



SCIENTIFIC ARTICLE

Oral health attitudes and behaviours among Portuguese dental students

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KEYWORDS

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Abstract

Introduction: Today's dental students are going to be the future dentists responsible for oral health education and promotion. Oral health professionals' attitudes and behaviours towards their own health reflect their understanding about the importance of oral problems prevention and may contribute to the improvement of their patients' oral health.

Objectives: Evaluate oral health attitudes and behaviours (OHAB) among Portuguese students.

Materials and methods: We conducted a cross sectional study in a sample constituted by 203 students of Portuguese Catholic University, Viseu. Data collection was performed through a self-administered questionnaire about OHAB, which included the Hiroshima University Dental Behavioural Inventory.

Results: We found that 69.5% of the students adopted less adequate OHAB. Only the year of the course influenced OHAB. Therefore, the higher the year, the better were OHAB. By calculating the variability, we found that the year was responsible for 8.87% of the variation in OHAB and the statistical differences were between the students of 1st and 4th year and 1st and 5th year.

Conclusion: These results are consistent with some studies that point to the likely influence of the exposure and acquisition of knowledge about OHAB transmitted along the academic education and clinical experience. As students progress through the course, they are more aware and more attentive to their oral health. Consequently, they adopt better attitudes and preventive behaviours. It is very important to change the way we do oral health education. The planning of teaching strategies for oral health behavioural changes should give importance to teaching self-care techniques, towards to alert to the perception of risk factors what are in the origin of oral diseases.

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Introduction

Globalization and urbanization of the current world have intensified changes in the levels of societies' development, emerging new challenges in the area of health and oral health (OH).¹

The concepts of health and OH are highly subjective, individualized and abstract. Their perception is strongly influenced by individual experience and cultural background.² The World Health Organization affirms that OH is an integral part of individual's general health and well-being and it is considered important for a good quality of life.³⁻⁶ Thus, OH is to be free of chronic oro-facial pain, oral and pharyngeal cancer, oral tissue lesions, birth defects, periodontal disease, dental caries, tooth loss and other diseases and disorders that affect the craniofacial complex.⁴

The profile of oral disease has changed markedly in the last fifty years, due to the impact of fluoride, the change of traditional diets to diets high in sugar and the ubiquity of alcohol and tobacco.⁴ Oral diseases are a serious Public Health problem, due to its high economic and social cost and the important pathological consequences that they can cause.^{1,4,6} Associated with behavioural nature, they are diseases with high incidence and prevalence in many countries of the world.^{4,7,8} So, sociodemographic factors, family socio-economic status, medical history and lifestyle, including eating, oral hygiene, smoking and alcohol habits, can influence the susceptibility to the development of these diseases, being also common risk factors to various chronic noncommunicable diseases.^{6,8} Thus, the correct knowledge and the appropriate behaviours are essential to reduce the inherent risk factors.^{8,9}

Historically, we have adopted a strongly centred approach to treatment, rather than OH prevention and promotion. However, this approach has limitations. Overall, the burden of oral diseases has too high costs in terms of human and financial resources.¹⁰ Oral diseases are the fourth most expensive disease to treat worldwide.¹¹ However, dental caries and periodontal disease if properly prevented or early treated, are highly vulnerable, with low economic costs and relevant health gains.⁷⁻⁹ The primary and secondary prevention measures, such as education and creation of oral hygiene habits, namely tooth brushing at least twice a day, daily use of dental floss, topical application of fluoride, regular visits to the dentist, and the establishment of a balanced, healthy and low-cariogenic diet, are of low technical complexity and perfectly achievable if included in programs that are structured and adapted to the reality of local health services, combining individual, professional and community actions.^{4,7-9} Therefore, preventive and promotion measures do not depend only on the health sector, but require the active participation of other community structures. It is a task that concerns everyone and it is realized through the action of each one of us in different environmental contexts.

The World Health Organization recommends the development of Public Health strategies and integrated programs in order to promote general health and OH, in particular, and consequently improve the quality of life. There is much to develop regarding OH, being an area to which it is not always given the importance it actually holds.^{7,12}

The OH theme has been investigated over the years. Although this is a field with a lot of information, literature is

still limited in specific segments of the population. Most available studies focuses on children's, adolescents' and the elderly's OH, being the university population poorly investigated. So, health promotion in Portuguese higher education lacks specific studies on the behaviours related to the students' health. Studies conducted in the last years have begun to investigate the influence of the courses and the different university study plans have in the development of attitudes and behaviours concerning the OH of their students.¹³⁻²¹

Study the issue of oral health attitudes and behaviour (OHAB) and the factors that relate to them, in dental students, may be important to understand better if the academic education has some influence on OH of these students and in their attitudes and behaviours. This becomes important, since today's dental students are going to be the future dentists responsible for OH education and promotion. OH professionals' attitudes and behaviours towards their own health reflect their understanding about the importance of oral problems prevention. They will act as role models for the general population and they can contribute to the improvement of their patients' OH.²²⁻²⁴

With this research, we intend to evaluate OHAB among Portuguese students.

Materials and methods

This is a descriptive-correlational and cross-sectional study. The sample was constituted by 203 students from the course of Dental Medicine from the Portuguese Catholic University, Viseu, who were in the classroom at the time of the application of the questionnaire and who agreed to participate in the study, expressed in the informed consent statement.

Data collection was performed through a self-administered questionnaire about OHAB, which included the Hiroshima University Dental Behavioural Inventory (HUDBI):

- Sociodemographic characterization, which allow collecting information about the age, gender, marital status, residential area, year of the course that the student attends, monthly household income, parents' education level and profession.
- Characterization of oral hygiene habits, which aims to collect information on the tooth brushing, toothpaste, dental floss, mouthwash and utensils adjuncts tooth brushing.
- Characterization of the self-perception in OH.
- Characterization of OHAB, whose information was obtained through the HUDBI, elaborated in Japanese by Kawamura in 1988, and posteriorly translated and adapted to the Portuguese population.¹⁴ In this inventory composed by 21 items, all of them have a dichotomous response format that pretends to evaluate student's self-perception and OHAB. For each one of the items that compose the instrument, students must decide whether they agree or disagree with the presented situations. Only 12 items out of 21 are included for scoring, 9 are considered as dummy, since they are not pondered when calculating inventory score, although they are useful to verify the reproducibility of the inventory and they can be used for other investigations. In order to calculate the

HUDBI score, one point is given for each “agree” response to items 4, 9, 11, 12, 16 and 19 and one point is given for each “disagree” response to items 2, 6, 8, 10, 14 and 15. The sum shows a quantitative estimate of OHAB. The higher the score is, the better the OHAB are, and the maximum score of 12 points.²⁴

In data analysis, we used descriptive and inferential statistic. With the descriptive statistic, we determined absolute frequencies and percentages, measures of central tendency (mean and median) and measures of dispersion (standard deviation). We use the parametric statistics when quantitative variables had a normal distribution and population variances were homogeneous.²⁵ So, to compare contin-

uous variables, we performed One-Way ANOVA and Mann-Whitney test.

In the statistical analysis, we used SPSS (Statistical Package for the Social Sciences) version 20.0 for Windows. The research protocol was evaluated and approved by the Ethic Committee and the informed consent statement was obtained from all the participants.

Results

The students had a mean age of 21.1 years (SD = 3.2); 69.0% were female; 74.9% lived in the urban zone; 14.3% had parents that were health professionals. Regarding the year of

Table 1 Characterization of oral hygiene habits

	Male (n = 63; 31.0%)		Female (n = 140; 69.0%)		Total (n = 203)	
	n	%	n	%	n	%
<i>Frequency of tooth brushing</i>						
3 or more times a day	31	49.2	89	63.6	120	59.1
Twice a day	28	44.4	49	35.0	77	37.9
Once a day	4	1.9	2	1.4	6	3.0
<i>When is realised the tooth brushing</i>						
<i>Before breakfast</i>						
Always	15	23.8	31	22.1	46	22.7
Often	3	4.8	7	5.0	10	4.9
Rarely	9	14.3	22	15.7	31	15.3
Never	36	57.1	90	57.1	116	57.1
<i>After breakfast</i>						
Always	33	52.4	94	67.1	127	62.6
Often	11	17.5	21	15.0	32	15.8
Rarely	7	11.1	13	9.3	20	9.9
Never	12	19.0	12	8.6	24	11.8
<i>Lunch</i>						
Always	19	30.2	53	37.9	72	35.5
Often	19	30.2	46	32.9	65	32.0
Rarely	12	19.0	26	18.6	38	18.7
Never	20.6	20.6	15	10.7	28	13.8
<i>Dinner</i>						
Always	17	27.0	51	36.4	68	33.5
Often	13	20.6	25	17.9	38	18.7
Rarely	9	14.3	25	17.9	34	16.7
Never	24	38.1	39	27.9	63	31.0
<i>At night before going to bed</i>						
Always	50	79.4	111	79.3	161	79.3
Often	7	11.1	12	8.6	19	9.4
Rarely	2	3.2	11	7.9	13	6.4
Never	4	6.3	6	4.3	10	4.9
<i>Duration of brushing (min)</i>						
< 2	16	25.4	45	32.1	61	30.0
2-5	45	71.4	88	62.9	133	65.5
> 5	2	3.2	7	5.0	9	4.4
<i>Use of dental floss</i>						
Yes	33	52.4	112	80.0	145	71.4
No	30	47.6	28	20.0	58	28.6
<i>Frequency of flossing</i>						
More than twice a day	4	12.1	18	16.1	22	15.2
Once a day	12	36.4	45	40.4	57	39.3
Sometimes	14	42.4	45	40.2	59	40.7
Rarely	3	9.1	4	3.6	7	4.8

the course. 21.7% attended the “1st year”; 23.6% the “2nd year”; 14.3% the “3rd year”; 19.7% the “4th year” and 20.7% the “5th year”.

In relation to the frequency of brushing, 59.1% brushed their teeth “≥ 3 times a day” and only 3.0% “once a day”. The majority practiced the tooth brushing after breakfast (62.6%) and at night before going to bed (79.3%). The whole sample used toothpaste and 71.4% used dental floss as an adjunct to oral hygiene (Table 1).

Concerning the evaluation of OH and the oral hygiene, 42.4% and 43.3% of the students, respectively, mentioned to be “very good”.

98.8% considered that it important for the self-image to have healthy and beautiful teeth.

Most of the students (70.4%) considered that the current course influenced taking decisions of hygiene, OH and dental treatments, being the “1st year” the most pointed out in relation to trigger this influence (47.6%).

Regarding OHAB, mean scores of HUDBI was 7.8 (SD = 1.5), being the minimum score of 3 and the maximum of 11 (Table 2)

Em relação OHAB, escores médios de HUDBI foi de 7.8 (DP = 1.5), sendo a pontuação mínima de 3 e um máximo de 11. To determine OHAB prevalence, we dichotomized this variable, based on the median cut-off point. We found that 69.5% of the students adopted less adequate OHAB (Table 3).

Only the year of the course influenced OHAB (Table 4). Therefore, the higher the year, the better were OHAB (ANOVA = 4.820; *P* = .001). By calculating the variability, we found that the year was responsible for 8.87% of the variation in OHAB and the statistical differences were between the students of 1st and 4th year (*P* = .006) and 1st and 5th year (*P* = .005).

Discussion

Intercultural studies conducted among students of Dental Medicine showed that OHAB were different depending on the country.^{26,27} In our study, the mean scores of HUDBI was 7.8 (SD = 1.45), being higher than those found in other country, such as Japan⁽¹⁶⁾ (7.4; DP = 2.55), United Kingdom²⁸ (7.3), Greece^{15,16} (6.9; DP = 1.83), Croatia²¹ (6.6; DP = 1.54), Turkey¹⁹ (6.5; DP = 1.99), India²⁹ (6.1; DP = 1.71), the Jordan¹⁷ (6.0; DP = 1.54) and China²⁸ (5.1).

Regarding the gender, in some studies, the female students had better OHAB compared to opposite gender.^{15,17,20,30-34} This can be explained by the fact that women are usually more concerned with their health and appearance and in case of problems they seek early medical help to solve them. The professional and social requests can be

Table 2 Characterization of self-perception of oral health (OH)

	Male (n = 63; 31.0%)		Female (n = 140; 69.0%)		Total (n = 203)	
	n	%	n	%	n	%
<i>OH evaluation</i>						
Very bad	0	0.0	0	0.0	0	0.0
Reasonable	8	12.7	9	6.4	17	8.4
Good	25	39.7	51	36.4	76	37.4
Very good	23	36.5	63	45.0	86	42.4
Excellent	7	11.1	17	12.1	24	11.8
<i>Oral hygiene evaluation</i>						
Very bad	0	0.0	0	0.0	0	0.0
Reasonable	8	12.7	5	3.6	13	6.4
Good	25	39.7	58	41.4	83	40.9
Very good	26	41.3	62	44.3	88	43.3
Very bad	4	6.3	15	10.7	19	9.4
<i>Evaluation of own smile</i>						
Pretty	29	46.0	71	50.7	100	49.3
Ugly	1	1.6	7	5.0	8	3.9
Normal	33	52.4	62	44.3	95	46.8
<i>Healthy and beautiful teeth for self-image</i>						
Yes	63	100.0	137	97.9	200	98.5
No	0	0.0	3	2.1	3	1.5
<i>Course influence in taking decision of hygiene, OH and dental treatments</i>						
Yes	24	38.1	36	25.7	143	70.4
No	39	61.9	104	74.3	60	29.6
<i>Year in which the influence began</i>						
1st year	22	56.4	46	44.2	68	47.6
2nd year	15	38.5	38	36.5	53	37.1
3rd year	1	0.6	20	19.2	21	14.7
4th year	0	0.0	0	0.0	0	0.0
5th year	1	2.6	0	0.0	1	0.7

	Male (n = 63; 31.0%)		Female (n = 140; 69.0%)		Total (n = 203)	
	n	%	n	%	n	%
Less adequate OHAB	48	76.2	93	66.4	141	69.5
Adequate OHAB	15	23.8	47	33.6	62	30.5

Sociodemographic variables	n	\bar{X} (DP)/mean rank	Test	P
<i>Gender</i>				
Male	63	95.6	Mann-Whitney	.282
Female	140	104.9		
<i>Year of the course</i>			ANOVA	.001
1st year	44	7.2 (1.35)		
2nd year	48	7.5 (1.49)		
3rd year	29	7.7 (1.67)		
4th year	40	8.3 (1.22)		
5th year	42	8.3 (1.30)		
<i>Parents' professional group</i>			Mann-Whitney	.102
Health professionals	29	118.1		
Other professions	174	99.3		

another reason to adopt better OHAB.²⁰ However, there are other studies that have shown no relationship between gender and OHAB. This can be due to the different social and cultural backgrounds.^{16,21,29} We were waiting that gender influence OHAB. But, our results did not demonstrate that. However, the female students had better OHAB.

Concerning the year of the course, we conclude that it positively influenced the dependent variable, in other words, as students progress through the course, improved OHAB. Thus, the score of HUDBI of 1st year was 7.2 (DP = 1.35; $P = .001$) and 4th and 5th years was 8.3 (DP = 1.22 and 1.30, respectively; $P = .001$), being this difference statistically significant, such as in the study of Polychronopoulou et al.¹⁵ These results are consistent with some studies that point to the likely influence of the exposure and acquisition of knowledge about OHAB transmitted by subjects such as Preventive Dentistry and Periodontology along the academic education and clinical experience.¹⁴⁻²¹ As students progress through the course, they are more aware and more attentive to their OH. Consequently, they adopt better attitudes and preventive behaviours.

In our research there was no statistically significant results regarding the influence of the parents' professional group in students' OHAB. However, by the results analysis, we found that students whose parents were health professionals (dentists, doctors and/or nurses) had better OHAB. The issue of parents' profession is not common to be referred as having influence in OHAB. However, from our experience and the knowledge surrounding this issue, it seems consensual that parents serve as role models for their children, even in the OH issues. Thus, learning is not independent from human development and behaviours can be determined by their knowledge, but also by external factors present in the environment in which students are inserted. Students' attitudes and behaviours are due to a variety of

factors that occur inside and outside the classroom, having the family influence a great contribution, especially if the parents are health professionals.

To conclude, it is very important to change the way we do OH education. Students know what are the attitudes and behaviours that they should adopt, but actually sometimes they are not properly motivated to pursue them. Therefore, they should be encouraged to set a good example regarding OHAB to their patients, family and friends. So, it is important to strengthen OH preventive and educational measures and promote them as early as possible, from the 1st year of the course.

What we know about the theme

- Oral health is an integral part of individual's general health and well-being.
- Today's dental students are going to be the future dentists responsible for oral health education and promotion.

What we get out the study

It is important to strengthen oral health preventive and educational measures and promote them as early as possible, from the 1st year of the course.

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Conflicts of interest

The authors declare that there are no conflicts of interest.

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