyses, data interpretation and writing of the paper. AMEBL Martins worked on the conception of the study and coordinated fieldwork and data processing. AMB Paula worked in critical review of the paper. EF Ferreira worked on the data interpretation and critical review of the paper. DS Haikal acted in the design of the study, contributed in the analysis, data interpretation and critical review of the paper.

Acknowledgements

Authors are grateful for the logistical support of Unimontes and the Municipality of Montes Claros, for the support of the Foundation for Research Support of the State of Minas Gerais (FAPEMIG) and the collaboration of all participants who accepted to participate in this study. LL Roberto is a master's degree fellow of the Coordination for the Improvement of Higher Education Personnel (CAPES). AMEBL Martins is a Post-doctorate fellow of the National Council for Scientific and Technological Development (CNPq). EF Ferreira is a productivity researcher at CNPq.

To Foundation for Research Support of the State of Minas Gerais (FAPEMIG) for financing source.

References

1. Esperidião MA, Trade LAB. Avaliação da satisfação de usuários: considerações teórico-conceituais. *Cad Saude Publica* 2006; 22(6):1267-1276.
2. Donabedian A. The quality of care: how can it be assessed? *JAMA* 1966; 260(12):1743-1748.
3. Santos MP. Avaliação da qualidade dos serviços públicos de atenção à saúde da criança sob a ótica do usuário. *Rev Bra Enferm* 1995; 48(2):109-119.
4. Gordis L. *Epidemiologia*. 4ª ed. Rio de Janeiro: Revinter; 2010.
5. Trad LAB, Bastos ACS. O impacto sociocultural do Programa de Saúde da Família (PSF):uma proposta de avaliação. *Cad Saude Publica* 1998; 14(2):429-435.
6. Bottan ER, Sperb RAL, Telles PS, Uriarte Neto M. Avaliação de serviços odontológicos: a visão dos pacientes. *Revista da ABENO* 2006; 6(2):128-133.
7. Emmi DT, Barroso RFF. Avaliação das ações de saúde bucal no Programa Saúde da Família no distrito de Mosqueiro - Pará. *Cien Saude Colet* 2008; 13(1):35-41.
8. Douglass CW, Sheets CG. Patients' expectations for oral health care in the 21st century. *JADA* 2000; 131(Supl.):3-6.
9. Baron-Epel O, Dushenat M, Friedman N. Evaluation of the consumer model: relationship between patient's expectations, perception and satisfaction with care. *Int J Qual Health Care* 2001; 13(4):317-323.
10. Roncalli AG, Frazão P, Ely HC, Araújo IC, Pattusi MP, Batista SM. Condições de saúde bucal em adultos: notas sobre a técnica de levantamento domiciliar. *Boletim da Saúde* 2002; 16(2):9-19.
11. Reisine ST. Dental disease and work loss. *J Dent Res* 1984; 63(9):1158-1161.
12. Uchimura KY, Bosi MLM. Qualidade e subjetividade na avaliação de programas e serviços em saúde. *Cad Saude Publica* 2002; 18(6):1561-1569.
13. Brasil. Ministério da Saúde (MS). Secretaria de Atenção à Saúde. *Cadastro Nacional de Estabelecimentos de Saúde*. [acessado 2015 fev 22]. Disponível em: http://portalsaude.saude.gov.br/
14. World Health Organization (WHO). *Oral Health surveys*: *basic methods*. 4th ed. Geneva: ORH EPID; 1997.
15. Brasil. Ministério da Saúde (MS). *PROJETO SB 2000 – Condições da saúde bucal da população brasileira no ano 2000*. Brasília: MS; 2000.
16. Martins AMEBL, Guimarães ALS, De-Paula AMB, Pires CPAB, Haikal DS, Silva JM, Silveira MF, Caldeira TCR, Eleutério NB, Silveira AM, Almeida BM, Almeida CM, De-Freitas CV, Botelho DMM, Chaves KTS, Pereira PMB, Lima RS, Pereira SM, Silva TF, Duarte VM, Silva VEP, Pordeus IA. Levantamento epidemiológico das condições de saúde bucal da população de Montes Claros - Projeto SBMOC. *Rev Unimontes Cientifica* 2012; 14(1):3-14.
17. Queiroz RCS, Portela MC, Vasconcellos MTL. Pesquisa sobre as Condições de Saúde Bucal da População Brasileira (SB Brasil 2003):seus dados não produzem estimativas populacionais, mas há possibilidade de correção. *Cad Saude Publica* 2009, 25(1):47-58.
18. Andersen RM, Davidson PL. Ethnicity, aging, and oral health outcomes: a conceptual framework. *Adv Dent Res* 1997; 11(2):203-209.

19. Martins AMEBL, Barreto SM, Pordeus IA. Características associadas ao uso de serviços odontológicos entre idosos dentados e edentados no Sudeste do Brasil: Projeto SB Brasil. *Cad Saude Publica* 2008; 24(1):81-92.
20. Utah. Office of Public Health Assessment. *Health status in Utah*: *the medical outcomes study SF-12 (2001 Utah health status survey report)*. Salt Lake City: Utah Department of Health; 2004.
21. Cascaes AM, Peres KG, Peres MA. Periodontal disease is associated with poor self-rated oral health among Brazilian adults. *J Clin Periodontol* 2009; 36(1):25-33.
22. Locker D, Quinonez C. To what extent do oral disorders compromise the quality of life? *Community Dent Oral Epidemiol* 2011; 39(1):3-11.
23. Myburgh NG, Solanki GC, Smith MJ, Lalloo R. Patient satisfaction with health care providers in South Africa: the influences of race and socioeconomic status. *Int J Qual Health Care* 2005; 17(6):473-477.
24. Lima-Costa MF, Loyola Filho AI. Fatores associados ao uso e à satisfação com os serviços de saúde entre usuários do Sistema Único de Saúde na região metropolitana de Belo Horizonte, Estado de Minas Gerais, Brasil. *Epidemiol Serv Saude* 2008; 17(4):247-257.
25. Tung YC, Chang GM. Patient satisfaction with and recommendation of a primary care provider: associations of perceived quality and patient education. *Int J Qual Health Care* 2009; 21(3):206-213.
26. Brasil. Ministério da Saúde (MS). *Projeto SB Brasil 2010*: *Resultados principais*. Brasília: MS; 2011.
27. Silva Filho JF, Cavalcanti MT, Cadilhe GR, Vilaça AT, Avancini E, Machado HO, Perecmanis L, Maisonnette MJ, Rocha EC, Carreteiro RO, Mozinho GMP, Pitta AM. Avaliação de qualidade de serviços de saúde mental no município de Niterói – RJ: a satisfação dos usuários como critério avaliador. *J Bras Psiquiat* 1996; 45(7):393-402.
28. Brasil. Ministério da Saúde (MS). *Projeto SB Brasil 2003*: *condições de saúde bucal da população brasileira 2002-2003*: *resultados principais*. Brasília: MS; 2004.
29. Martins AMEBL, Haikal DS, Pereira SM, Barreto SM. Uso de serviços odontológicos por rotina entre idosos brasileiros: Projeto SB Brasil. *Cad Saude Publica* 2008; 24(7):1651-1666.
30. Rodrigues CAQ, Silva PLV, Caldeira AP, Pordeus IA, Ferreira RC, Martins AMEBL. Fatores associados à satisfação com serviços odontológicos entre idosos. *Rev Saude Publica* 2012; 46(6):1039-1050.
31. Rahmqvist M, Bara AC. Patient characteristics and quality dimensions related to patient satisfaction. *Int J Qual Health Care* 2010; 22(2):86-92.
32. Esperidião M, Trad LAB. Avaliação de satisfação de usuários. *Cien Saude Colet* 2005; 10(Supl.):303-312.
33. Coulter A, Ellins J. Effectiveness of strategies for informing, educating, and involving patients. *Br Med J* 2007; 335(7609):24-27.
34. Kay EJ, Locker D. Is dental health education effective? A systematic review of current evidence. *Community Dent Oral Epidemiol* 1996; 24(4):231-235.
35. Macnab A, Kasangaki A. 'Many voices, one song': a model for an oral health programme as a first step in establishing a health promoting school. *Health Promot Internation* 2012; 27(1):63-73.
36. Brasil. Ministério da Saúde (MS). Secretaria de Políticas de Saúde. Departamento de Atenção Básica. Área Técnica de Saúde Bucal. *Projeto SB2000*: *condições de saúde bucal da população brasileira no ano 2000*: *manual do examinador*. Brasília: MS; 2001.
37. Narvai PC. Collective oral health: ways from sanitary dentistry to buccality. *Rev Saude Publica* 2006; 40(N esp):141-147.
38. Haikal DS, Martins AMEBL, Aguiar PHS, Silveira MF, De-Paula AMB, Ferreira EF. O acesso à informação sobre higiene bucal e as perdas dentárias por cárie entre adultos. *Cien Saude Colet* 2014; 19(1):287-300.
39. Gilbert GH, Duncan RP, Shelton BJ. Social Determinants of Tooth Loss. *Health Serv Res* 2003; 38(6 Pt 2):1843-1862.
40. Leite RAF, Brito ES, Silva LMC, Palha PF, Ventura CAA. Access to healthcare information and comprehensive care: perceptions of users of a public service. *Interface (Botucatu)* 2014; 18(51):661-671.
41. Nutbeam D. Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promot Internation* 2000; 15(3):259-267.
42. Sørensen K, Van den Broucke S, Fullam J, Doyle G, Pelikan J, Slonska Z, Brand H. Health literacy and public health: a systematic review and integration of definitions and models. *BMC Public Health* 2012; 80(12):1-13.
43. Aharony L, Strasser S. Patient satisfaction: what we know about and what we still need to explore. *Med Care Rev* 1993; 50(1):49-79.
44. Ware JE, Snyder MK. Dimensions of patient attitudes regarding doctors and medical care services. *Med Care* 1975; 13(8):669-682.
45. Reis C, Martelli-Júnior H, Franco BM, Santos AA, Ramalho LMP. Avaliação do serviço de saúde bucal no município de Grão Mogol, Minas Gerais, Brasil: "a voz do usuário". *Cien Saude Colet* 2009; 14(4):1287-1295.
46. Trad LAB, Bastos ACS , Santana EM, Nunes M. O estudo etnográfico da satisfação de usuário do Programa de Saúde da Família (PSF) na Bahia. *Cien Saude Colet* 2002; 7(3):581- 589.

Article submitted 20/05/2015
Approved 27/12/2015
Final version submitted 29/12/2015