ORAL HEALTH-RELATED QUALITY OF LIFE AMONG BRAZILIAN DENTAL STUDENTS

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ABSTRACT

This study was conducted to assess oral health-related quality of life (OHRQoL) among Brazilian dental students. A cross-sectional study was carried out involving 300 dental students at the Federal University of Parana, Brazil. To measure OHRQoL, the Oral Health Impact Profile (OHIP-14) was self-administered and a questionnaire was filled out addressing socio-demographic characteristics, health-related aspects and dental experience. Descriptive analysis was performed and both univariate and multivariate Poisson regression with robust variance were used to determine associations between OHRQoL and the covariables. The prevalence of reported impact on OHRQoL was 45 percent. The mean OHIP-14 score was 4.5. In the univariate analysis, the reason for the last visit to the dentist (p=0.004), reported discomfort in teeth/mouth (p<0.001) and both self-rated general (p=0.011) and oral (p<0.001) health were significantly associated with OHRQoL. The year of academic education was not associated with OHRQoL (p=0.712). In the multivariate model, students who reported dissatisfaction with their teeth (PR=1.32; IC 95%: 1.01-1.73), dental pain/sensitivity (PR=2.36; IC 95%: 1.63-3.40), esthetic dental problems (PR=1.45; IC 95%: 1.10-1.89), restorative needs (PR=1.60; IC 95%: 1.01-2.55) and whose last visit to the dentist was for curative treatment (PR=1.36; IC 95%: 1.05-1.76) had greater impact on OHRQoL. Aspects related to previous dental experience and self-reported oral health problems were associated with OHRQoL.

Key words: *Students, dental - Quality of Life -Oral Health.*

QUALIDADE DE VIDA RELACIONADA À SAÚDE BUCAL ENTRE ESTUDANTES BRASILEIROS DE ODONTOLOGIA

RESUMO

Este estudo teve como objetivo avaliar a qualidade de vida relacionada à saúde bucal (QVRSB) entre estudantes brasileiros de odontologia. Um estudo transversal foi realizado com 300 estudantes de odontologia da Universidade Federal do Paraná, Brasil. Para avaliar a QVRSB, o Oral Health Impact Profile (OHIP-14) foi auto-aplicado juntamente com um formulário abordando características sócio-demográficas, aspectos relacionados com a saúde e experiência odontológica. Foram realizadas análise descritiva, regressão de Poisson univariada e múltipla, com variância robusta, para verificar possíveis associações entre as covariáveis e a QVRSB. A prevalência de impactos relatados na QVRSB foi de 45 por cento. A média do escore OHIP-14 foi de 4,5. Na análise univariada, o motivo da última visita ao dentista (p = 0,004), relato de desconforto em dentes / boca (p <0,001) e a auto-avaliação da saúde geral (p = 0,011) e bucal (p <0,001) foram significativamente associados com QVRSB. O ano de formação acadêmica não foi associado com a QVRSB (p = 0,712). No modelo multivariado, os estudantes que relataram insatisfação com os dentes (RP = 1,32, IC 95%: 1,01-1,73), dor / sensibilidade dental (RP = 2,36, IC 95%: 1,63-3,40), problemas dentários estéticos (PR = 1,45, IC 95%: 1,10-1,89), necessidades de restauração (PR = 1,60; IC 95%: 1,01-2,55) e cuja última visita ao dentista foi para tratamento curativo (PR = 1,36; IC 95%: 1,05-1,76) tiveram maior prevalência de impacto na QVRSB. Aspectos relacionados à experiência anterior odontológica e ao auto-relato de problemas bucais foram associados com QVRSB.

Palavras-chave: *Estudantes de odontologia, qualidade de vida, saúde bucal.*

INTRODUCTION

The concept of health involves bio-psychosocial wellbeing and oral health status can exert an influence on different aspects of quality of life.[1] Despite the growing number of studies addressing this issue, few studies have involved dental students as the specific study population[2-4]. Such studies allow oral health-related quality of life (OHRQoL) to be analyzed among a group of individuals with intensive training in perceiving small deviations from normality as well as in how to maintain their oral health[5]. A number of papers indicate changes in the attitudes and behavior of dental students regarding oral health as they advance in their studies[6-9]. While this has not

always been observed[10], dental students are expected to improve their health-related behavior and attitudes by the end of the course[11].

Knowing dental students' self-perceptions of oral health, including OHRQoL, will provide insights that may enable better teaching methods to be defined. Furthermore, an understanding of OHRQoL may contribute to the development of strategies aimed at enhancing the dental curriculum and improving the education of dental students.

Thus, the aim of this study was to assess OHRQoL and associated factors among Brazilian dental students.

MATERIALS AND METHODS

Ethical considerations

The study was approved by the Committee for Ethics in Human Research of *Universidade Federal do Paraná* (Brazil) and carried out according to the Declaration of Helsinki. All students who agreed to participate and the guardians of those under 18 years of age signed a statement of informed consent.

Population and study design

A cross-sectional census study was carried out with undergraduate students from the dental course (n = 375) at *Universidade Federal do Paraná* (Brazil) in 2011, 307 of whom agreed to participate. However, seven students (2.3 percent) were excluded due to incomplete questionnaires, so the final sample included 300 students (97.7 percent response rate).

Questionnaire addressing socio-demographic characteristics, health aspects and dental experience

Data on socio-demographic characteristics, health-related aspects and dental experience were collected using a questionnaire specifically designed for this study, with items on gender, year of academic education (1st to 4th), provider's schooling (classified into 9 categories ranging from no schooling to complete university education), self-rated general health (very poor, poor, fair, good and very good), opinion regarding teeth and mouth (very satisfied, satisfied, dissatisfied and neither satisfied nor dissatisfied), reported discomfort in teeth and mouth (yes or no), reason for discomfort (open-ended question, subsequently categorized) and reason for last visit to the dentist (checkup, prevention, pain, extraction, treatment or other).

Economic classification

A questionnaire designed by the Brazilian Association of Research Firms (local acronym: ABEP), called the Brazilian Economic Classification Criteria, was used for the economic classification. This questionnaire is widely employed in Brazil and categorizes the population based on the number of household items and schooling of the head of the family, with scores assigned to each household characteristic. The aggregate score categorizes a family as belonging to one of the following economic classifications, ranging from highest to lowest purchasing power: A1, A2, B1, B2, C, D or E[12].

Assessment of oral health-related quality of life

The short version of the Oral Health Impact Profile (OHIP-14)[13] was used for the assessment of OHRQoL. This questionnaire has been validated for Brazilian Portuguese[14]. The period of reference was the previous 12 months and the questionnaire was self-administered by the students. The OHIP-14 is widely used in the field of dentistry and has a solid conceptual and empirical foundation, with known psychometric properties and ease of application. The questionnaire is divided into seven subscales, each with two items: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and social handicap. The different response options receive scores ranging from 0 to 4 points: never (0), hardly ever (1), occasionally (2), often (3) and very often (4). The sum of the scores for each item gives the overall score ranging from 0 to 56 points, with higher scores denoting greater perceived oral health problems and impact on quality of life.

Pilot study

A pilot study was carried out on 15 undergraduate students from other health fields at the same university to test the methods and understanding of the questions. The methods proved adequate for the study population and no changes were deemed necessary.

Administration of questionnaires

The questionnaires were self-administered in a classroom under the supervision of the same researcher (JAGS), who was present to answer any questions that might have arisen. Explanations were given

regarding the objectives of the study and the data collection process was then carried out in the following sequence: questionnaire on socio-demographic characteristics, health-related aspects and dental experience; economic classification questionnaire; and OHRQoL questionnaire. To ensure anonymity and confidentiality, each student filled out the questionnaires individually. The OHIP-14 can be either self-administered or administered in interview form. The administration method does not affect the psychometric properties of the questionnaire[15].

Evaluation of stability of OHIP-14

The test-retest method was carried out on 10 percent of the sample to evaluate the stability of the OHIP-14, with a two-month interval between the separate administrations of the questionnaire. The weighted Kappa index demonstrated moderate to perfect agreement for the 14 items (0.426 to 1).

Statistical analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS for Windows, version 18.0, SPSS Inc, Chicago, IL, USA). Descriptive analysis was performed and both univariate and multivariate Poisson regression analyses with robust variance were performed to determine associations between OHRQoL and socio-demographic characteristics, health-related aspects and dental experience. The dependent variable (OHRQoL) was dichotomized as absence of impact (answers of never and hardly ever) and presence of impact (answers of occasionally, often and very often). For the analysis of associations, the independent variables were categorized as follows: gender (male/female), economic classification (A1-A2/B1-B2/C-D-E), provider's schooling (> 8 years/≤ 8 years), self-rated general health (good-very good/fair-poor-very poor), opinion regarding teeth and mouth (satisfied/dissatisfied-indifferent), report of discomfort in teeth or mouth (yes/no), report of discomfort related to esthetic problems (yes/no), report of pain and sensitivity (yes/no) and reason for last visit to dentist (checkup-prevention/treatment).

RESULTS

Mean age of the participants was 21 ± 2.5 years. Most respondents were female (70.6 %), lived with their parents or relatives (77.6 %), were single (96.6 %), had no children (98.6 %), belonged to economic classes A and B (92.6 %) and were from homes in which the provider had more than eight years of schooling (93.3 %).

The prevalence of impact on OHRQoL was 45 percent and the mean OHIP-14 score was 4.50 ± 5.14 (range: 0 to 37; median: 3). The psychological discomfort and physical pain subscales were those for which the impact on OHRQoL was greatest (37.7 % and 24.0 %, respectively). Those with the least impact were social disability and social handicap (Table 1).

The OHIP-14 items with the highest prevalence of reports of impact on OHRQoL were 'felt self-conscious because of problems with mouth or teeth' (OHIP-5) and 'had painful aching in mouth' (OHIP -3) (Table 2).

Table 1: Prevalence of reported impact of oral conditions on quality of life and OHIP-14* scores among dental students at the Federal University of Paraná, Curitiba, Brazil, 2011 (n = 300).

OHIP-14 subscales	Score				Frequency (%) of impact on OHRQoL***
	Mean ± SD**	Minimum	Maximum	Median	
Functional limitation	0.21±0.57	0	4	0	13 (4.3)
Physical pain	1.25±1.39	0	6	1	72 (24.0)
Psychological discomfort	1.68±1.78	0	8	1	113 (37.7)
Physical disability	0.41±0.93	0	6	0	18 (6.0)
Psychological disability	0.63±1.12	0	8	0	40 (13.3)
Social disability	0.23±0.73	0	8	0	8 (2.7)
Social handicap	0.10±0.52	0	7	0	3 (1.0)
OHIP-14 TOTAL	4.50±5.14	0	37	3	135 (45.0)

Note: *OHIP- Oral Health Impact Profile; **SD – standard deviation; ***OHRQoL – oral health-related quality of life

Table 2: Frequency of reported impact on each item of the OHIP-14* among dental students at the Federal University of Paraná, Curitiba, Brazil, 2011 (n = 300).

Subscale/Item	0		1		2		3		4	
	n	%	n	%	n	%	n	%	n	%
Functional limitation										
Have you had trouble pronouncing any words becauseof problems with your teeth, mouth or dentures?	268	89.3	22	7.3	8	2.7	1	0.3	1	0.3
Have you felt that your sense of taste has worsened because of problems with your teeth, mouth or dentures?	286	95.3	10	3.3	4	1.3	0	0.0	0	0.0
Physical pain										
Have you had painful aching in your mouth?	138	46.0	108	36.0	50	16.7	4	1.3	0	0.0
Have you found it uncomfortable to eat any foods because of problems with your teeth, mouth or dentures?	196	65.3	64	21.3	31	10.3	7	2.3	2	0.7
Psychological discomfort										
Have you felt self conscious because of problems with your teeth, mouth or dentures?	114	38.0	86	28.7	74	24.7	12	4.0	14	4.7
Have you felt tense because of problems with your teeth, mouth or dentures?	189	63.0	64	21.3	34	11.3	6	2.0	7	2.3
Physical disability										
Has your diet been unsatisfactory because of problems with your teeth, mouth or dentures?	244	81.3	40	13.3	11	3.7	3	1.0	2	0.7
Have you had to interrupt meals because of problems with your teeth, mouth or dentures?	264	88.0	29	9.7	6	2.0	1	0.3	0	0.0
Psychological disability										
Have you found it difficult to relax because of problems with your teeth, mouth or dentures?	234	78.0	46	15.3	17	5.7	2	0.7	1	0.3
Have you been a bit embarrassed because of problems with your teeth, mouth or dentures?	236	78.7	38	12.7	19	6.3	4	1.3	3	1.0
Social disability										
Have you been a bit irritable with other people because of problems with your teeth, mouth or dentures?	270	90.0	23	7.7	5	1.7	0	0.0	2	0.7
Have you had difficulty doing your usual jobs because of problems with your teeth, mouth or dentures?	276	92.0	21	7.0	2	0.7	0	0.0	1	0.3
Social handicap										
Have you felt that life in general was less satisfying because of problems with your teeth, mouth or dentures?	282	94.0	15	5.0	2	0.7	0	0.0	1	0.3
Have you been totally unable to function because of problems with your teeth, mouth or dentures?	294	98.0	5	1.7	0	0.0	1	0.3	0	0.0

Note: *OHIP- Oral Health Impact Profile

Students from higher economic classes, those with providers with a higher level of schooling, those with better self-rated general and oral health, those who did not report discomfort in the teeth or mouth and those who last visited the dentist for a checkup or prevention had a lower impact on OHRQoL. The prevalence of impact on OHRQoL was higher among students who reported esthetic pro-

blems, restorative needs and dental pain/sensitivity (Table 3).

No statistically significant difference was found between impact on OHRQoL and year of academic education (Table 4).

In the multivariate model, students who reported dissatisfaction with their teeth (PR = 1.32; IC 95%: 1.01 to 1.73), dental pain/sensitivity (PR = 2.36; IC 95%: 1.63 to 3.40), esthetic dental problems (PR = 1.45; IC 95%: 1.10 to 1.89), restorative needs (PR = 1.60; IC 95%: 1.01 to 2.55) and whose last visit to the dentist was for curative treatment (PR = 1.36; IC 95%: 1.05 to 1.76) had greater impacts on OHRQoL (Table 5).

Table 3: Frequency distribution of dental students according to socio-demographic variables, self-rated general health and reported impact of oral conditions on quality of life, Curitiba, Brazil, 2011 (n = 300).

Variables		Impact on OHRQoL*			univariate analysis	
		No impact n (%)	Impact n (%)	Total n (100%)	p**	Unadjusted PR*** [95% CI****]
Gender	Male	56(63.6)	32(36.4)	88	0.066	1
	Female	109(51.4)	103(48.6)	212		1.33 [0.98-1.82]
Economic classification	A1, A2	79(57.2)	59(42.8)	138		1
	B1, B2	76(54.3)	64(45.7)	140	0.620	1.07 [0.82-1.39]
	C,D,E	6(33.3)	12(66.7)	18	0.022	1.56 [1.07-1.28]
Provider's schooling	> 8 years	158(56.4)	122(43.6)	280	0.024	1
	≤ 8 years	7(35.0)	13(65.0)	20		1.49 [1.05-2.11]
Self-rated general health	Good, very good	158(56.6)	121(43.4)	279	0.011	1
	Fair, poor, very poor	7(33.3)	14(66.7)	21		1.53 [1.10-2.14]
Opinion of teeth and mouth	Satisfied	145(60.4)	95(39.6)	240	< 0.001	1
	Dissatisfied/indifferent	20(33.3)	40(66.7)	60		1.68 [1.32-2.13]
Report of discomfort in teeth or mouth	No	116(68.2)	54(31.8)	170	< 0.001	1
	Yes	49(37.7)	81(62.3)	130		1.96 [1.51-2.53]
Discomfort related to esthetic problems	No	129(60.6)	84(39.4)	213	0.003	1
	Yes	35(42.7)	47(57.3)	82		1.45 [1.13-1.87]
Discomfort related to restorative needs	No	162(56.8)	123(43.2)	285	<0.001	1
	Yes	2(20.0)	8 (80.0)	10		1.86 [1.32-2.60]
Discomfort related to pain/sensitivity	No	162(56.6)	121(43.4)	283	<0.001	1
	Yes	2(16.7)	10(83.3)	12		1.95 [1.46-2.60]
Reason for last visit to dentist	Checkup/Prevention	108(62.1)	66(37.9)	174	0.004	1
	Treatment	57(45.2)	69(54.8)	126		1.44 [1.12-1.84]

Note: *OHRQoL – oral health-related quality of life; ** p-value referring to univariate Poisson regression;
*** PR – prevalence ratio; ****CI – confidence interval

Table 4: Frequency distribution of dental students according to academic year and impact of oral conditions on quality of life, Curitiba, Brazil, 2011 (n = 300).

Year	Impact on OHRQoL			p*
	No impact n (%)	Impact n (%)	Total n (%)	
First year	44(58.7)	31(41.3)	75(100.0)	0.752
Second year	40(52.6)	36(47.4)	76(100.0)	
Third year	33(44.6)	41(55.4)	74(100.0)	
Fourth year	48(64.0)	27(36.0)	75(100.0)	

Note: * p-value referring to linear trend chi-squared test

Table 5: Poisson multivariate regression analysis for impact of oral conditions on quality of life among dental students at the Federal University of Paraná, Curitiba, Brazil, 2011 (n = 300).

Variables		p*	Adjusted PR**[95% CI***]
Opinion of teeth and mouth	Satisfied Dissatisfied, indifferent	0.040	1 1.32 [1.01-1.73]
Discomfort related to pain/sensitivity	No Yes	<0.001	1 2.36 [1.63-3.40]
Discomfort related to esthetic problems	No Yes	0.007	1 1.45 [1.10-1.89]
Discomfort related to restorative needs	No Yes	0.048	1 1.60 [1.01-2.55]
Reason for last visit to dentist	Checkup/prevention Curative treatment	0.019	1 1.36 [1.05-1.76]
Economic classification	A1, A2 B1, B2 C, D, E	0.219	1 1.19 [0.80-1.75] 1.29 [0.86-1.93]

Note: *p-value referring to Poisson multiple regression; **PR – prevalence ratio; ***CI – confidence interval

DISCUSSION

The impact of oral health status on activities of daily living among the dental students surveyed in this study was of low intensity, but was found in nearly half of the respondents. A previous cross-sectional study involving the OHIP-14 administered to dental students in India also found a low degree of impact of oral health status on quality of life.[2] Two aspects are directly related to a low OHIP-14 score: low frequency or low degree of severity of oral problems and the inability of certain individuals to perceive such problems. In the present case, the second possibility may be discarded, as dental students receive intensive training in the perception of small deviations from normality[5]. On the other hand, adverse oral conditions that exert considerable impact on OHRQoL in this age group, such as periodontal disease or tooth loss, have low frequency or low degree of severity, which may explain the low OHIP-14 score. Moreover, the low frequency and severity of conditions may also be influenced by care regarding oral health, which tends to be more intensive and frequent in dental students[5].

In this study, the subscales that most contributed to the impact on OHRQoL were psychological discomfort and physical pain, particularly the items 'felt self-conscious because of problems with mouth or teeth' and 'had painful aching in mouth'. Cross-sectional studies involving students in Pakistan and India report similar results using the OHIP-14[2,3]. Physical pain is one of the most important aspects when analyzing OHRQoL with the OHIP-14[16]. Indeed, events associated with pain are expected to be remembered more easily. Psychological discomfort may be associated with the level of concern dental students have regarding the appearance of their teeth and mouth, since they are encouraged to perceive and value their oral health status. On the other hand, this same training may ensure the necessary emotional control not to allow the psychological discomfort caused by oral conditions to interfere in their social relations, which may explain the low scores on the social disability and social handicap subscales. In the study by Achaya and Sangam (2008)[2], these were the only OHIP-14 domains for which the scores of Indian students in the fourth year of the dental course were lower than those in the first year. However, no significant difference was found between the different phases of academic education with regard to the overall OHIP-14 score[2].

In this study, the overall OHIP-14 score also did not differ between the different years of academic education, despite the expectation that the acquisition of knowledge and experience throughout the course would broaden conceptions regarding dental care and would be reflected in the OHIP-14 score. However, one must bear in mind that this is a cross-sectional study, whereas evidence of changes in behavior and perceptions would be better determined in longitudinal studies.

No gender difference was found in this study. A number of studies report that female dental students

exhibit more positive behavior and attitudes with regard to oral health[7,8,17,18], whereas other studies have found no difference between females and males[10,19]. It is possible that training and access to the same educational conditions minimize the differences between genders.

Socioeconomic factors, such as low income and schooling, can affect OHRQoL[20,21]. In this study, economic class and schooling of the family provider were associated with the impact on OHRQoL in the univariate analysis. However, these associations did not remain significant in the multiple regression model, suggesting that the influence of these factors was indirect in the sample considered.

Self-rated health is influenced by an individual's beliefs and convictions and its relationship with OHRQoL has been studied in dental students[4] as well as other university students[22]. In this study, individuals who perceived their general health as fair, poor or very poor had higher OHIP-14 scores, even after controlling for covariables in the multivariate model.

Dental experiences, such as the reason for one's last visit to the dentist and reports of oral and dental discomfort, also proved to be associated with OHRQoL among these students, even after controlling for confounding variables. Associations between self-reported oral problems and OHRQoL have also been reported among dental students in India[2].

Most dental schools in Brazil still follow the traditional teaching model centered on disease and technique[23] and concepts such as OHRQoL are rarely part of the curriculum. The use of OHRQoL assessment tools on dental students offers a number of benefits. The information generated can be used to establish specific teaching strategies that value the experiences of the student, thereby enhancing the teaching-learning process. The identification of the impact of one's own dental experience with regard to OHRQoL can facilitate the development of the critical, analytical thinking needed to comprehend and interpret the oral health status of the population with whom future dentists will work, thereby enhancing their clinical and social awareness. Moreover, the dental education system should direct efforts toward improving the quality of life of students[24] and the use of OHRQoL assessment tools allows the identification of those students who should be prioritized with regard to the adoption of measures for recuperating oral health.

This study employed information collected from self-administered questionnaires filled out collectively in a classroom setting to ensure anonymity and had a very high response rate. However, the data should be interpreted with caution due to the possibility of information bias, as clinical examinations were not performed and the evaluation of health was based solely on self-reports.

In Brazil, the National Curricular Directives of the Ministries of Health and Education establish that each teaching institution has relative autonomy to define the specificities of the curriculum[25]. Therefore, the findings of this study cannot be generalized. However, even considering that the data on factors associated with reported impact on OHRQoL among students of the dental course of the Federal University of Parana are restricted, the analysis of these data favors the understanding of the phenomenon and the possibility of creating theoretical models that allow the adoption of internal measures within the institution as well as the formulation of hypotheses for future studies with a broader scope.

In this study, the year of academic education (1st to 4th) was not associated with OHRQoL. Among the other aspects analyzed, those related to previous dental experience and self-reported oral health problems were associated with OHRQoL.

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