


Self-perceived oral health in teachers with diabetes mellitus

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ABSTRACT

Objective: To analyze the association between self-perception of oral health in basic education teachers in the state of Minas Gerais with and without diabetes mellitus. **Methods:** An analytical cross-sectional study was conducted with secondary data from an epidemiological survey conducted in July 2020 (ProfSMoc - Minas Covid Stage), involving 1907 teachers from the state public school system of Minas Gerais. Socioeconomic and oral health variables were investigated. The collected data were tabulated using SPSS version 20.0 for Windows, and the Kolmogorov-Smirnov test was applied to evaluate the normality of the data. The chi-square test was used to analyze the associations. The level of significance adopted in the tests was 95%. **Results:** Among the 1907 patients analyzed, it was found that the patients' ages ranged from 21 to 72 years (mean age 44.37 years; median 44 years), 77.2% were female, 54.5% were white, and 6.2% had diabetes mellitus. A statistically significant association was observed between the variables self-perception of oral health and gender ($p = 0.007$), skin color ($p = 0.021$), family income ($p = 0.000$), and diabetes mellitus ($p = 0.001$). **Conclusion:** There is an association between the self-perception of oral health in basic education teachers of the state public school system of the state of Minas Gerais and the presence of diabetes mellitus.

Keywords: Diabetes mellitus, Oral health, Dentistry.

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INTRODUCTION

The concept of access to health has changed over the years. At first, it was observed according to geographical availability and financial capacity. However, socioeconomic, cultural, and educational aspects are currently employed. Thus, health demands should be verified in a multidisciplinary way in order to promote full access to this right for citizens (MARTINS et al., 2020).

Positive variations in quality of life, progress, and scientific and technological development, associated with a greater reach of health services, lead to improvements in the social conditions of the Brazilian population, contributing factors to the increase in life expectancy as well as a decrease in the birth rate, which leads to the growth of the elderly population generating an incidence of chronic diseases. Such modifications require absolute care concerning health on the part of professionals with an interdisciplinary emphasis (BORTOLOTTI et al., 2021).

In the list of the most frequent chronic diseases, Diabetes Mellitus (DM) exerts a relevant weight, given the difficulty in terms of prevention and therapy, since it requires effort and changes in habits that directly impact the individual's behavior and quality of life (BORTOLOTTI et al., 2021). In this sense, it is emphasized that the self-perception of diabetic patients about their pathology increases the search for health services, in addition to reinforcing their care with prevention and changing habits (MOURA et al., 2019).

DM is a disease characterized by high blood glyceic levels, which can lead to a decrease or deficiency in insulin secretion and, as a consequence, can affect general health, including the oral cavity. Among these manifestations, symptoms such as viscosity in the lingual region, xerostomia and candidiasis are observed. In addition, it is an agent of mortality and morbidity, with statistics that increase annually at an exponential level. Thus, the dental surgeon (DC) must have the knowledge to identify possible complications due to this condition (SOUTO et al., 2022).

According to the International Diabetes Federation, the prevalence of DM cases is approximately 8.8% of the world's population. Thus, it is important to observe the consequences on quality of life and public health in Brazil (BOELL et al., 2020). According to Barbosa and Guedes (2022), one of the most frequent manifestations of DM is hyperglycemia and there are some characteristic symptoms such as polydipsia (excessive thirst), polyuria (exacerbated urine volume), polyphagia (increased hunger) and reduced body weight. In addition, people with the disease have decreased immunity and are more susceptible to infections, some of which occur in the oral cavity. In addition, when hyperglycemia is not controlled, hypofunction of the salivary glands can be noted, which can lead to changes in the oral cavity, such as halitosis, periodontal diseases, caries, and tongue coating. Also, there is a prevalence of xerostomia among diabetic patients, ranging between 34% and 51% (THOMES et al., 2021).



In this context, the objective of the present study was to analyze the association between self-perception of oral health in basic education teachers in the state of Minas Gerais with and without diabetes mellitus.

METHODOLOGY

This retrospective cross-sectional study included the analysis of secondary data from 1907 basic education teachers in the state public school system of the state of Minas Gerais. This analysis is part of the ProfSMoc Project - Minas Covid Stage, which examined the health and working conditions of teachers in the state education system of Minas Gerais during the COVID-19 pandemic through an epidemiological survey (ProfSMoc Project). Due to the websurvey and to ensure the quality and interpretation of the results, this study followed the guidelines of the Checklist for Reporting Results of Internet E-Surveys (CHERRIES).

Data related to age, sex, skin color (self-declared), family income (in minimum wages), level of education, diagnosis of diabetes and self-perception of oral health were analyzed, which was collected through the question: how would you rate your oral health? (Answers: great, good, fair, bad, terrible).

The collected data were tabulated using the SPSS software (Statistical Package for the Social Sciences; Chicago; USA) version 20.0 for Windows and the Kolmogorov-Smirnov test was applied to evaluate the normality of the data. The chi-square test was used to analyze the associations, and the level of significance adopted in the tests was 95%.

RESULTS

DESCRIPTIVE ANALYTICS

Table 1 presents the descriptive data of the variables studied. Among the 1907 patients analyzed, the age of the patients ranged from 21 to 72 years (mean age 44.37 years; median 44 years), 77.2% were female, 54.5% were white and 6.2% had diabetes mellitus.

Table 1: Descriptive analysis of the variables studied.

VARIABLES EVALUATED		N	%
Sex	Female	1472	77,2
	Male	434	22,8
Age	Non-elderly	1801	94,4
	Old	106	5,6
Skin color	White	1040	54,5
	Black	142	7,4
	Brown	704	36,9
	Other	21	1,1
Household income	From 1 to 4 minimum wages	1337	70,1
	More than 5 minimum wages	570	29,9
Level of education	Graduation	759	39,8
	Specialist	1132	59,4
	Master's/Doctorate	16	0,8
Diabetes Mellitus	No	1789	93,8
	Yes	118	6,2
Self-perceived oral health	Great/Good	1316	69,0
	Regular	483	25,3
	Poor/Very Bad	108	5,7

ASSOCIATIVE ANALYTICS

A statistically significant association was observed between the variable self-perception of oral health and gender, skin color, family income, and diabetes mellitus (Table 2).

Table 2: Variables analyzed and their association with self-perceived oral health.

	Self-perception of oral health (Great/Good)	Self-perception of oral health (Regular)	Self-perception of oral health (Bad/Terrible)	p
Sex				
Female	1041 (79,1%)	358 (74,1%)	74 (68,5%)	0,007
Male	275 (20,9%)	125 (25,9%)	34 (31,5%)	
Age				
Non-elderly	1243 (94,5%)	460 (95,2%)	98 (90,7%)	0,183
Elderly	73 (5,5%)	23 (4,8%)	10 (9,3%)	
Skin color				
White	749 (56,9%)	228 (47,2%)	63 (58,3%)	0,021
Black	90 (6,8%)	45 (9,3%)	7 (6,5%)	
Brown	462 (35,1%)	205 (42,4%)	37 (34,3%)	
Other	15 (1,1%)	5 (1,0%)	1 (0,9%)	
Household income				
From 1 to 4 minimum wages	892 (67,8%)	350 (72,5%)	95 (88,0%)	0,000
More than 5 minimum wages	424 (32,2%)	133 (27,5%)	13 (12,0%)	
Level of education				
Graduation	516 (39,2%)	191 (39,5%)	52 (48,1%)	0,374
Specialist	789 (60,0%)	287 (59,4%)	56 (51,9%)	
Master's/Doctorate	11 (0,8%)	5 (1,0%)	0 (0,0%)	
Diabetes Mellitus				
No	1246 (94,7%)	450 (93,2%)	93 (86,1%)	0,001
Yes	70 (5,3%)	33 (6,8%)	15 (13,9%)	

Note: X² test; significance at 5% level (p<0.05).

DISCUSSION

The present study plays a significant role in addressing self-perceived oral health in teachers with diabetes mellitus in the public school system of Minas Gerais. This approach is essential, as



individuals with this disease face a higher risk of developing oral problems (Kudiyirickal & Pappachan, 2015). Although diabetes mellitus is an issue widely discussed in the literature, the self-perception of oral health among teachers affected by this condition lacks specific studies, which makes this study an important contribution to filling this knowledge gap.

It is relevant to highlight that self-perception of oral health is an important indicator to assess the oral health status of individuals and is influenced by a series of factors ranging from biological aspects to socioeconomic and cultural issues (MARTINS et al., 2020). In this context, the association found between teachers' self-perception of oral health and gender corroborates the findings of other studies (LIPSKY et al., 2021; SU et al., 2022), which indicate a greater concern and care for oral health on the part of women compared to men.

Regarding the association between self-perception of oral health and skin color, it is important to note that, in the Brazilian context, where racial and ethnic inequalities persist, these factors may play a significant role in the participants' self-perception of oral health (KARAM et al., 2022). In sum, the significant result of this association highlights the need for a racially and ethnically sensitive approach to oral health promotion. Policies and interventions should be developed considering social and racial disparities, aiming to ensure equitable oral health for all, regardless of their skin color or ethnic identity (SINGH et al., 2019; STEELE et al., 2015).

In addition, the analysis revealed an association between teachers' self-perception of oral health and family income. This result suggests that more favorable socioeconomic conditions may be related to a better perception of oral health, which can be explained by easier access to dental services, better oral hygiene conditions, and healthier eating habits in families with higher purchasing power (TEIXEIRA et al., 2019; SINGH et al., 2019).

The relationship between diabetes mellitus and oral health is complex and multifaceted (Kudiyirickal & Pappachan, 2015). Previous studies highlight the intersection between diabetes and dental treatment, underscoring the importance of an integrated approach to manage not only the direct oral complications of diabetes but also the factors that can modulate its course, such as age, metabolic control, and vascular complications (MAURI-OBRADORS et al., 2017; POUDEL et al., 2018; GRISI et al., 2022).

Regarding the results of the association between teachers' self-perception of oral health and the presence of diabetes mellitus in this study, a statistically significant association was observed. Although a considerable proportion of teachers with diabetes have evaluated their oral health positively, it is important to emphasize that there is still a need to improve and understand the oral health care of this population (SOUTO et al., 2022). This is explained by the bidirectional relationship between diabetes and oral conditions, especially due to the increased susceptibility of



diabetic individuals to periodontal diseases, oral candidiasis, xerostomia, and other complications (THOMES et al., 2021).

In addition, the association between diabetes mellitus and self-perception of oral health may reflect not only the direct influence of this disease on oral conditions but also the awareness and increased attention that diabetic patients should have to their oral health due to medical guidance on the additional risks associated with the disease (POUDEL et al., 2018).

It is important to recognize some limitations of this study. First, the retrospective cross-sectional design adopted may restrict the ability to establish causal relationships between the variables studied (DEKKERS & GROENWOLD, 2020). In addition, the sample may not be completely representative of the population of teachers with diabetes mellitus in the public school system of Minas Gerais, which induces a selection bias in the results presented. Limitations in data collection, such as memory errors or interpretation, can also compromise the quality of the information obtained.

Despite these limitations, the results obtained provide important insights into the relationship between diabetes mellitus and self-perceived oral health in this sample. The need for public health policies and educational interventions aimed at the prevention and proper management of oral conditions in diabetic patients can be highlighted, as well as the importance of equitable access to dental services for all segments of the population. Therefore, it is critical to plan further studies to explore the nuances of this relationship and develop effective oral health promotion strategies, taking into account the unique challenges posed by diabetes.

CONCLUSION

It is concluded that there is an association between self-perceived oral health in teachers of basic education in the state public system of the state of Minas Gerais and the presence of diabetes mellitus. Although teachers with diabetes evaluate their oral health positively, there is a need to seek other information that can expand the knowledge already available in the existing literature.

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