

# Oral hygiene habits, periodontal status and need for treatment in university students

## Hábitos de higiene oral, da condição periodontal e da necessidade de tratamento entre estudantes universitários

### Abstract

**Purpose:** To assess oral hygiene habits, periodontal status and need for treatment of students.

**Methods:** The sample consisted of 392 students from the State University of Paraíba, Brazil, divided into eight groups according to their course: Dentistry (62), Physiotherapy (49), Pharmacy (45), Nursing (77), Physical Education (50), Psychology (47), Computing Science (26), and Statistics (36). The periodontal index PSR was used to analyze the periodontal condition, and the Treatment Implications were determined. Data were analyzed with chi-square tests.

**Results:** Most students (78.1%) reported flossing daily and 57.9% reported brushing their teeth three times a day. Students of Dentistry, Nursing, Physical Education, Psychology and Statistics had a higher prevalence of gingivitis and Treatment Implication 2. For the students of Physiotherapy, Pharmacy and Computing Science, the most prevalent diagnosis was suggestive of Periodontitis and Treatment Implication 4. Statistically significant associations ( $P < 0.05$ ) were found between periodontal diagnosis and the courses and between Treatment Implications and the courses.

**Conclusion:** Most students exhibited periodontal changes, though they demonstrated satisfactory oral hygiene habits. Dentistry students had better periodontal status and oral hygiene habits than students from other courses.

**Key words:** Periodontics; oral hygiene

### Resumo

**Objetivo:** Avaliar os hábitos de higiene oral, a condição periodontal e a necessidade de tratamento de estudantes.

**Metodologia:** A amostra foi constituída por 392 estudantes da Universidade Estadual da Paraíba, Brasil, divididos em oito grupos de acordo com seu curso: Odontologia (62), Fisioterapia (49), Farmácia (45), Enfermagem (77), Educação Física (50), Psicologia (47), Informática (26), e Estatística (36). O índice periodontal PSR foi usado para analisar a condição periodontal, e as Implicações de Tratamento foram determinadas. Os dados foram analisados utilizando o teste do qui-quadrado.

**Resultados:** A maioria dos estudantes (78,1%) relatou usar fio dental diariamente e 57,9% relataram escovar os dentes três vezes ao dia. Verificou-se que os estudantes de Odontologia, Enfermagem, Educação Física, Psicologia e Estatística exibiram uma maior prevalência de gengivite e Implicação de Tratamento 2. Para os estudantes de Farmácia, Fisioterapia e Informática, o diagnóstico mais prevalente foi o sugestivo de periodontite e a Implicação de Tratamento 4. Associações estatisticamente significativas ( $P < 0,05$ ) foram encontradas entre o diagnóstico periodontal e os cursos e entre as Implicações de Tratamento e os cursos.

**Conclusão:** A maioria dos estudantes exibiram alterações periodontais, embora tenham demonstrado hábitos de higiene oral satisfatórios. Os acadêmicos de Odontologia mostraram melhor estado periodontal e hábitos de higiene oral do que os estudantes de outros cursos.

**Palavras-chave:** Periodontia; higiene oral

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## Introduction

Currently, it is estimated that periodontal disease is a health risk, evidenced by data from microbiological investigations, experimental clinical evidence and longitudinal studies (1). Periodontal disease has an infectious and inflammatory nature and various clinical forms. Its etiologic agent is oral biofilm. Its manifestation and severity depend upon the composition of the biofilm as well as environmental and acquired factors, and also on the susceptibility of each individual (2).

The introduction of motivation programs regarding oral hygiene methods is of great importance in reducing the plaque index and in decreasing the prevalence of caries and periodontal disease (3). In order to carry out preventive measures, the prevalence of the disease must be established (4). Thus, epidemiology uses indices that indicate the prevalence of periodontal disease and dental biofilm accumulation (5).

In 1992, the American Dental Association along with the American Academy of Periodontology developed a new periodontal index called PSR (Periodontal Screening and Recording) to facilitate early identification of periodontal disease. The PSR is an efficient method for periodontal evaluation, noted for its ease and simplicity, and its sensitivity and objectivity and is indicated for routine use in all areas of dentistry. With its simple probing technique, it facilitates early detection of periodontal disease, and locates and documents needs for treatment (6-8)

The attitudes that dental students have regarding their oral health condition and periodontal status are important because they are indicators of the role that the future dentist will play in educating motivating patients to look after their own oral hygiene. It is hoped that the knowledge and attitudes acquired during the course are incorporated into their professional practice and influence the quality of preventive care given to their patients. Hardly any studies have been carried out that address this subject.

Considering of the importance of epidemiological studies, especially among young people, for the prevention, diagnosis, and early treatment of periodontal disease, this study was designed to investigate the periodontal condition, oral hygiene habits, and the need for periodontal treatment among university students in order to observe the influence of academic subject on oral health care.

## Methodology

This study was approved by the Human Research Ethics Committee of the State University of Paraiba, Campina Grande, PB, Brazil (process 0253.0.133.000-10), in compliance with Resolution 196/96 of the Brazilian National Health Council.

The study had a cross-sectional clinical design and used direct observation (through periodontal clinical examination) and interview (about oral hygiene habits) methods.

The sample design was probabilistic, using a confidence level of 95% and a margin of error of 5%, and consisted of

327 students. This figure was increased by 20% to account for possible losses. Therefore, the final sample comprised 392 students at the State University of Paraiba. The students were divided into eight groups according to the course, namely: Group I (62 Dentistry); Group II (49 Physiotherapy); Group III (45 Pharmacy); Group IV (77 Nursing); Group V (50 Physical Education); Group VI (47 Psychology); Group VII (26 Computing Science) and Group VIII (36 Statistics).

To analyze the periodontal condition, the periodontal index PSR (Periodontal Screening and Recording) was used and the Treatment Implications (TI) was determined. For PSR assessment, a titanium periodontal probe was used as advocated by the World Health Organization (WHO-621). This probe has a colored band between the 3.5 mm and 5.5 mm markers, allowing for quick identification of pockets with this depth and of those deeper than 5.5 mm. Its active end (0.5 mm sphere) was run along the gingival sulcus of all present teeth (except the 3rd molars and teeth in eruption), with minimum pressure, following this sequence of six sextants: upper right (17-14), upper front (13-23), upper left (24-27), lower left (37-34), lower front (33-43) and lower right (44-47). After periodontal probing the dental surfaces of each sextant received the next codes: 0 (totally visible colored band, without bleeding on probing, without calculus and/or excesses in restoration margins), 1 (totally visible colored band, with bleeding on probing, without calculus and/or excesses in the sub- and/or supragingival margins of restorations), 2 (totally visible colored band, with bleeding on probing, with sub- and/or supragingival calculus and/or excesses in the sub- and/or supragingival margins of restorations), 3 (partially visible colored band – 3.5 mm to 5.5 mm pocket), 4 (non-visible colored band – pocket larger than 5.5 mm), and \* (problems such as furcation involvement, mobility, gingival recession greater than 3.5 mm and loss of queratinized gingiva) (9). The score registered per sextant was that of deepest probing along with other findings of clinical nature, and an absent sextant was recorded as "X". These data were collected by a single calibrated examiner ( $Kappa = 0.77$ ).

Periodontal Diagnosis was classified as follows: Healthy Periodontium (all sextants with code 0); Gingivitis (at least one sextant with a code 1 and/or 2); and Suggestive of periodontitis (at least one sextant with code 3 and/or 4 with or without\* and 0, 1 or 2 with\*).

In order to determine the need and treatment implications (TI) as a function of the periodontal condition presented, we used the following classification:

- IT0 – When there is no need for periodontal treatment, and just an appropriate preventive treatment is indicated;
- IT1 – Prophylaxis and Guidance about oral hygiene;
- IT2 – Guidance on oral hygiene; prophylaxis; scaling and root planing (supra and / or subgingival) and/or removal of plaque retentive factors;
- IT3 – Comprehensive periodontal examination of sextant, radiographs, and possible referral to a periodontist for more complex periodontal treatment;

- IT4 – Comprehensive periodontal examination of the complete dentition, radiographs and referral to a periodontist for complex periodontal treatment.

To summarize the findings and present them in tables, the study considered the WHO recommendations and made some modifications regarding the treatment implications (9-10), following the parameters set for the PSR, which were coded as follows: IT0 – recommended for patients with all sextants with code 0; IT1 – recommended for patients with all sextants coded 0 and 1 or just 1; IT2 – recommended for patients with code 2 as the main code; IT3 – recommended for patients who have only a sextant 3 and/or 0, 1, and/or 2 with an asterisk; IT4 – recommended for patients who have two or more sextants 3, one or more sextants with code 4, and also those patients with an asterisk in the presence of code 3 and/or 4. Data were analyzed with Epi-Info 3.3.2 software by using chi-square tests, at the significance level of 0.05.

## Results

Most students were female (63.5%), aged 18 to 24 years (86.2%), single (94.1%) and had a family income from 5 to 10 minimum wages (29.8 %).

Regarding oral hygiene habits, 98.7% of students reported that they had received some type of oral hygiene orientation. Most of these brushed their teeth three times a day (57.9%), used dental floss at least once a day (78.1%), said they still

regularly visit the dentist (52.2%), and that their last visit was between 6 months and 1 year prior to the study (70.9%). All these results showed statistical significance ( $P<0.05$ ). As for the items used to carry out oral hygiene, the most commonly cited were: dental floss associated with a soft brush and toothpaste (30.4%) and dental floss associated with a soft brush, toothpaste and mouthwash (21.2%).

It was found that the prevalence of periodontal alterations in the sample was 99.2%, and in Dentistry, Nursing, Physical Education, Psychology and Statistics courses there was a higher prevalence of gingivitis. For the courses of Physiotherapy, Pharmacy and Computing Science, the highest prevalence was suggestive of a diagnosis of periodontitis. It is noteworthy that the few students (0.8%) who had a healthy periodontium belonged to Dentistry, Pharmacy and Nursing courses. The study showed that the Dentistry students had a better periodontal status when compared with students from other courses, including a lower prevalence (25.8%) in cases suggestive of periodontitis (Table 1).

For the courses in Dentistry, Nursing, Physical Education, Psychology and Statistics, the most prevalent score was IT 2 whereas for the courses in Computer Science, Pharmacy and Physiotherapy, the most prevalent score was IT 4 (Table 2). Statistically significant associations ( $P<0.05$ ) were found between periodontal diagnosis and the courses and between treatment implication and the courses.

**Table 1.** Distribution of students according to their periodontal diagnosis and their course.

Course	Diagnosis							
	Healthy Periodontium		Gingivitis		Suggestive of Periodontitis		Total	
	n	%	n	%	n	%	n	%
Dentistry	1	1.6	45	72.6	16	25.8	62	100
Physiotherapy	0	0	23	46.9	26	53.1	49	100
Pharmacy	1	2.2	12	26.7	32	71.1	45	100
Nursing	1	1.3	41	53.2	35	45.5	77	100
Physical Education	0	0	30	60	20	40	50	100
Psychology	0	0	27	57.4	20	42.6	47	100
Computing Science	0	0	6	23.1	20	76.9	26	100
Statistics	0	0	23	63.9	13	36.1	36	100
Total	3	0.8	207	52.8	182	46.4	392	100

**Table 2.** Distribution of students as a function of the treatment implication.

Course	Treatment implication											
	0		1		2		3		4		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Dentistry	1	1.6	13	21	32	51.6	7	11.3	9	14.5	62	100
Physiotherapy	0	0	5	10.2	18	36.7	6	12.2	20	40.8	49	100
Pharmacy	1	2.2	3	6.7	9	20	7	15.6	25	55.6	45	100
Nursing	1	1.3	6	7.8	35	45.5	10	13.0	25	32.5	77	100
Physical Education	0	0	4	8	26	52	7	14	13	26	50	100
Psychology	0	0	2	4.3	25	53.2	11	23.4	9	19.1	47	100
Computing Science	0	0	1	3.8	5	19.2	1	3.8	19	73.1	26	100
Statistics	0	0	4	11.1	19	52.8	5	13.9	8	22.2	36	100
Total	3	0.8	38	9.7	169	43.1	54	13.8	128	32.7	392	100

## Discussion

It is noteworthy that the actions of integration between the student and the university are both feasible and necessary, and can become an agent in the process of oral health. Periodontal disease is of high prevalence and, without a proper diagnosis patients with this disease can have irreversible outcomes, including insertion loss, and tooth loss (11). Recently, the association between the presence of periodontal disease and certain systemic conditions has been reported (1,12-13). This reinforces the need for an accurate diagnosis and the establishment of health conditions in the periodontal tissues in order to reduce the chance of periodontal disease increasing the risk of impaired general health (14).

According to Trentin and Oppermann (15), brushing and flossing must be carried out at least once a day. Floss is an effective tool for removing biofilm and maintaining interproximal gingival health. In turn, manual toothbrushing is a highly effective method when properly carried out for an adequate period of time, besides being the primary method used in the maintenance of satisfactory oral hygiene for the majority of the population, which is corroborated by this study, where 57.9% of students reported that they brushed their teeth three times a day and 78.6% used dental floss at least once a day. The pattern of daily brushing reported by students was high when compared with that observed in European countries and the United States, where the most common frequency of daily toothbrushing is one to two times a day (16). Abegg (16) also showed that oral hygiene habits are common in most individuals, however there is lack of knowledge regarding their use, which corroborates the findings of this research, although 98.7% of students reported receiving some type of oral hygiene orientation.

According to Pietrobon et al. (17), several unnecessary, cumbersome and costly treatments could be avoided if individuals made periodic visits to the dentist, as most students in this research did, who stated that they regularly visit the dentist, and that their last visit was during the period varying between 6 months and 1 year prior to the study. However, Fúccio et al. (18) recommend that the intervals of maintenance visits are determined by the risk category into which the patient falls, taking into account the stage of eruption of teeth, occlusal development, risk and caries activity, orthodontic needs and condition of the soft tissues. Thus, it can be concluded from the statements of those authors that each patient's interval between maintenance visits should be individualized.

PSR method is easy to apply and showed the status of the group investigated by demonstrating that the majority had some periodontal alteration. Gingivitis was the most prevalent in the courses of Dentistry, Nursing, Physical Education, Psychology and Statistics, and the diagnosis

suggestive of periodontitis was the most prevalent in the courses of Physiotherapy, Pharmacy and Computing Science. Only 0.8% of the students had good periodontal health and all of these belonged to courses in the field of health, particularly to the courses in Dentistry, Nursing and Pharmacy. The results of this study agree with Dourado and Rapp (19), who used the same index (PSR) to diagnose the periodontal status of university students.

Similar data were also found in an experiment by Broun et al. (20), which showed that of the total number of individuals participating in research aged between 19 and 44 years, only 17.3% exhibited good periodontal health. Matsson (21) found that young Dentistry students (23-25 years) have a trend of gingival bleeding on probing that is higher than the population of children. In addition, Dantas and Regô (22) found that students of Dentistry, at the Federal University of Rio Grande do Norte (UFRN), had a high rate of gingival bleeding on probing. In our study, where 392 students were examined, there was a higher prevalence of codes 2, 1 and 3 of the PSR, respectively, which suggests profiles of chronic gingivitis (codes 1 and/or 2) and is suggestive of periodontitis (code 3).

The PSR is a good tool for communication between professional and patient, because it facilitates the understanding of the periodontal condition, expresses the current status as a score and defines periodontal health goals (23). Thus, in this survey, the majority (42.9%) of students had Treatment Implication TI2, followed by TI4 (32.7%) after the PSR exam. This finding emphasizes the relevance of this research, because assessing the periodontal condition of students at the State University of Paraíba, who are mainly young adults, can provide insight that can be used to plan actions to promote oral health and dental care in order to guide preventive measures that are geared towards university academics.

## Conclusions

- University students, in general, take good care of their oral health and have satisfactory oral hygiene habits;
- Most university students present a conclusive periodontal diagnosis of chronic gingivitis or suggestive of periodontitis, presenting, therefore, a need for treatment implications TI2 (basic periodontal procedures) or IT4 (referral to a specialist and comprehensive periodontal treatment);
- The Dentistry students have oral hygiene habits and periodontal condition that is better than those of other courses studied, attesting that the knowledge acquired during the course in relation to oral health, periodontal disease, biofilm and oral hygiene conditions exerts a strong influence on their own oral condition.

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