Oral health-related quality of life in older adults: a cross-sectional study

Qualidade de vida relacionada à saúde bucal em idosos: um estudo transversal

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ABSTRACT

OBJECTIVE: This study evaluated oral health-related quality of life (OHRQoL) and associated factors in 282 older adults (≥ 60 years) from Veranópolis/RS.

METHODS: Clinical examination and a structured questionnaire were applied. Dependent variable was OHRQoL, measured by OHIP-14 instrument. Sample was divided into two groups: low impact (those that answered never or rarely in all questions) and high impact (those that answered sometimes, repeatedly or always in at least one question). Associations were assessed by Poisson regression with robust variance.

RESULTS: Mean OHIP-14 was 3.76±6.22. Retired individuals maintaining or not work activity had 27.6% (p=0.036) and 38.5% (p=0.026), respectively, lower prevalence ratio (PR) for greater impact when compared to non-retired individuals. Those without halitosis had 27% (p=0.014) lower PR for greater impact on OHRQoL when compared to those with halitosis. Higher number of teeth present was associated with lower PR of being in the group with high impact on OHRQoL (p=0.009).

CONCLUSIONS: Presence of higher number of teeth, absence of self-reported halitosis and retirement, with or without work activity, were factors associated with lower impact on OHRQoL.

KEYWORDS: Cross-sectional studies. Oral health. Quality of life.

RESUMO

OBJETIVO: Esse estudo avaliou a qualidade de vida relacionada à saúde bucal (QVRSB) e fatores associados em 282 idosos (≥60 anos) de Veranópolis/RS.

MÉTODOS: Exame clínico e um questionário estruturado foram aplicados. A variável dependente foi QVRSB, mensurada pelo instrumento OHIP-14. A amostra foi dividida em dois grupos: baixo impacto (aqueles que responderam nunca ou raramente em todas as questões) e alto impacto (aqueles que responderam às vezes, repetidamente ou sempre em pelo menos uma questão). Associações foram realizadas por meio da regressão de Poisson com variância robusta.

RESULTADOS: Média de OHIP-14 foi de 3,76±6,22. Indivíduos aposentados que mantiveram ou não atividade laboral apresentaram 27,6% (p=0,036) e 38,5% (p=0,026), respectivamente, menor razão de prevalência (RP) para maior impacto quando comparados com indivíduos não aposentados. Aqueles sem halitose apresentaram 27% (p=0,014) menor RP para alto impacto na QVRSB quando comparados com aqueles com halitose. Maior número de dentes presentes foi associado com menor RP de pertencer ao grupo com maior impacto na QVRSB (p=0,009).

CONCLUSÕES: Presença de maior número de dentes, ausência de halitose autorreportada e aposentadoria, com ou sem atividade laboral, foram associados com menor impacto na QVRSB.

PALAVRAS-CHAVE: Estudos transversais. Saúde bucal. Qualidade de vida.

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INTRODUCTION

Physiological alterations are inherent to the aging process and may change functionality of the organism for both general and oral health (RIVERA; DROGUETT; ARENAS-MÁRQUEZ, 2017). Oral health conditions represent a serious public health issue and the worst conditions can affect general health and, consequently, the individual quality of life (PETERSEN; OGAWA, 2018). This is particularly important for the older adults population, which suffers more from cumulative effects of several oral diseases, resulting in tooth loss and edentulism (ROBERTO et al., 2019).

The concept of oral health-related quality of life (OHRQoL) is considered an integral part of general health and well-being and can be associated with the way oral diseases influence the normal functioning of the individual (RODAKOWSKA et al., 2014). Unfortunately, the available data demonstrate poor oral health condition for Brazilian older adults, showing a high prevalence of caries and edentulism (PERES et al., 2013), a moderate prevalence of periodontal disease (GIL-MONTOYA et al., 2015) and high percentage of need for oral rehabilitation (AZEVEDO et al., 2017; ROSALEN et al., 2021).

However, the literature reports that these conditions presented a low impact on the OHRQoL of older adults (LEÃO et al., 2018). This is mainly due to the potential adaptability and resilience that older adults develop. In this sense, despite the limitations of oral health, they report good levels of well-being. Most older adults individuals tend not to worry about their oral health problems when they become chronic (MASOOD et al., 2017), even when adequate oral rehabilitation is absent.

Despite the low impact on OHRQoL observed in the literature, there is important information that studies on OHRQoL can provide, especially for this age group. Therefore, this study aimed to assess the OHRQoL and associated factors among older adults in a southern city of Brazil. The null hypothesis of this study is that there are no statistically significant differences in OHRQoL regarding demographic, socioeconomic and dental variables in older adults.

METHODS

STUDY DESIGN AND LOCATION

The present observational cross-sectional study interviewed and examined individuals aged 60 or more in both urban and rural areas of Veranópolis. The city is located in the northeast of the state of Rio Grande do Sul, Brazil, about 160 km from the capital, Porto Alegre. The city has a population of approximately 22,810 inhabitants (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2011).

Of these, 3,554 are in the age group of 60 years or more, with 42.91% male and 57.09% female. Overall, 87% of the population lives in urban areas. The Municipal Human Development Index, in 2010, was 0.75 (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2018). The Gross Domestic Product per capita was R$ 41,184.25 (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2011), and the Gini Index, in 2010, was 0.4836 (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2010). Life expectancy at birth was 75.24 years, and illiteracy rate of people aged ≥15 was 2.82% (RIO GRANDE DO SUL, 2020).

SAMPLE SIZE

The determination of sample size was based on the observation of 20% on impact prevalence of OHIP-14 (MARTINS *et al.*, 2014). Taking into account the size of the target population, a level of significance of 95%, 80% of power and an attrition rate of, approximately, 15%, the sample number of 266 individuals was reached.

A probabilistic per cluster sampling was conducted in order to interview and examine older adults, respecting the proportionality in both urban and rural areas. Based on the map of the urban area, all blocks were numbered. A total of 82 blocks (20% of the total blocks) in the urban area were randomly selected to participate, using the website www.random.org. In each block drawn, three households were visited with at least one older adult resident. In addition, corners of each block was randomly selected to determine the starting point of the first interview. After the first interview, visits continued in a clockwise manner until the completion of the planned work. New blocks were drawn to include the number of households required.

A total of three rural communities were involved in the study, randomly selected among all rural communities of the city. Within each community, 12 households were visited with at least one older adult resident. The households in rural area involved are located in central nucleus of the community as well as along roads to access the community. The rural areas were: Monte Bérico, Lajeadinho and Nossa Senhora da Saúde.

INCLUSION AND EXCLUSION CRITERIA

Participants that answered all questions and allowed the clinical oral examinations were included in the present study. They had be to aged 60 years or over and living in the selected households. If during the initial contact, the researcher observed that the individual could not participate, or if a caregiver informed that the individual was not able to participate, volunteer was excluded from the study.

In each household, if more than one resident meet the eligibility criteria, all of them were invited to participate. Residential buildings included only one apartment in the study. In case of absence on the day of data collection, a new visit was scheduled for data collection. People who were visiting at the residence, Long Term Care Institution, commercial and uninhabited households were excluded from the study.

CLINICAL EXAMINATION AND INTERVIEW

A structured questionnaire was applied, which included sociodemographic, behavioral, medical and dental history data, obtained through the use of question blocks from PCATool-Brasil instrument (BRASIL, 2010). The instrument used to assess Temporomandibular Dysfunction (TMD) was the Fonseca Anamnesis Index (FONSECA *et al.*, 1994). Halitosis was assessed by the question: Do you have bad breath?, answered through Likert-type answer options: never, rarely, sometimes, repeatedly and always. OHRQoL was assessed using the validated Brazilian version of Oral Health Impact Profile-14 (OHIP-14) instrument (OLIVEIRA; NADANOVSKY, 2005). Oral health was assessed by counting teeth and verifying the use of and need for rehabilitation with dental prosthesis, according to the criteria of the World Health Organization (WHO) (2013). Clinical examinations were performed using wooden spatulas, without the use of artificial lighting. Teeth counting was performed excluding the third molars.

Individuals were examined and interviewed between December 2018 and January 2019, by two teams composed of an interviewer and an oral health examiner who were previously calibrated to ensure the data uniformity. Training consisted of theoretical lectures, discussion of all questions in the questionnaire, as well as explanations about oral health exams.

Before the study, training was conducted with the application of the questionnaire and oral health exam in older adults patients undergoing treatment in the clinics of the Faculty of Dentistry of University of Passo Fundo. Intra-examiner and inter-examiner reproducibility of the clinical examination was verified in 5% of individuals examined, 14 days after the initial examination, chosen randomly.

Kappa coefficient for intra-examiner and inter-examiner tooth loss were 0.89. Kappa coefficients for use of dental prosthesis were 1.00 and 0.935, respectively, for intra-examiner and inter-examiner. Kappa coefficient for need for dental prosthesis was 1.00 both intra- and inter-examiner.

STATISTICAL ANALYSIS

Dependent variable in the present study was OHRQoL, using OHIP-14 instrument. In the present study, sample was divided into two groups: one with those who answered never or rarely in all questions, which was categorized as low impact; and another group, with those who answered sometimes, repeatedly or always in at least one question, which was categorized as high impact.

Independent variables included: age, gender, skin color/ethnicity, level of education, retirement, living area, marital status, health problem, use of medication, smoking exposure, alcohol exposure, access to the dentist in the last 12 months, toothbrush frequency, use of dental floss, self-reported halitosis, use of dental prosthesis, need for dental prosthesis, number of teeth present and self-reported symptoms of TMD.

Ethnicity/skin color was categorized as white or non-white. The non-white group included individuals who referred themselves as black, yellow, brown or indigenous. Level of education was categorized as low, which includes individuals with up to complete elementary school, including illiterates; medium, for those with incomplete or complete high school; and high, for the individuals with incomplete or complete higher education.

Retirement was categorized into three groups: non-retired, retired and retired individuals who continue with some work activity. Marital status was categorized into two groups: married and non-married individuals. The non-married group included: widowed, single or divorced.

Health problem was categorized into two groups: one with individuals who reported not having a health problem; and another group with individuals who reported having at least one health problem. Use of medication was categorized into two groups: individuals who reported using one or more medications and another who reported not using it.

Toothbrushing frequency was categorized as <twice a day and ≥twice a day. Self-reported halitosis was categorized as yes, for those who answered sometimes, repeatedly and always, and no, for those who answered never and rarely. Use of dental prosthesis was categorized as yes, for users of any dental prostheses in at least one arch, and no, for those who did not use of any type of dental prosthesis.

Need for dental prosthesis was categorized as yes, for individuals who need some type of dental prosthesis in at least one arch, and no, for individuals without any need for dental prosthesis. Symptoms of TMD was categorized into three groups: without TMD symptoms, mild symptoms and moderate/severe symptoms of TMD.

Data analysis was performed using the software SPSS 21 statistical package (SPSSInc., Chicago, United States). Associations between dependent and independent variables were assessed using chi-square or Mann-Whitney tests, presented through the distribution of frequencies with a 5% level of significance. Uni- and multivariate analyses were performed, using Poisson regression with robust variance in order to verify the association between dependent and independent variables.

Only those variables that presented $p < 0.20$ in the univariate analysis were included in the multivariate model. Maintenance of independent variables in the final model was determined by a combination of $p < 0.05$ and analysis of effect changes.

Multicollinearity analyses between the independent variables were performed, but none was observed. This study was approved by the Ethics Committee of the University of Passo Fundo, under the protocol number 2,990,088. All the individuals read and signed the informed consent before participating in the study (approved in October 30th, 2018).

RESULTS

A total of 282 individuals were interviewed and examined, 244 (86.5%) in urban and 38 (13.5%) in rural areas, 81 (28.7%) were male and 201 (71.3%) female, as described in Figure 1. The mean age of individuals was 71.42 years (SD ±7.89). Regarding skin color/ethnicity, 252 (89.4%) were white. Overall, 208 (79.8%) presented low education, of which 17 (6%) declared themselves illiterate. Around 53% of the older adults were married, while approximately 47% were divided between single, divorced or widowed. Health problem was observed in 248 individuals (87.9%).

When considering the whole sample, mean of OHIP-14 was 3.75±6.22. When considering both group with low and high impact on OHRQoL, a statistically significant association was observed with level of education (p=0.011), retirement (p=0.025), use of dental floss (p=0.011), tooth loss (p=0.006) and presence of self-reported TMD symptoms (p<0.001) (Table 1).

Figure 1 – Flowchart of the participants in the study
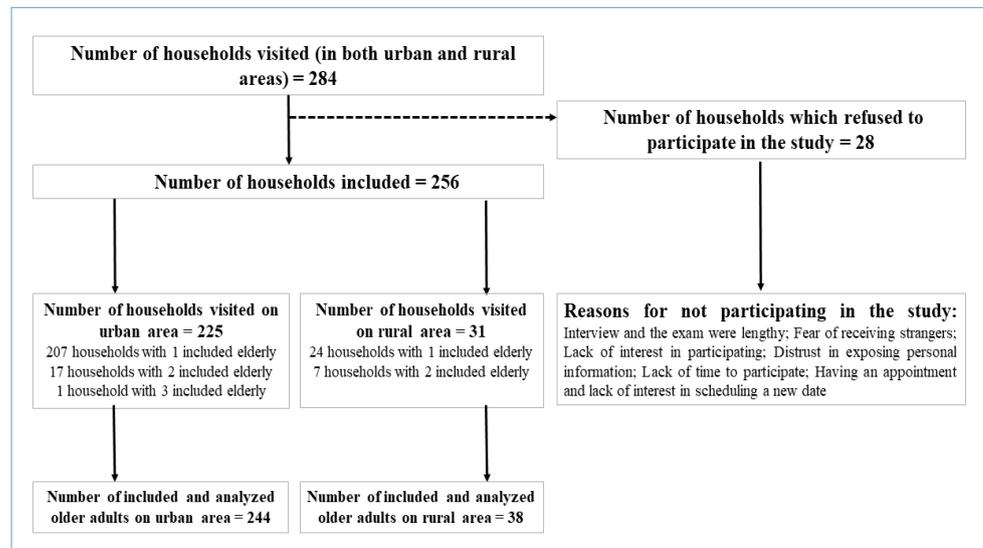
Source: Own authorship.

Table 1 – Association between quality of life related to oral health and demographic, socioeconomic, behavioral, biological and oral factors in the elderly, Veranópolis, 2019

(to be continued)

Variables	Whole-sample n=282 (100%)	Low impact n=155 (55%)	High impact n=127 (45%)	p-value
OHIP-14				
Mean±SD	3.76±6.22	0.23±0.53	8.06±7.20	<0.001#
Age				
Mean±SD	71.42±7.90	71.14±7.48	71.76±8.40	0.712#
Sex				
Male	81 (28.7)	48 (31.0)	33 (26.0)	
Female	201 (71.3)	107 (69.0)	94 (74.0)	0.357*
Skin color/ethnicity				
White	252 (89.4)	142 (91.6)	110 (86.6)	0.176*
Non-white	30 (10.6)	13 (8.4)	17 (13.4)	
Level of education				
Low	225 (79.8)	113 (72.9)	112 (88.2)	
Medium	35 (12.4)	25 (16.1)	10 (7.9)	0.006*
High	22 (7.8)	17 (11.0)	5 (3.9)	

Table 1 – Association between quality of life related to oral health and demographic, socioeconomic, behavioral, biological and oral factors in the elderly, Veranópolis, 2019

(continuation)

Variables	Whole-sample n=282 (100%)	Low impact n=155 (55%)	High impact n=127 (45%)	p-value
Retirement				
Non-retired	33 (11.7)	12 (7.7)	21 (16.5)	
Retired	183 (64.9)	100 (64.5)	83 (65.4)	0.025
Retired and working	66 (23.4)	43 (27.7)	23 (18.1)	
Living area				
Urban	244 (86.5)	135 (87.1)	109 (85.8)	
Rural	38 (13.5)	20 (12.9)	18 (14.2)	0.756*
Marital status				
Married	150 (53.2)	86 (55.5)	64 (50.4)	0.394*
Non-married	132 (46.8)	69 (44.5)	63 (49.6)	
Health problem				
Yes	248 (87.9)	135 (87.1)	113 (89.0)	0.630*
No	34 (12.1)	20 (12.9)	14 (11.0)	
Use of medication				
Yes	245 (86.9)	135 (87.1)	110 (86.6)	0.905*
No	37 (13.1)	20 (12.9)	17 (13.4)	
Smoking exposure				
Smokers	20 (7.1)	11 (7.1)	9 (7.1)	
Former-smokers	68 (24.1)	34 (21.9)	34 (26.8)	0.633*
Non-smokers	194 (68.8)	110 (71.0)	84 (66.1)	
Alcohol exposure				
Yes	156 (55.3)	83 (53.5)	73 (57.5)	
No	126 (44.7)	72 (46.5)	54 (42.5)	0.509*

Table 1 – Association between quality of life related to oral health and demographic, socioeconomic, behavioral, biological and oral factors in the elderly, Veranópolis, 2019

(conclusion)

Variables	Whole-sample	Low impact	High impact	p-value
	n=282 (100%)	n=155 (55%)	n=127 (45%)	
Access to the dentist				
Yes	131 (46.5)	71 (45.8)	60 (47.2)	
No	151 (53.5)	84 (54.2)	67 (52.8)	0.810*
Toothbrushing frequency				
<Twice a day	34 (12.1)	17 (11.0)	17 (13.4)	0.535*
≥Twice a day	248 (87.9)	138 (89.0)	110 (86.6)	
Use of dental floss				
Yes	79 (28.0)	53 (34.2)	26 (20.5)	
No	203 (72.0)	102 (65.8)	101 (79.5)	0.011*
Self-reported halitosis				
Yes	93 (33.0)	44 (28.4)	49 (38.6)	
No	189 (67.0)	111 (71.6)	78 (61.4)	0.070*
Use of dental prosthesis				
Yes	246 (87.2)	131 (84.5)	115 (90.6)	
No	36 (12.8)	24 (15.5)	12 (9.4)	0.131*
Need for dental prosthesis				
Yes	76 (27.0)	44 (28.4)	32 (25.2)	0.548*
No	206 (73.0)	111 (71.6)	95 (74.8)	
Number of present teeth				
Mean±SD	7.28±9.12	8.66±9.54	5.61±8.34	0.006#
Self-reported TMD				
No TMD	196 (69.5)	121 (78.1)	75 (59.1)	
Mild TMD	70 (24.8)	30 (19.4)	40 (31.5)	0.001*
Moderate/Severe TMD	16 (5.7)	4 (2.6)	12 (9.4)	

Source: Own authorship.
Note: *Chi-square; #Mann-Whitney.

Table 2 shows the univariate analysis for the association between OHRQoL and independent variables. Medium (prevalence ratio [PR] 0.574; 95% confidence interval [95%CI]: 0.334-0.985) and high (PR: 0.457; 95%CI: 0.209-0.998) level of education were significantly associated with lower impact on OHRQoL when compared with individuals with low education.

Retired individuals, keeping (PR: 0.548; 95%CI: 0.360-0.832) or not working (PR: 0.713; 95%CI: 0.526-0.965) activities, also showed a lower PR for being in the group with higher impact on OHRQoL when compared with non-retired individuals.

Non-users of dental floss presented a significantly higher PR of having a high impact on OHIP-14 when compared with users of dental floss (p=0.018). Higher number of teeth present was associated with lower PR of being in the group with high impact on OHRQoL (PR: 0.978; 95%CI: 0.961-0.995).

Table 2 – Univariate analysis for the association between oral health-related quality of life and independent variables, Veranópolis, 2019

(to be continued)

Variables	Prevalence Ratio (95% CI)	p-value
Age	1.005 (0.990-1.022)	0.502
Sex		
Male	Ref.	0.369
Female	1.148 (0.849-1.551)	
Skin color/ethnicity		
White	Ref.	
Non-white	1.298 (0.921-1.829)	0.136
Level of education		
Low	Ref.	
Medium	0.574 (0.334-0.985)	0.049
High	0.457 (0.209-0.998)	0.044
Retirement		
Non-retired	Ref.	
Retired	0.713 (0.526-0.965)	0.028
Retired and working	0.548 (0.360-0.832)	0.005

Table 2 – Univariate analysis for the association between oral health-related quality of life and independent variables, Veranópolis, 2019

(continuation)

Variables	Prevalence Ratio (95% CI)	p-value
Living area		
Urban	Ref.	0.752
Rural	1.060 (0.738-1.525)	
Marital status		
Married	Ref.	0.394
Non-married	1.119 (0.865-1.447)	
Health problem		
Yes	Ref.	
No	0.904 (0.591-1.381)	0.640
Use of medication		
Yes	Ref.	0.904
No	1.023 (0.703-1.490)	
Smoking exposure		
Smokers	Ref.	
Former-smokers	1.111 (0.648-1.906)	0.702
Non-smokers	0.962 (0.577-1.603)	0.882
Alcohol exposure		
Yes	Ref.	
No	0.916 (0.705-1.190)	0.511
Access to the dentist		
Yes	Ref.	0.810
No	0.969 (0.748-1.254)	
Toothbrushing frequency		
<Twice a day	Ref.	0.519
≥Twice a day	0.887 (0.617-1.276)	

Table 2 – Univariate analysis for the association between oral health-related quality of life and independent variables, Veranópolis, 2019

(conclusion)

Variables	Prevalence Ratio (95% CI)	p-value
Use of dental floss		
Yes	Ref.	0.018
No	1.512 (1.072-2.132)	
Self-reported halitosis		
Yes	Ref.	0.062
No	0.783 (0.606-1.013)	
Use of dental prosthesis		
Yes	Ref.	0.168
No	0.713 (0.441-1.153)	
Need for dental prosthesis		
Yes	Ref.	
No	1.095 (0.810-1.482)	0.555
Number of present teeth	0.978 (0.961-0.995)	0.006#
Self-reported TMD		
No TMD	Ref.	
Mild TMD	1.493 (1.140-1.956)	0.004
Moderate/Severe TMD	1.960 (1.403-2.738)	<0.001

Source: Own authorship.

In the final multivariate model, it remained associated with OHRQoL the following variables: retirement, self-reported halitosis and number of present teeth (Table 3). Retired or retired with work activity presented significantly lower PR for high impact on OHRQoL when compared to non-retirement. Retired and retired with some work activity individuals had, respectively, 27.6% (p=0.036) and 38.5% (p=0.026) lower PR for greater OHIP-14 impact.

Absence of self-reported halitosis was associated with lower PR for greater impact on OHRQoL when compared to older adults that reported halitosis.

Individuals who did not report halitosis had 27% (p=0.014) lower PR for a greater impact on OHRQoL. Similarly, number of present teeth was associated with lower PR for a greater impact on quality of life. For each increase in the number of teeth present, there is a decrease of 2.3% in the PR in belonging to the group with the greatest impact on OHRQoL (PR: 0.977; 95%CI: 0.960-0.994).

Table 3 – Multivariate analysis for the association between oral health-related quality of life and independent variables, Veranópolis, 2019

Variables	Prevalence Ratio (95% CI)	p-value
Retirement		
Non-retired	Ref.	
Retired	0.724 (0.536-0.980)	0.036
Retired and working	0.615 (0.400-0.943)	0.026
Self-reported halitosis		
Yes	Ref.	0.014
No	0.730 (0.567-0.939)	
Number of present teeth	0.977 (0.960-0.994)	0.009

Source: Own authorship.

DISCUSSION

The present study aimed to assess the OHRQoL among older adults in a southern city of Brazil. The results revealed that retirement with or without work activity, the absence of halitosis and higher presence of teeth were associated with lower impact on OHRQoL, thus rejecting the null hypothesis. Increased life expectancy and, consequently, the aging of population reinforce the need for epidemiological studies, including the oral health of older adults and their consequences in psychosocial aspects.

The city of Veranópolis was chosen because it is one of the pioneering cities in studies related to human aging in Brazil. It has been the target of several epidemiological studies in all areas of interest of Gerontology and Geriatrics over the past decades. For this reason, WHO granted the title of Friendly-City for the Aged (WORLD HEALTH ORGANIZATION, 2016).

The mean OHIP-14 in the present study was 3.76. These data demonstrate a low impact on the OHRQoL among the evaluated older adults.

This trend can also be observed in other studies conducted in two cities in the State of Rio Grande do Sul. In these studies, the OHIP-14 average was 5.3 (SANTOS *et al.*, 2015) and 5.92 (COLAÇO *et al.*, 2020). Low OHIP-14 average of older adults can also be seen in UK, where the average was 2.95 (MASOOD *et al.*, 2017) or in United States, where the average was 0.6 (KOHLI *et al.*, 2017). One study even report a slightly higher average of OHIP-14, 6.8 in Mexico (CASTREJÓN-PÉREZ *et al.*, 2017). In this sense, the results of the present study suggest that poor oral health, especially due to high rates of tooth loss, edentulism and the lack of oral rehabilitation, does not seem to affect OHRQoL of these individuals.

In the present study, retired older adults maintaining or not their work activities were associated with lower impact on OHRQoL. These results corroborate with a study that demonstrates that retirement was also associated with OHRQoL (SILVA E FARIAS *et al.*, 2020). The individuals who are still in a professional activity tend to be more concerned with issues related to appearance, for example. In this context, issues related to oral health tend to have a greater impact on these individuals. However, it should be noted that the association between occupation and OHRQoL needs to be better understood.

Similarly, tooth loss has impacted the OHRQoL. The maintenance of a greater number of teeth was associated with lower impact on OHRQoL. This is corroborated by studies that demonstrate that older adults with fewer teeth have greater impact on their quality of life (ANBARSERRI *et al.*, 2020; RIJT *et al.*, 2021).

This trend of severe tooth loss observed in Brazilian older adults can be explained, among other reasons, by the dental practice based on tooth extractions, which makes it natural to lose teeth during the aging process (DIAS *et al.*, 2019; SANTOS *et al.*, 2013). The findings of the present study revealed no significant association between the need for dental prosthesis and OHRQoL, although some studies have observed this association in the literature (CASTREJÓN-PÉREZ *et al.*, 2017; SOUZA; OLIVEIRA; MARTINS, 2017).

The presence of halitosis was also associated with greater impact on OHRQoL. Older adults who did not report halitosis had a 27% lower PR for greater impact when compared to those with halitosis. This result corroborates with a study that found worse OHRQoL in patients with halitosis and that this condition impact on functional and psychosocial well-being (LU *et al.*, 2017). It is noteworthy that halitosis can lead to difficulty in establishing social relationships with family and friends and, consequently, to a more restricted life (RENVERT *et al.*, 2020).

Level of education was not associated with greater impact on OHRQoL. However, literature shows that better educational level can be considered a protective factor for greater impact on OHRQoL (CASTREJÓN-PÉREZ *et al.*, 2017).

Similarly, gender was not associated with greater impact, which was also observed in other studies (KOHLI *et al.*, 2017; MASOOD *et al.*, 2017). However, one study demonstrated this association, with women generally having greater impact on OHRQoL (SANTOS *et al.*, 2015).

This study aimed to be representative of the socioeconomic strata in the city of Veranópolis, RS, Brazil. For this reason, a study with a probabilistic per cluster sampling was conducted. The proportion between the urban and rural population, between white and non-white individuals and the level of education, among older adults included in this study, were similar to that observed in the last national census for this city (INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA, 2011).

In addition, the examiners were trained and calibrated to data collection, which increases its internal validity. On the other hand, this study has some limitations that have to be highlighted. Its cross-sectional design, which does not allow to assess temporality for the associations between OHRQoL and independent variables. Additionally, this study has not clinically assessed the presence of dental caries or periodontal disease and evaluated the self-reported data for TMD. Despite the limitations, the study design allows generalization of data for comparisons with other home-based studies with a representative sample.

The results suggest that older adults showed great potential for adaptation, which may justify the low impact on OHIP-14. The resilience capacity can lead to a positive self-perception regarding OHRQoL, even taking into account the poor oral health conditions observed (MARTINS *et al.*, 2011). A study observed that oral health did not have a significant impact on health awareness (LEÃO *et al.*, 2018), showing the need to better inform this age group about the relevance of OHRQoL.

It is essential to educate older adults, through oral health education programs, so that they understand that old age is not a synonym for poor oral health. Therefore, older adults must be aware that improvement of oral health reflects directly in a better quality of life. Presence of a higher number of teeth, absence of self-reported halitosis and retirement, whether or not maintaining work activity, were associated with lower impact on OHRQoL.

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