Patient´s oral health literacy and associations with sociodemographic, source of information, and oral health variables

Fábio Luiz Mialhe*; Pâmela Letícia Pereira**; Alcir José de Oliveira Júnior***; Karine Laura Cortellazzi*; Gustavo Hermes Soares****

*	Professor, Departamento de Ciências da Saúde e Odontologia Infantil, Faculdade de Odontologia de Piracicaba, Universidade Estadual de Campinas
**	Dental Surgeon, Dental School, Faculdade de Odontologia de Piracicaba, Universidade Estadual de Campinas
***	MSc, Dental School, Faculdade de Odontologia de Piracicaba, Universidade Estadual de Campinas
****	PhD, Australian Research Centre for Population Oral Health, The University of Adelaide

ABSTRACT

The objective of this study was to evaluate the levels of Oral Health Literacy (OHL) among adult patients attending in a university dental clinic (UDC) and associations with diverse variables. A cross-sectional study was conducted with a sample of 312 adult users of a UDC, from February to July 2018. Data collection was done by using a self-administered questionnaire including demographics, HeLD-14 for evaluating OHL, sources for accessing information about oral health, self-rated oral health (SROH), and reasons to look for the dentist. Simple and multiple logistic regression analyses were performed to assess the level of association between independent and dependent variables (OHL). The median value for HeLD-14 was 44.2 (sd=7.8). In the final model, the following users had a significantly higher likelihood of presenting lower OHL levels compared to their counterparts: those with up to elementary school (OR: 3.82, 95%CI: 1.85-7.88), those whose income was less than or equal to 2 Brazilian Minimum Wages (OR: 3.65, 95%CI: 1.37-9.76), those who use television/radio/newspaper/magazines/others as their main source of oral health information (OR: 1.97, 95%CI:1.17-3.30), those who classified their SROH as fair/poor (OR: 1.88, 95%CI: 1.08-3.26), and those who had gone to the dentist the last time due to pain/extraction (OR: 2.28, 95%CI: 1.35-3.85). The users' OHL levels were associated with sociodemographic variables, sources of information, and oral health, a fact that must be considered by dental students and their professors, in the processes of communication and health education with UDC users, to provide better oral health care for them.

Descriptors: Health Literacy. Dental Health Services. Dental Schools.

1 INTRODUCTION

Dental school clinics are places that provide relevant services to the population, as well training for health professionals and the development of research[1]. In Brazil, university dental clinics are often affiliated to the public health system and the health care networks[1].

In this context, understanding the

characteristics of those who use dental services, such as sociodemographic characteristics and epidemiological profile, is essential for the planning and delivery of dental care interventions[2]. In view of this, a large body of the dental scientific literature has focused on identifying the factors associated with the use and type of dental treatments, and whether they are carried out in situations of prevention and maintenance or urgency and pain[3-5].

Among the myriad of factors that influence health outcomes, more recent studies have addressed the Health Literacy (HL) construct, which is defined as the situation in which the user is able to obtain, communicate, process, and understand health-related knowledge, enabling the use of basic services and health care[6]. In the dental field, studies have identified that Oral Health Literacy (OHL) is a construct associated with diverse clinical and behavioral outcomes related to oral health[4,6,7].

Despite OHL being an important determinant of dental outcomes, there is a scarcity of studies evaluating which factors interfere with this construct to help professionals plan activities that improve communication with patients, as well as making healthcare organizations more user-friendly[8,9]. Research has shown that OHL is influenced not only by individual skills and knowledge, but also by the demands and complexities of the healthcare system[10]. Therefore, one way to improve low levels of HL in populations is by building health-literate systems of care, including the clinical environments of university health courses.

Considering that OHL is a relatively new field of research, there is still a need to evaluate the factors associated with this construct in different realities and locations, including the dental school environments[11].

This study aimed to evaluate the levels of OHL among a sample of adult patients attending a university dental clinic in Brazil and the associations with sociodemographic, source of information, and oral health variables.

2 METHODS

This is an analytical cross-sectional observational study. This research project was initially submitted to and approved by a Research Ethics Committee under number CAAE: 67590017.8.0000.5418. All participants provided verbal and written consent to take part in the study.

A convenience sampling strategy was employed. Data collection was carried out in the waiting room of the adult clinic of a public university dental school located in the state of São Paulo, Brazil, from February to July 2018. The sample size of 312 participants provided a test power of 80% ($\beta=0.20$) with a significance level of 5% ($\alpha = 0.05$) for the effect size found in the study (Odds Ratio of 2.0 and 40% response in the unexposed group).

Initially, a researcher invited the participants, explaining the objectives and methods of the study and, after the patient signed the Free and Informed Consent Term, the data collection instruments were applied. The questionnaire was self-administered, that is, the researcher explained the research, offered a clipboard with a pen, and was available in the waiting room to answer questions.

The inclusion criteria were being a Brazilian Portuguese native speaker; being 18 years of age or older; having no vision or cognitive difficulties that interfere with the ability to complete the survey; and being attending the school clinic.

The applied questionnaire contained a section with the following sociodemographic variables: sex (male, female); age (recorded in years and dichotomized by the median ≤ 40 years); marital status (dichotomized into

single/widowed/alone, and married/ cohabitation); educational level (recorded in years and dichotomized into up to eight years and 8 years or more); monthly income (dichotomized into up to or above elementary school); and main source to accessing information about oral health (dichotomized into internet or television/ radio/newspaper/magazines/others).

Self-rated oral health was evaluated asking participants "How do you rate your oral health?" (excellent, very good, good, regular, bad). Participants were also asked the last time they visited a dentist (dichotomized into up to a year or more than a year) and the reason for last dental visit (categorized as prevention/maintenance and pain/extraction).

The OHL outcome variable was measured using a validated Brazilian Portuguese version of the Health Literacy in Dentistry (HeLD-14) instrument, which comprises 14 questions assessing the individual's ability to seek, understand, and use oral health information to make appropriate oral health decisions[12,13]. Each item is scored using 5-point ordinal items ranging from 0 ('unable to do') to 4 ('without any difficulty'). High scores indicate minimal difficulties in performing functions (high OHL) and low scores indicate limited abilities to perform functions (low OHL)[12].

Simple and multiple logistic regression models were performed to test the associations between OHL and the independent variables. For the statistical analysis, the median dichotomization of HeLD-14 was adopted with ≤ 45 (low OHL) and > 45 (high OHL). The variables that presented p<0.20 in the simple regression models were tested in the multiple logistic regression model. Statistical significance was set at 5%. Statistical tests were performed using the SAS statistical program (SAS Institute Inc. 2011 version 9.4, NC, USA).

3 RESULTS

A total of 368 patients were initially approached. Later, with the refusal or absence of criteria/completion, data from 312 patients, aged from 18 to 74 years old, with a mean age of 42 years, was used for the analyses. Most of the respondents were female, married, with complete high school, and monthly income of 1 to 3 minimum wages. Regarding HeLD-14, the median value was 45 and the mean value was 44.2, ranging from 14 to 56, indicating that, on average, the sample of patients had a good level of OHL.

In the final model of multiple logistic regression, the following users had a significantly higher likelihood of presenting lower OHL levels compared to their counterparts: those up to eight years of schooling (OR: 3.82, 95%CI: 1.85-7.88), those whose income was less than or equal to 2 minimum wages (OR: 3.65, 95%CI: 1.37-9.76), those who use television/radio/newspaper/magazines/ others as main source of oral health information (OR: 1.97, 95%CI:1.17-3.30), those who classified their oral health as fair/poor (OR: 1.88, 95%CI: 1.08-3.26), and those who had gone to the dentist the last time due to pain/extraction (OR: 2.28, 95%CI: 1.35-3.85). All these data are arranged and specified in table 1.

4 DISCUSSION

The results of this study indicated that socioeconomic and individual factors and the source of information used to obtain dental information were associated with a lower level of OHL. An accurate understanding of the patients' levels of OHL and their determinants can contribute to dental students and professionals to adapt the communication processes and clinical environment to improve the quality of care and oral health outcomes[14,15].

Table 1. Gross and adjusted analyses between low and high OHL levels with socioeconomic, source of information, and oral health variables (n = 312)

Variable	n (%)	Low OHL n (%)	Highl OHL n (%)	Univariate model OR	CI95%	p value	Multiple model Adjusted OR	95%CI	p value
Socioeconomic variables and mode of information									
Sex									
Male	127 (40.70)	70 (55.12)	57(44.88)	1.24	0.79-1.95	0.3496			
Female	185 (59.30)	92 (49.73)	93 (50.27)	Ref					
Age									
≤40 years old	159 (50.96)	76 (47.80)	83 (52.20)	Ref					
>40 years old	153 (49.04)	86 (56.21)	67 (43.79)	1.40	0.90-2.19	0.1376			
Marital status									
Single/widowed/alone	139 (44.55)	72 (51.80)	67 (48.20)	Ref					
Married/cohabitation	173 (55.45)	90 (52.02)	83 (47.98)	1.01	0.65-1.58	0.9685			
Education									
Up to elementary school	246 (78.84)	149 (60.57)	97 (39.43)	6.26	3.24-12.10	<0.0001	3.82	1.85-7.88	0.0003
Above elementary school	66 (21.16)	13 (19.70)	53 (80.30)	Ref			Ref		
Income									
≤2 BMW	270 (86.53)	156 (57.78)	114 (42.22)	8.21	3.35-20.13	<0.0001	3.65	1.37-9.76	0.0098
>2 BMW	42 (13.47)	6 (14.29)	36 (85.71)	Ref			Ref		
Main source of information about oral health									
Internet	172 (55.12)	70 (40.70)	102 (59.30)	Ref			Ref		
Television/radio/newspaper/magazines/others	140 (44.88)	92 (65.71)	48 (34.29)	2.79	1.76-4.44	<0.0001	1.97	1.17-3.30	0.0102
Oral health variables									
Self-rated oral health									
Excellent/very good/good	206 (66.02)	87 (42.23)	119 (57.77)	Ref			Ref		
Regular/bad	106 (33.98)	75 (70.75)	31 (29.25)	3.31	2.00-5.47	<0.0001	1.88	1.08-3.26	0.0254
Last visit to the dentist									
Less than 1 year ago	155 (49.67)	76 (49.03)	79 (50.97)	Ref					
More than 1 year ago	157 (50.33)	86 (54.78)	71 (45.22)	1.26	0.81-1.97	0.3102			
Reason for going to the dentist last time									
Return/prevention/maintenance	126 (40.38)	47 (37.30)	79 (62.70)	Ref			Ref		
Pain/extraction	186 (59.62)	115 (61.83)	71 (38.17)	2.72	1.71-4.34	<0.0001	2.28	1.35-3.85	0.0021

Ref= reference; OR=Odds Ratio; CI=Confidence Interval; HeLD ≤ 45 (low OHL) was the reference category for the dependent variable.

4 DISCUSSION

The results of this study indicated that socioeconomic and individual factors and the source of information used to obtain dental information were associated with a lower level of OHL. An accurate understanding of the patients' levels of OHL and their determinants can contribute to dental students and professionals to adapt the communication processes and clinical environment to improve the quality of care and oral health outcomes[14,15].

In general, the sample showed good levels of oral health literacy, since the mean value of the instrument for the sample (44.2) was greater than 2/3 of the total score (56) and the value was next to that found by Ju et al. (2018)[16] in a dataset with Australian adults (48.52). In addition, the median value of HeLD-14 was next to that found in other Brazilian studies using the same instrument[9,17].

In the multivariate analysis, low level of education remained associated with low OHL. Previous studies conducted with patients from university dental clinics in other countries found an association between level of education and OHL among adults[18], elderly people[19], or both[8,20], using diverse instruments to measure OHL. Together, these findings show that education is an essential element in promoting oral health literacy and the importance of intersectoral actions to improve it from the school years[21]. In addition, this fact highlights the importance of undergraduate dentistry students and their professors to pay attention to the educational level of users of dental clinics for the adequacy and improvement of communication processes.

Lower income of patients was a variable that remained associated with low OHL levels in the multiple models. This fact corroborates other studies in primary and secondary health care settings in Brazil that found associations between HeLD-14 scores and income[9,13]. In addition, our results are in line with those found in other countries, settings, and using different OHL instruments[19,22], but adds a new finding in the university environment, complementing the scientific evidence on the subject.

Furthermore, as a non-dental independent variable, the non-use of the internet to gain access to information on oral health remained associated with low OHL, that is, using television/radio/newspaper/magazines/others as main source of information. Among the multiple facets of literacy, much is discussed about digital literacy and how online information can impact oral health[23,24]. In a review of the last decade, McKay[23] (2021) found that the digitalization of information can have both positive and negative effects, depending on the response of dentists to technological tools, reaffirming the importance of encouraging the use of digital artifacts by academics in training. More specifically, in recent times, digital health literacy instruments (eHealth) have been produced, which have expanded our understanding of the impact of the individuals' ability to use digital tools and information on the health of populations[25]. Moreover, a recent study demonstrated that the instrument BR-eHEALS is a valid and reliable tool to be used in dental settings for evaluating the digital health literacy of patients[26].

Concerning oral health variables, we have observed that self-perception of oral health, a subjective indicator of dental condition, was associated with low OHL, a fact also observed in other studies using HeLD-14 as a measure of OHL[12,13] and other OHL instruments[19]. In addition, studies have shown that OHL is associated with self-perception of oral health as an outcome[27]. Therefore, there seems to be evidence of a bidirectional relationship between these two variables, indicating that those who perceive their oral health as bad also have a lower perception of their capacity to obtain, process,

and understand oral health information and the services necessary to make appropriate health decisions and vice versa.

Finally, regarding the association found between the reason for going to the dentist in the last time for "pain/extraction" and low OHL, the scientific literature presents studies that found a similar association as the study of Cruvinel *et al.* (2018)[11] and Batista et al. (2020)[3] using different OHL instruments. Other studies have also shown associations between the time since the last consultation and OHL[18,19,22]. Similarly to self-perception of oral health, there also seems to be a bidirectional association between this variable and the outcome, since OHL was also investigated as a predictor of dental utilization for treatment[5].

Considering that evidence has shown that OHL is an important determinant of oral health[3,5,22,28], and that this construct that can be improved by adequate communication and health education processes[29,30], dental schools must take steps to incorporate a health-literate approach with patients to promote their OHL, including the training of their students, professors, and employees about that[10].

This study presents some limitations. The clinical dental condition of patients was not evaluated. The levels of OHL of the patients in this sample may be higher than the general population because they are being attended within the university environment and, therefore, more exposed to oral health information in a differentiated way. Thus, the findings are not representative of the population of the city. Lastly, the cross-sectional nature of the study precludes the inference of causal relationships.

5 CONCLUSION

The OHL levels of participants were associated with their sociodemographic, individual, and service-related variables, a fact that must be considered by dentistry students and their professors in the communication processes with patients treated in university-based dental clinics.

RESUMO
Letramento em saúde bucal de pacientes e associações com variáveis sociodemográficas, fonte de informação e saúde bucal
O objetivo desse estudo foi avaliar os níveis de Letramento em Saúde Bucal (LSB) de pacientes adultos atendidos em uma clínica odontológica universitária (COU) e associações com diversas variáveis. Foi realizado um estudo transversal com amostra de 312 usuários adultos de uma COU, no período de fevereiro a julho de 2018. A coleta de dados foi feita por meio de um questionário autoaplicável incluindo dados demográficos, HeLD-14 para avaliação do LSB, fontes de acesso a informações sobre saúde bucal, autoavaliação de saúde bucal (ASB) e motivos para procurar o dentista. Análises de regressão logística simples e múltipla foram realizadas para avaliar o nível de associação entre as variáveis independentes e dependente (LSB). O valor mediano para HeLD-14 foi de 44,2 (dp=7,8). No modelo final, os seguintes usuários tiveram uma probabilidade significativamente maior de apresentar níveis de OHL mais baixos em relação aos seus pares: aqueles com até o ensino fundamental (OR: 3,82, IC 95%: 1,85-7,88), aqueles com renda menor ou igual a 2 Salários Mínimos (OR: 3,65, IC 95%: 1,37-9,76), aqueles que utilizam televisão/rádio/jornal/revistas/outros como principal fonte de informação sobre saúde bucal (OR: 1,97, IC 95%:1,17 -3,30), os que classificaram sua ASB como regular/ruim (OR: 1,88, IC 95%: 1,08-3,26), e os que foram ao dentista pela última vez por dor/extração (OR: 2,28, 95% IC: 1,35-3,85). Os níveis de LSB dos usuários estiveram associados a variáveis sociodemográficas, fontes de informação e saúde bucal, fato que deve ser considerado pelos estudantes de odontologia e seus docentes, nos processos de comunicação e educação em saúde com os usuários da COU, para uma melhor assistência à saúde bucal a eles.

Descritores: Letramento em Saúde. Serviços de Saúde Bucal. Faculdade de Odontologia.

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Correspondence to:
Fábio Luiz Mialhe.
e-mail: mialhe@unicamp.br
Av. Limeira, 901 Areião
13414-903 Piracicaba/SP Brazil