

Edentulism and self-perception of oral health in adult and geriatric patients

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• **Conflicts of interest:** none declared.

ABSTRACT

Objective: to evaluate the self-perception of oral health in adult and geriatric patients, totally and/or partially edentulous, treated at the Clinical School of Dentistry of the CESMAC University Center. **Material and Methods:** cross-sectional observational study. A total of 102 patients from the Clinical School were evaluated. The prosthesis need index was used, which determined the increase of edentulism estimated the problem severity in the sample. Data were recorded in an individual clinical record during each patient examination. **Results:** it was possible to identify that, for the research subjects, keeping the teeth has contributed to improve social relations and health, whereas teeth loss was associated with multiple negative feelings regarding interpersonal relationships. **Conclusion:** the way the individuals under scrutiny understood and assessed oral health self-perception seems to be influenced by factors such as educational level and socioeconomic conditions. Aspects like appearance, mastication, and phonetics did not negatively affect individuals. On the other hand, data concerning interpersonal relationships and oral health were conclusive and showed the unfavorable behavior of the sample regarding social relations.

Keywords: Geriatric dentistry; Self-image; Oral Health.

Introduction

The influence of self-perception in oral health shows that the dental surgeon must not only know the clinical conditions of the patient, but also extrapolate such limits and seek for references in the relationship between oral health conditions and their impact in the individual's quality of life, for a better understanding of patient reality.¹

Among the factors that may directly interfere with health self-perception, we highlight social and psychological aspects. As for clinical aspects of oral health, these are considered to have less influence, especially from the socio-economic point of view.²

Oral health is part of overall health and is closely related to quality of life. This is noticeable through changes reported by individuals after a proper oral rehabilitation treatment. Proactivity, self-esteem, and communicational abilities – these are the conquests they report, inducing them to a reflection about health self-care to improve satisfaction, comfort, and well-being.^{3,4}

Poor eating habits lead to the intake of cariogenic foods and, when associated with lack of access to dental care, constitute a problem that can bring caries and periodontal diseases, having a direct impact in the individual's oral health.^{4,5}

People used to believe that dental loss was a natural consequence of age, making the individuals to neglect their oral care and leading over the years to a gradual replacement of natural teeth for prosthesis.^{6,7} A large part of the population accepted de oral disease as inevitable due to the fact they belonged to a period in which these issues were solved with extractions, regardless of the existence of other possible treatments.⁵

Edentulism is the total or partial loss of teeth, bringing several consequences to individuals, such as functional disorders, deficiency in chewing, swallowing, and speaking, in addition to stomatognathic system disorders that may cause anemia and digestive problems. Moreover, it affects the aesthetics of the patient, causing loss of self-confidence and appearance concerns.⁸

Understanding and identifying conditions, added to the self-perception in oral health, favorably contribute to the planning and implementation of actions and programs to prevent the onset of oral diseases. Despite the recognized importance of oral health, a major portion of the Brazilian population does not use the dental services provided. Even so, access to dental services must be broadened in all age groups, especially in adults, since promoting a healthy aging is paramount due to the ever-increasing population aging in Brazil.⁹

Expressing their own self-perception of health enables individual autonomy and, when associated with anamnesis, it becomes another tool in clinical practices to recognize oral health needs.¹⁰

Thus, the evaluation of such aspects as appearance, mastication, and phonetics becomes essential for the patients to understand their influence on the quality of life. This study aims to evaluate the self-perception of oral health in adult and geriatric patients, with total or partial edentulism, treated in the Clinic of the School of Dentistry of the University Center CESMAC.

Material and Methods

This is an observational cross-sectional analytical study that evaluated 102 patients treated in the disciplines involving attendance in the Clinic School of the University Center

CESMAC.

As sample for this study, we considered patients over the age of 18, of both genders, partially or totally edentulous, and were automatically excluded individuals with dental loss for orthodontic indication, third molars extracted for clinical indications, and patients with oral diseases that limited the exams required for data analysis.

Patients were initially examined to diagnose the level of edentulism. To this end, the prosthetic need index was used. Such index helped understanding edentulism aggravation and, at the same time, served to estimate the severity of this issue in the sample. Therefore, the criterion established in the Project SB Brazil 2010 – National Research of Oral Health was used.¹¹ Data were recorded in an individual clinical file during the examination of each patient.

For the collection of data on socio-economic characterization, we opted for the application of a questionnaire through face-to-face interview with the patient, held after signing the Informed Consent Form (ICF), followed by data collection on oral health self-perception, in accordance with the protocol established by Pereira (2008).¹²

In this phase of the research, issues regarding how the respondent classifies certain aspects of his/her oral health (conditions of teeth and gums, mastication, phonetics, oral pain, and dental aesthetics) were discussed. This study was previously approved by the Ethics Committee in Research with Human Beings (CEP - Brazil Platform) under the CAEE number: 31721114.0.0000.0039.

Results were expressed by percentages and statistic measures: mean, median, and standard deviation. To verify the hypothesis of a significant association among categorial variables, Pearson's Chi-square test was used, or Fisher's Exact test when the Chi-square test was not possible. In the decision of statistical tests, the margin of error was 5%. The software used for computing statistical data was the SPSS (Statistical Package for Social Sciences), version 21.

Results

Individuals analyzed were aged from 18 to 78 years, with a mean age of 48.01 years, standard deviation 12.92, and median of 47.50 years. Table 1 shows the data concerning the sample's socioeconomic characterization. 69.6% (n=71) of the individuals were women, with a predominance of individuals aged from 40 to 59 years, representing 54.9% (n=56).

Educational level of the respondents showed that 46.1% (n=47) of them had attended the school for a period of up to 8 years, and 53.9% (n=55) attended school for over 9 years. As for housing situations, 72.5% (n=74) lived in their own houses and 17.6% (n=18) in rented homes.

Table 1. Respondents distribution according to socio-demographic data

Variable	N	%
TOTAL	102	100.0
• Age group (in years)		
18 to 39	29	28.4
40 to 59	56	54.9
60 or more	17	16.7
• Gender		
Male	31	30.4
Female	71	69.6
• Years of study		
Up to 8	47	46.1
9 or more	55	53.9
• Number of people in the family		
One or two	35	34.3
Three or four	50	49.0
5 to 7	17	16.7
• Type of housing		
Own	74	72.5
Own in acquisition	3	2.9
Rented	18	17.6
Subsidized	6	5.9
Others	1	1.0
• Household income (minimum wages)		
Up to 1	24	23.5
More than 1 to 3	48	47.1
More than 3	25	24.5
Absent in the system	5	4.9

Source: Research data

Family income was defined in accordance with the minimum wage, and data showed that 23.5% (n=24) received up to 1 minimum wage of monthly income, 47.1% (n=48) received between 1 and 3 minimum wages, 24.5% (n=25) had a monthly income greater than 3 wages, and 4.9% (n=5) were outside the system because they had no income or earnings.

Table 2 shows the results for edentulism severity from the indexes adopted by the Ministry of Health¹¹. When the prosthesis use index was applied, we detected that 52.9% (n=54) of the individuals investigated did not have any kind of dental prosthesis in the upper arch even though 91.8% (n=93) needed it, whereas 81.4% (n=84) did not use lower prosthesis although 78.4% (n=80) needed some kind of prosthesis in the lower arch.

Table 2. Participants distribution according to their use of prosthesis and need for upper and lower prosthesis

Variable	N	%
TOTAL	102	100.0
• Use of upper prosthesis		
Does not use prosthesis	54	52.9
Uses a fixed prosthesis	8	7.8
Uses more than one fixed bridge	2	2.0
Uses removable partial prosthesis	27	26.5
Uses one or more fixed bridges or removable partial prosthesis	1	1.0
Uses total dental prosthesis	10	9.8
• Need for upper prosthesis		
Does not require dental prosthesis in the upper arch	9	8.8
Requires a fixed or removable prosthesis for replacing one element	13	12.7
Requires a fixed or removable prosthesis for replacing more than one element	26	25.5
Requires a combination of prosthesis, fixed and/or removable, for replacing more than one element	33	32.4
Requires total dental prosthesis	21	20.6
• Use of lower prosthesis		
Does not use prosthesis	83	81.4
Uses a fixed prosthesis	2	2.0
Uses more than one fixed bridge	-	-
Uses removable partial prosthesis	14	13.7
Uses one or more fixed bridges or removable partial prosthesis	1	1.0
Uses total dental prosthesis	2	2.0
• Need for lower prosthesis		
Does not require dental prosthesis in the lower arch	22	21.6
Requires a fixed or removable prosthesis for replacing one element	7	6.9
Requires a fixed or removable prosthesis for replacing more than one element	33	32.4
Requires a combination of prosthesis, fixed and/or removable, for replacing more than one element	32	31.4
Requires total dental prosthesis	8	7.8

Source: Research data

Still on Table 2, data concerning total edentulism in the research revealed that 9.8% (n=10) of the patients used complete denture in the upper arch and 20.6% (n=21) were total edentulous cases that required a total prosthesis at this arch. As for the total edentulous lower arch, 2.0% (n=2) used a complete mandible denture and 7.8% (n=8) needed such prosthesis.

Table 3 presents data on access to dental services, such as the fact that 98% (n=100) of the individuals on the research

had already gone to the dentist at least once in a lifetime, and 94.1% (n=96) had a dentistry consultation less than a year before. Most individuals have attended a public dental service (36.3%, n=37), 34.3% (n=35) used supplementary private services (dental plans and agreements), 18.3% (n=19) attended private services, and 5.9% (n=6) received dental treatment through philanthropy.

Table 3. Data related to the access to dental services

Study variables	N	%
TOTAL	102	100.0
• Have you ever been to a dentist		
Yes	100	98.0
No	2	2.0
• How long since you have been to the dentist		
Never been to the dentist	2	2.0
Less than 1 year	96	94.1
From 1 to 2 years	4	3.9
• Where have you been to the dentist		
Never been to the dentist	2	2.0
Public service	37	36.3
Liberal service	19	18.3
Private supplementary service (plans and agreements)	35	34.3
Philanthropic service	6	5.9
Others	3	2.9
• Reasons for going to the dentist		
Never been to the dentist	2	2.0
Routine consultation/repairs/maintenance	35	34.3
Pain	44	43.1
Gingival bleeding	6	5.9
Cavities in the teeth	6	5.9
Sore, lump, or patches in the mouth	1	1.0
Others	8	7.8
• How do you evaluate the treatment		
Never been to the dentist	2	2.0
Terrible	8	7.8
Poor	2	2.0
Regular	26	25.5
Good	51	50.0
Great	13	12.7
• Received information on how to prevent oral problems		
Yes	42	41.2
No	60	58.8
• Do you consider you are currently requiring treatment		
Yes	98	96.1
No	4	3.9

Source: Research data

When asked about the reasons that led them to the dentist, the sample population mentioned routine consultations for repairs and/or maintenance (34.3%, n=35), pain (43.1%, n=44), gingival bleeding (5.9%, n=6), cavities in the teeth (5.9%, n=6), sores or patches on the mouth (1.0%, n=1), and other causes (7.8%, n=8). On the evaluation of dental treatment, 7.8% (n=8) of the patients reported the treatment as terrible, 2.0% (n=2) as poor, 25.5% (n=26) as regular, 50% (n=51) considered it to be good, and 12.7% (n=13) classified it as great.

Data on oral health self-perception were grouped in Table 4. In this phase of the research, we collected data related to self-evaluation factors for oral health conditions, as: own oral health classification, appearance of teeth and gums, mastication, phonetics, interpersonal relations, and pain.

Table 4. Variables related to health self-perception of the individuals studied

Study variables	N	%
TOTAL	102	100.0
• How would you rate your oral health		
Does not know/not reported	3	2.9
Terrible	7	6.9
Poor	9	8.8
Regular	28	27.5
Good	47	46.1
Great	8	7.8
• How would you rate the appearance of your teeth and gums		
Does not know/not reported	1	1.0
Terrible	9	8.8
Poor	18	17.6
Regular	28	27.5
Good	38	37.3
Great	8	7.8
• How would you rate your mastication		
Does not know/not reported	2	2.0
Terrible	19	18.6
Poor	24	23.5
Regular	26	25.5
Good	23	22.5
Great	8	7.8
• How would you rate your speech due to teeth and gums		
Does not know/not reported	5	4.9

Terrible	8	7.8
Poor	9	8.8
Regular	30	29.4
Good	34	33.3
Great	16	15.7
• How does your oral health affect your relationship with other people		
Does not know/not reported	9	8.8
Terrible	46	45.1
Poor	10	9.8
Regular	18	17.6
Good	19	18.6
• How much pain your teeth and gums caused you in the last three months		
None	70	68.6
Little pain	10	9.8
Average pain	14	13.7
Much pain	8	7.8

Source: Research data

These results show that 46.1% (n=47) of the individuals considered their oral health as good, 27.5% (n=28) as regular, 8.8% (n=9) poor, 7.8% (n=8) great, 6.9% (n=7) as terrible, and 2.9% (n=3) did not know how to evaluate themselves in this regard. Concerning dental appearance, 17.6% (n=18) of the respondents considered it to be poor, 27.5% (n=28) said it was regular, 37.3% (n=38) believe their dental health is good, and only 7.8% (n=8) considered it great. For mastication classification, 23.5% (n=24) reported bad chewing, 25.5% (n=26) considered it to be regular, and 22.5% (n=23) said their mastication was good.

Data analysis pertaining speech classification and its relationship with teeth and gums showed that 29.4% (n=30) considered it regular, 33.3% (n=34) good, and 15.7% (n=16) reported it as great. When we questioned them on the effect their oral health has on their relationship with other people, 45% (n=46) stated that its effect was terrible, 17.6% (n=18) classified it as regular, and 18.6% (n=19) as good.

Table 5 shows the cross-check of data related to oral health and age group, showing that for individuals with 18 to 39 years of age the regular conditions had the highest percentage (35.7%, n=10), whereas 16.7% (n=9) of the individuals from 40 to 59 years old reported a terrible condition and most individuals over 60 years of age reported a good/great oral health (52.9%, n=9).

Table 5. Evaluation of oral health according to socio-demographic data

Variable	Classification of oral health						TOTAL		p-value
	Poor/Bad		Regular		Good/Great		n	%	
	N	%	n	%	n	%			
Total Group	16	16.2	28	28.3	55	55.6	99	100.0	
• Age group (in years)									
18 to 39	5	17.9	10	35.7	13	48.4	28	100.0	p(1) = 0.626
40 to 59	9	16.7	12	22.2	33	61.1	54	100.0	
60 or more	2	11.8	6	35.3	9	52.9	17	100.0	
• Gender									
Male	5	16.7	9	30.0	16	53.3	30	100.0	p(2) = 0.956
Female	11	15.9	19	27.5	39	56.5	69	100.0	
• Years of study									
Up to 8	6	13.3	10	22.2	29	64.4	45	100.0	p(2) = 0.265
9 or more	10	18.5	18	33.3	26	48.1	54	100.0	

(1): Fisher's exact test

(2): Pearson's Chi-square test

Source: Research data

When gender and oral health classification were compared, 16.7% (n=5) of the men considered their oral health as poor/terrible, whereas 15.9% (n=11) of the women had the same opinion. 30% (n=9) of men and 27.5% (n=19) of women classified themselves as regular, and 53.3% (n=16) of the women and 56.5% (n=39) of the men considered their oral health as good/great.

In this same perspective, the cross-examination of years of study and oral health showed that 64.4% (n=29) of the individuals who attended school for up to eight years classified their oral health as good/great, 22.2% (n=10) as regular, and only 13.3% (n=6) as terrible/poor.

Discussion

According to Hernández-Palacios *et al.*,¹³ in a study conducted with 150 older adults, individuals with low income and low educational levels first satisfy their basic needs such as feeding, clothing, and transportation, before worrying about oral health. Thus, edentulism can be associated with many factors, especially socioeconomic and educational ones.¹⁴

It is possible to observe from the socioeconomic data of this study, presented in Table 1, that most of the sample (53.9%) had around 9 years of schooling, data which is consistent with the study on edentulism by Hamdan & Fahmy,¹⁴ where 44.1% of the individuals under study had little or no schooling. Still on Table 1, although most individuals in the research receives a mean of 1 to 3 minimum wages per month, 4.9% were outside the system because they had no income, similarly to the findings of Campos *et al.*,¹⁵ which presented a percentage of 66.1% of individuals with mini-

imum monthly income.

The analysis of the sample regarding the need for prosthesis, with peculiar percentage references (Table 2), showed that 91.8% of the individuals in the sample needed some kind of prosthesis in the upper arch and 78.4% in the lower arch, values greater than those of Klotz *et al.*¹⁶ where, in a population of 169 individuals, 59% presented edentulous features in at least one of the arcades.

Although in this study the data concerning dental services revealed that 98% of the participants had access to treatment less than one year before the research and only 2% had never been to the dentist (Table 3), it is possible to affirm that, in a way, the type of treatment provided during their life history was not therapeutically effective since it did not avoid the teeth loss neither properly controlled it, especially if we consider that Probst *et al.*¹⁷ determines that restrictions to the access and use of dental services are one of the main causes for severe edentulism.

Still bearing this in mind, analyses on the type of dental service in this study had similar results to those of Hernández-Palacios *et al.*,¹³ Oliveira *et al.*¹⁸ and Mestriner,¹⁹ where most of the interviewees used public dental care due to their low socioeconomic levels. In this respect, it is noteworthy that the access to private services can be an effective alternative when some obstacles are considered, such as the long waiting time for the procedures in certain public services, which leave no alternative other than dental extraction due to the extent of the disease.

As for the reasons for consultation with the dentist, our results show that the main causes for using dental services are related to treatment for gingival bleeding, caries, and

pain (Table 3). In other words, they seek a dentist when the problem is already installed rather than for routine consultations for oral health control and prevention. Such fact reflects unfavorably the need for going to the dentist, greatly linking this medical appointment to a negative self-perception of oral health.

According to Oliveira *et al.*¹⁸ and Campos *et al.*²⁰ the information conveyed affect behavior and lead to the adoption of healthy habits, and the greater the information, the more positive will be the search for health care. However, most individuals reported to have not been informed on how to prevent oral care, or perhaps they do not have a clear understanding about causes and consequences due to educational limitations (Table 3).

Despite this reality, in dimensions related to self-perception of oral health (Table 4) a representative percentage of individuals reported to have a good oral health (46.1%) and good/great teeth appearance (45.1%), results that can also be observed in the findings of Haikal *et al.*,²¹ in which the study population did not mention any discomfort or aesthetical inconvenience. This data can be justified by the non-perception of functional limitations, which seems to be crucial for self-perception, although there is some understanding on the real situation of oral health. Especially considering that, when questioned about mastication, most participants consistently reported regular (25.5%), good (22.5%), and great (7.8%) performance.

With regard to the relationship with other people, the data demonstrated that oral health has a great impact in the life of edentulous patients since it negatively influences social conviviality and self-esteem. The importance of the prosthesis should be highlighted (45.1%) since, according to Soares *et al.*,⁶ it represents for these individuals not only a

dental/oral function, but also their decisive reintegration to their communities.

Even though 52.9% of the individuals in the sample do not use maxillary prosthesis, 91.2% of them need some kind of prosthesis in the lower arch, which features a high level of dental loss. Oral health self-perception reports, which most of these individuals classified as good or great, are contradictory with these numbers, something that can probably be explained by the low educational level of the study participants, as expressed in Table 5.

From the analysis of Table 5, we can affirm that when edentulism occurs at an age apparently considered unusual the impact may be greater and lead to a negative self-perception of oral health, because the thought of living with dental loss for life affected more significantly the younger individuals in the sample, fact which is consistent with the findings of Tyrovolar *et al.*²²

Conclusion

Oral health self-perception seems to be influenced by factors such as educational level and socioeconomic conditions. Although the prosthesis need indexes are considerably high, showing the high levels of all stages of edentulism for the individuals evaluated, aspects like appearance, mastication, and phonetics did not negatively affected the patients. On the other hand, data regarding interpersonal relationship were clear and proved to adversely influence social behavior of the sample. It is also possible to affirm that, for younger adults, the perspective of edentulism is more critical and decisively hinders their oral health references, whereas older adults erroneously consider this to be a consequence of aging and are not affected by it in their oral self-perception.

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Mini Curriculum and Author's Contribution

1. Vanessa Pereira Gonçalves de Souza – graduate student. Contribution: data collection, bibliographic research, article writing.

2. Mikaelly Veiga de Assis – graduate student: data collection, bibliographic research, article writing.

3. Laura Freire de Carvalho – graduate student. Contribution: data collection, bibliographic research, article writing.

4. Jéssica Rayane Oliveira Melo – graduate student. Contribution: data collection, bibliographic research, article writing.

5. Flávio Augusto Aquino Carvalho – DDS and MSc. Contribution: project coordination and preparation, calibration, registration in the Brazil Platform and Ethics Committee procedures, data analysis, and article writing.

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