

# Dentistry for Special Needs Patients in undergraduate teaching: perception of students and professors at a university in Piauí and a Brazilian overview

Ana Beatriz dos Santos Conceição\* ; Isaac Torres dos Santos\*\* ; Aryvelto Miranda Silva\*\* ; Raimundo Rosendo Prado Júnior\*\*\* ; Regina Ferraz Mendes\*\*\*

- \* Dentistry Course, Federal University of Piauí
- \*\* Post-graduation Program in Dentistry, Federal University of Piauí
- \*\*\* Full Professor, Post-graduation Program in Dentistry, Federal University of Piauí

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## ABSTRACT

Dentistry undergraduates do not acquire much experience managing Patients with Special Needs (PSN) during their university training. This knowledge deficit contributes to the situation where PSNs face barriers to accessing oral health services. This study was a cross-sectional, descriptive and exploratory study about the perception of Dentistry students and professors at the Federal University of Piauí (UFPI - Brazil) on whether care of PSN should be included in their course. The reactions of students facing a simulated situation of dental care for PSN was also analyzed. A survey of the situation regarding PSN inclusion at other universities in Brazil was also carried out. Professors and students filled out questionnaires and information regarding university curriculums was collected from their websites. Descriptive data analysis was performed, and Fisher's exact test was applied. Most UFPI students reported never having treated a PSN (54.8%) and, of these, 67.7% did not feel confident to provide this treatment. Most professors (73.1%) reported having treated PSN. Most students (84.7%) and professors (53.8%) agree that Dentistry for PSN should be mandatory in the curricular structure. Lack of confidence was the most common reaction of students to a simulation of dental care for a PSN. Dentistry for PSN is part of the curriculum of 67.8% of the Dentistry courses surveyed. In conclusion, the lack of Dentistry for PSN during student training can make dentists-to-be unsure about how to treat PSN in real-life situations. The inclusion of dental care for PSN in the curriculum is supported by students and teachers. The topic is present in most Dentistry courses in Brazil.

**Descriptors:** People with Disabilities. Dentistry Education. Dentistry students.

## 1 INTRODUCTION

Worldwide, approximately one billion people have a disability<sup>1</sup>. In Brazil, around 45.6 million people (23.9% of the population) have an

intellectual, physiological or anatomical disability<sup>2</sup>. To extend the right to health treatment for this significant portion of the population, the National Health Policy for People with Disabilities, established by Ordinance 1.060/2002, improved assistance to people with disabilities in the entire network of services of the Brazilian Unified Health System (SUS)<sup>3</sup>.

People with special needs (PSN) are at greater risk of developing oral diseases, such as tooth decay and periodontal disease<sup>4,5</sup>. These individuals have higher immune<sup>6</sup> and financial<sup>7,8</sup> risk factors and it is more difficult for them to adequately control oral biofilm than the non-disabled population<sup>9</sup>. Oral health care in Brazil has underprovided for PSN, whether in an outpatient, domiciliary or hospital setting<sup>10</sup>. Of the 336,000 registered dentists across the country in 2021, only 759 have a qualification in Dentistry for Patients with Special Needs<sup>11</sup>. This scarcity of trained professionals precipitated the creation of Centers of Dental Specialties (CEOs) as part of the Unified Health System (SUS). However, even these centers do not provide enough qualified professionals to assist the oral health needs of the population with disabilities<sup>12</sup>.

Between 45 and 70% of PSN have difficulty in accessing dental services. The main barriers are unpreparedness of professionals, communication difficulties and physical obstacles to access dental offices. Furthermore, dentists ignore the type of need for dental treatment of PSN<sup>13,14</sup>. These difficulties can also be a consequence of the lack of training of students to treat PSN in graduation<sup>15</sup>. PSN are individuals who have one or more mental, physical, sensorial, emotional, growth or medical disability, whether temporary or permanent. This deficiency prevents them from undergoing conventional dental care<sup>16</sup>. Therefore, PSN do not necessarily require care in specialized services, but can be treated in basic oral health

care services.

Even though Dentistry for PSN is an official professional specialty recognized by the National Council of Dentistry since 2002, the pedagogical autonomy of higher education institutions makes inclusion of the topic non-mandatory in the curriculum of undergraduate courses<sup>17</sup>. According to the National Curriculum Guidelines in force, dentists must be a professional with generalist, humanist, critical and reflective training<sup>18</sup>. Therefore, it would be expected for the generalist dentist to have a theoretical-practical foundation during their training to enable them to treat, at least, PSN who do not require specialized health care. In view of this objective, many higher education institutions try to make up for this curricular limitation by creating internships of experience and multidisciplinary work<sup>19</sup> or outreach projects for PSN.

Previous studies sought to quantify the implementation of PSN topic in Dentistry courses in Brazilian universities<sup>19-26</sup>. However, an overview of the inclusion of a curricular unit that addresses this issue at the national level is unprecedented. In addition, the literature is scarce on the opinion of the possible impacts of the absence of the PSN topic on the training of future dentists, according to the perception of dentistry students and professors. Thus, the present study aimed to: (1) assess the perception of undergraduate dentistry students and professors at the Federal University of Piauí on the inclusion of Dentistry for PSN in the curriculum, (2) analyze the reactions of students facing a simulated situation of dental care for PSN, and (3) to show an overview of the presence of PSN topic of Dentistry undergraduate courses in Brazil.

## 2 METHODS

A cross-sectional observational,

exploratory and descriptive study, with a quantitative approach was carried out. The study followed the ethical recommendations of Resolution 510/2016 of the National Health Council and was approved by the Ethics Committee for Research with Human Beings at the Federal University of Piauí (CAAE 12936519.0.0000.5214). The Survey Reporting Guideline (SURGE)<sup>27</sup> was also consulted.

The study was developed with the Dentistry Course of the Federal University of Piauí (UFPI), based in Teresina. For inclusion in the study sample, students who were regularly enrolled in at least one academic unit with practical clinical activities (3rd to 9th terms) during the second semester of 2019 were considered eligible, totaling 189 students. Professors who were teaching subjects in the professional cycle of the curriculum at the time of the beginning of the study were also considered eligible, totaling 38 professors. All students and professors considered eligible were invited to participate in the study.

For the inclusion in the survey of higher education institutions (HEIs) in Brazil that offer the Dentistry course, the sample calculation for simple random sampling adjusted for finite populations (<http://www.openepi.com/SampleSize/SSPropor.htm>) resulted in n=143 HEI, for the sample to be considered representative of the population. A stratified sampling was carried out according to the proportions of institutions for each region of the country (Midwest, Northeast, North, Southeast and South).

UFPI students and professors who were eligible for the study received a Google Forms<sup>®</sup> link, via WhatsApp<sup>®</sup> instant messaging application, to complete the questionnaire created. The questionnaire used in this study is available in an online repository (DOI 10.17605/OSF.IO/J4ZR7) and was created based on the study by Jacomine et al. (2018)<sup>20</sup>. The

instrument consisted of questions related to the knowledge and attitudes of students/professors about the provision of dental care to patients with special needs (PSN) in an undergraduate teaching environment. In addition, the description of a simulated situation of dental care to PSN was presented, and the behavioral reactions of the students were assessed. For this situation, the scores were inversely proportional to the likelihood of their reaction. There were response alternatives of 10 possible reactions to the simulated service provided and for the student's reaction.

Study participants were free to answer the questionnaire at a day and time of their choice. A single reminder was sent via WhatsApp<sup>®</sup> 15 days after the first request.

The websites of the selected universities were accessed to collect the data. The data collected consisted of the information on whether there was a curricular activity related to Dentistry for PSN, whether it was mandatory or optional, the type of activity (theoretical, practical or theoretical-practical) and the duration (in hours). If the website did not contain the information on their curriculum, they were excluded, and another university was selected. Those courses with incomplete data on the subject offered were also excluded from the study (n=11). All HEI's data used for sample selection are available at the National Register of Higher Education Courses and Institutions (<http://emec.mec.gov.br/>).

Data were tabulated and analyzed using IBM SPSS<sup>®</sup> Statistics (Armonk, NY, USA) version 22.0 for Windows. Response rates for students and faculty were obtained from the  $P_R/P_E$  formula, where the R and E subscripts represent the responding and eligible participants, respectively. Descriptive analyzes were performed and presented in absolute (n) and relative (%) frequencies. The possible association between the dichotomous variables "Participation

in the extension project of Promotion of Oral Health for Special Patients (PROSBE)" and "Ability to treat patients with special needs" was verified by Fisher's Exact Test and the impact of the duration of the university degree of students on perception and attitudes related to PSN was assessed by Pearson's Chi-square test. A significance level of 5% was adopted for all analyses.

### 3 RESULTS

Answers were obtained from 124

students and 26 professors, a 65.6% and 68.4% (response rate, respectively) of the UFPI Dentistry course.

The analysis of the curricular structure of 143 Brazilian Dentistry courses was carried out. Figure 1 shows the distribution of participating students per term attended at the time of inclusion in the study. Most students (54%) had attended at least one of the four supervised internships, as part of the curriculum, which are offered from the 6th through to the 9th academic term.

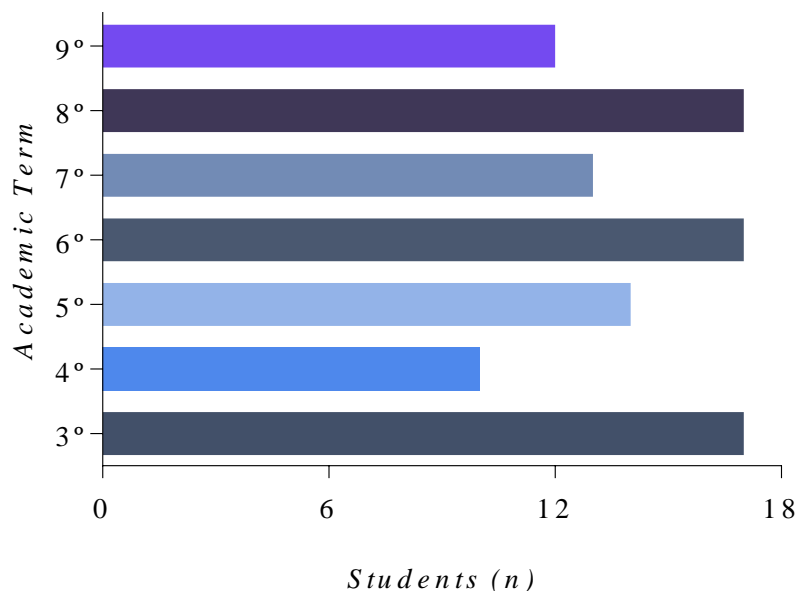


Figure 1. Distribution of UFPI Dentistry students per academic term

Table 1 describes the participants of the study. It was observed that most students (54.8%) have never treated PSN or participated (80.6%) of PROSBE outreach project but showed some interest in how to proceed with PSN (75.8%). In addition, 58.1% of the participants had not attended lectures or courses on the topic and 63.7% of the participants do not feel prepared to treat a PSN. When the students' data were analyzed

according to the academic semester (table 2), higher frequencies of PNS treatment ( $p=0.001$ ), participation in PROSBE outreach project ( $p=0.011$ ) and self-reported feeling of preparedness for assistance to PNS ( $p=0.001$ ) among students in more advanced stages of the course (6th to 9th semesters) compared to other students (3rd to 5th semesters) were observed. In addition, a significant association ( $p<0.001$ ) was found between participating in the

outreach project and the ability to care for PSN, demonstrating that approximately 9 out of 10 students participating in the project reported feeling confident to care for PNS (table 3).

Table 1. UFPI students' knowledge and attitudes regarding PSN

Variable		n	%
<i>PSN in the family</i>	Autism	11	8.9
	Cerebral Palsy	3	2.4
	Down Syndrome	11	8.9
	Others	11	8.9
	No PSN in the family	88	70.9
<i>Treated PSN<sup>1</sup></i>	Yes, outreach project**	22	17.7
	Yes, at UFPI	20	16.1
	Yes, at public setting (CEO/UBS)	9	7.3
	Yes, other setting	7	5.6
	No	68	54.8
<i>Participated of PSN outreach project *</i>	Yes	24	19.4
	No	100	80.6
<i>Intends to seek knowledge on procedures in PSN</i>	Yes	94	75.8
	No	30	24.2
<i>Attended lectures on the dental treatment of PSN</i>	Yes	54	43.5
	No	70	56.5
<i>Feels confident to treat dental needs of PSN</i>	Yes	45	36.3
	No	79	63.7
<i>Special needs patient that you feel confidente to treat<sup>1</sup></i>	Autism	35	28.2
	Cerebral Palsy	15	12.1
	Down Syndrome	40	32.3
	Others	2	1.6

<sup>1</sup> More than one choice allowed as answer; \* Oral Health Promotion Program for Special Patients; \*\*Integrated Special Education Center.

Table 2. UFPI students' knowledge and attitudes regarding PSN, per academic term

Variable	Term		p <sup>1</sup>	
	3 <sup>rd</sup> - 5 <sup>th</sup>	6 <sup>th</sup> - 9 <sup>th</sup>		
<i>Treated PSN</i>	Yes	13	42	0.001
	No	37	32	
<i>* Participated of PSN outreach project *</i>	Yes	4	21	0.011
	No	46	53	
<i>Intends to seek knowledge on procedures in PSN</i>	Yes	40	54	0.495
	No	10	20	
<i>Attended lectures on the dental treatment of PSN</i>	Yes	21	33	0.919
	No	29	41	
<i>Feels confident to treat dental needs of PSN</i>	Yes	7	33	0.001
	No	43	41	

<sup>1</sup>Pearson's chi-square test ( $\alpha = 0.05$ ); \* Oral Health Promotion Program for Special Needs Patients.

Table 3. Distribution of Dentistry students at UFPI according to participation in an extension project and self-reported aptitude to perform dental care to PSN.

Attended PROSBE*	Confident to treat PSN			Total	p <sup>1</sup>
	No	Yes			
No	82 (66.1%)	18 (14.5%)	100 (80.6%)	<0.001	
Yes	2 (1.6%)	22 (17.8%)	24 (19.4%)		
<b>Total</b>	84 (67.7%)	40 (32.3%)	124 (100.0%)		

<sup>1</sup>Pearson's chi-square test ( $\alpha = 0.05$ ); \* Oral Health Promotion Program for Special Needs Patients.

Insecurity and frustration were the main reactions of students in face of the fictitious situation of dental care for a PSN (Figure 2). On the other hand, the inclusion of PSN as a mandatory topic in the curricular structure of the Dentistry course at UFPI is advocated by majority of students (84.7%) and teachers (53.8%) participants.

Table 4 shows that although most of the professors participating in the study reported having already treated a PSN (73.1%), the majority also never carried out guidance of PSN dental care in undergraduate clinics (61.5%) and neither took courses on PSN (53.8%) or showed interest in the topic (61.5%).

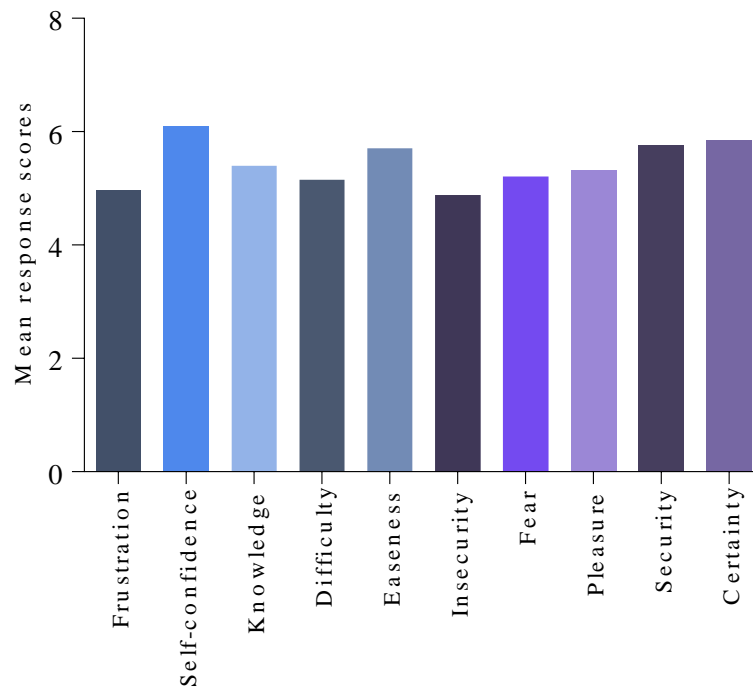


Figure 2. Mean response scores of UFPI Dentistry students to a simulated situation of dental care for a patient with special needs

Table 4. UFPI Dentistry professors' knowledge and attitudes regarding PSN

Variable	n	%	
<i>PSN in the Family/ friends</i>	Yes	8	30.8
	No	18	69.2
<i>Treated any PSN</i>	Yes	19	73.1
	No	7	26.9
<i>Has supervised PSN treatment</i>	Yes	10	38.5
	No	16	61.5
<i>Intends to seek for knowledge on procedures for PSN</i>	Yes	10	38.5
	No	16	61.5
<i>Has attended any Lectures on dental treatment of PSN</i>	Yes	12	46.2
	No	14	53.8
<i>PSN should be treated at public service</i>	Yes	21	80.8
	No	5	19.2



According with e-MEC system, the largest number of Dentistry courses included in the study were in the Southeast region (35.7%) and were private educational institutions (76.2%) (table 5). In addition, approximately 2/3 of the

evaluated courses (67.8%) offered the PSN topic in their curricular structure. The topic was offered on a mandatory basis (54.5%), in a theoretical-practical format (48.2%) and with a duration of approximately 60 hours.

Table 5. Distribution of the sample of Dentistry courses in Brazil<sup>1</sup> and distribution of the ones that offer the topic of Dentistry for Patients with Special Needs<sup>2</sup>, considering the institution's management, character, format and duration of the topic

Region	Administration <sup>1</sup>		Character <sup>2</sup>		Format <sup>2</sup>			Mean Duration
	N=143		N=97		N=97			
	<i>Public</i>	<i>Private</i>	<i>Mandatory</i>	<i>Optional</i>	<i>Theoretical</i>	<i>Practical</i>	<i>Both</i>	
Midwest	2 (1.4%)	12 (8.4%)	5 (5.2%)	2 (2.1%)	2 (2.1%)	-	5 (5.1%)	61h45min
Northeast	9 (6.3%)	32 (22.4%)	33 (34.0%)	8 (8.2%)	10 (10.3%)	3 (3.1%)	28 (28.9%)	70h48min
North	1 (0.7%)	12 (8.4%)	13 (13.4%)	-	3 (3.1%)	1 (1.0%)	9 (9.3%)	63h50min
Southeast	14 (9.8%)	37 (25.8%)	20 (20.6%)	4 (4.1%)	4 (4.1%)	1 (1.0%)	19 (19.6%)	60h40min
South	8 (5.6%)	16 (11.2%)	7 (7.2%)	5 (5.2%)	4 (4.1%)	-	8 (8.3%)	56h15min
Brazil	34 (23.8%)	109 (76.2%)	78 (80.4%)	19 (19.6%)	23 (23.7%)	5 (5.2%)	69 (71.1%)	62h40min

#### 4 DISCUSSION

This study described the perception of students and professors at a public Dentistry university in a Northeastern capital of a Brazilian state, regarding the teaching PSN topic. Most undergraduate students and professors at UFPI are in favor of the inclusion of a PSN discipline in the course's curricular structure, and students mostly showed negative reactions in face of a simulated situation of dental care for PSN. In addition, it was observed that the PSN topic is offered by most

Dentistry undergraduate courses in Brazil on a mandatory basis and in a format that involves theoretical and practical activities.

Having a family member and/or friend with a disability has an impact on the behavior of the individual, which can affect the way they deal with the public, by making them more sensitive and creating interest in the topic<sup>28</sup>. In the present study, the proportion of PSN in the family circle or friends of students (29%) and teachers (30.8%) was close to what Brazilian Institute of Geography and Statistics (IBGE)



found for the prevalence of PSN in the Brazilian population (23.9%)<sup>2,19</sup>.

Dentistry students who treat PSN during graduation experience different clinical scenarios, which require equally different approaches<sup>26</sup>. This tends to improve dental care for PSN in the future professional practice of these students<sup>25</sup>. However, this is not the reality of the participants in this study, in which it was found that more than half (54.4%) did not receive any care for PSN. A similar situation was observed among students from Centro Universitário São Lucas (UNISL) and Faculdades Integradas Aparício Carvalho (FIMCA), in the state of Rondônia (53.3%)<sup>21</sup>.

The absence of PSN topic in the curriculum of the UFPI Dentistry course directly impacted our results. Although most professors (73.1%) reported having treated a PSN, only 38.5% of them had some interest in seeking knowledge on the subject. On the other hand, 75.8% of students sought some information on PSN topic, through lectures, courses, and the like. Since 2007, UFPI has been offering the students an Outreach Project that aims to promote oral health and dental care to PSN, the result of a partnership with the Department of Education of the State of Piauí.

The outreach project is an opportunity to fill this gap in the undergraduate Dentistry degree and it has established a strong bond between teaching-research-extension activities for students and professors, with development of research projects and master's dissertations, for example<sup>29-34</sup>. However, 80.6% of the responding students in this study did not participate in the project. That can be explained by the need to limit the number of available places for students and the difficulty students face to accommodate the project with mandatory curricular activities.

Evidence suggests that undergraduates

who participate in projects of this nature become more confident to provide dental care to PSN, unlike undergraduates who have never had contact with this type of patient<sup>22,23</sup>. Corroborating such evidence, the findings of the present study demonstrate an association between participation in the extension project and the confidence to treat a PSN (Tab. 3). In addition, these undergraduates develop a critical view, free of prejudices and better clinical and behavioral management of these patients and their families<sup>22,23</sup>. This was also evident when we analyzed the interest in providing dental care to PSN according to the academic semester that the student was enrolled and found a greater confidence by the more advanced students.

The self-doubt to care for PSN of some dentists is the result of inexperience, mainly caused by the lack of contact with these patients during their university degree<sup>24</sup>. This insecurity in primary care dentists triggers an indiscriminate referral of these patients to specialized centers<sup>25</sup>, contrary to the recommendations of No. 17 Primary Care Norms of the Unified Public Service<sup>35</sup>.

Most professors participating in this study advocate that PSN should be treated in primary care health services, but it does not occur routinely<sup>36</sup>. The lack of experience during the graduation is a decisive factor for such scenario<sup>24,37,38</sup>.

Faced with a simulated scenario of dental care to PSNE, "lack of confidence" was the most prevalent reaction among students. Similarly, Amaral et al.<sup>19</sup> observed that 54% of students were not confident to in care for patients with systemic diseases, physical or emotional frailty. The hesitancy of undergraduates to care for PSN is reported in other studies, as well as the desire of students to provide care in the best possible way<sup>39,40</sup>.

The present study found that, 54.5% of the courses that offer PNS topic do so in a mandatory manner. PSN topic should be a mandatory curricular topic of Dentistry courses<sup>41</sup>. That would facilitate contact between students and these patients and with content related to the topic. Therefore, students would develop confidence and security to treat PSN during their professional career<sup>42</sup>. According with the 2002 National Curriculum Guidelines (DCN), the training of dentists should be generic in nature, working in all areas of oral health care<sup>43</sup>. The 2018 review of the guidelines states that Dentistry courses must also guarantee training focused on outpatient clinical dental care for individuals with special needs<sup>44</sup>. Considering that a significant portion of the population has some type of disability, the acquisition of humanized and adequate dental care skills for PSN needs to be emphasized<sup>45</sup>.

In a study carried out in 2006, Fassina et al.<sup>45</sup> found that 221 higher education institutions (public and private) in Brazil had an undergraduate degree in Dentistry and that 27.9% offered some discipline related to Dentistry for PSN. Surprisingly, the findings of the present study showed that approximately 2/3 of the selected institutions offer the topic on PSN as part of their curriculum. This represents a vertiginous growth within 15 years<sup>44</sup> and may be associated with the continuous campaigns for social inclusion and accessibility of social media and civil society movements. The creation of new Dentistry courses in Brazil may also have driven this change, since it is expected that new courses try to address limitations or problems of the existing institutions. In addition, more than half of public and private institutions in all regions of Brazil had in their curriculum a teaching unit focused on PNE, showing a growing concern

with the inclusion of this theme in the training of new dentistry professionals<sup>46</sup>.

The PSN disciplines assessed in this study have a mean duration of 62 hours and 40 minutes and the largest proportion of them (48.2%) is offered in a theoretical-practical format. Similar findings were found by Penha (2018)<sup>42</sup>, who reported a mean duration of 62.2 hours, in addition to observing in this study that all disciplines on PSN were offered on a mandatory basis and most were theoretical-practical. The integration of theory with practice expands knowledge and favors student's clinical management of the eventual real-life situations. In a more qualified, efficient and humanized way<sup>45,47,48</sup>.

Therefore, this study shows a growing interest in the provision of teaching for dental care of PSN in Brazil. In addition, the fact that most students and professors perceive the need to include a discipline on this topic should be an alert for other undergraduate courses in the country that do not offer have Dentistry for PSN in their curriculum or any activity to fill this gap in the training of undergraduate dental students.

This study has some limitations. Its cross-sectional nature makes it impossible to establish causal relationships between the analyzed variables. In cross-sectional studies, a response above 80% is expected to minimize non-response bias, that the responses of the portion of respondents differ from those of non-respondents<sup>49</sup>. Although our response rate was around 60%, we believed that, because respondents and non-responders are individuals inserted in the same environment and who are exposed to the same factors that have potential effects on the assessed outcomes, this was a mild bias.

The acquaintance between the authors and the teaching institution may represent an

information bias in the study. However, obtaining the data through online questionnaires ensured the anonymity of the participants, which minimized this risk of bias. Finally, a possible selection bias is inherent to the exclusion of the institutions whose curriculum were unavailable. These institutions may represent those with fewer specific PSN disciplines. However, the excluded institutions represent a low percentage relative to the obtained sample (~13%) and it is believed that they did not influence the findings of the study.

## 5 CONCLUSION

Most of the students participating in this study have never treated any PSN, and when faced with a fictitious care situation, the most frequently reported reactions were frustration and lack of confidence. The inclusion of PNE as a compulsory subject in the curricular structure of the Dentistry course at UFPI is supported by most students and professors. The PSN teaching unit is offered in approximately 2/3 of the courses evaluated in this study, mostly on a mandatory basis, in a theoretical-practical format and with an average workload of approximately 60 hours. Thus, it is important to include mandatory activities that encompass this topic.

## RESUMO

### **Odontologia para Pacientes com Necessidades Especiais no ensino de graduação: percepção de discentes e docentes em uma instituição do Piauí e um panorama brasileiro**

A inexperience do graduando em Odontologia no manejo de Pacientes com Necessidades Especiais (PNE) gera lacunas na formação e pode contribuir para a barreira de acesso desses indivíduos aos serviços de saúde bucal. Este estudo analisou a percepção de discentes e docentes do curso de Odontologia da

Universidade Federal do Piauí (UFPI) sobre a inclusão de atendimento a PNE no ensino de graduação e o panorama nacional da oferta de disciplina de PNE na estrutura curricular de cursos de Odontologia. Foi realizado um estudo transversal, descritivo e exploratório, com aplicação de questionários a discentes e docentes do curso de Odontologia da UFPI. As matrizes curriculares dos cursos foram consultadas em endereços eletrônicos institucionais. Foi realizada análise descritiva dos dados e teste Exato de Fisher foi aplicado. A maioria dos discentes relataram nunca ter atendido um PNE (54,8 %) e, destes, 67,7% não se sentem preparados para este atendimento. A maioria dos discentes (84,7%) e docentes (53,8%) aprova a obrigatoriedade da disciplina de PNE na estrutura curricular. Insegurança foi a reação mais comum dos discentes ao atendimento odontológico fictício a um paciente PNE. Entre os docentes participantes do estudo, 73,1% informaram já ter atendido PNE. Em 67,8% dos cursos de Odontologia pesquisados há oferta de disciplina de PNE. Em conclusão, a ausência de atendimento a PNE gera insegurança aos graduandos em Odontologia. A inclusão do tema PNE na matriz curricular é apoiada por discentes e docentes. A disciplina está presente na maioria dos cursos de Odontologia do Brasil.

**Descritores:** Pessoas com Deficiências. Educação em Odontologia. Estudantes de Odontologia.

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**Correspondence to:**

Aryvelto Miranda Silva

e-mail: [aryveltomirand@gmail.com](mailto:aryveltomirand@gmail.com)

Programa de Pós-graduação em Odontologia

Universidade Federal do Piauí

Campus Universitário Ministro Petrônio

Portella

Bloco 5, Bairro Ininga

64049-550 Teresina/PI Brazil