

Paediatric Dentistry curriculum in undergraduate Dental courses in Brazil

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ABSTRACT

This study aimed to collect information regarding the contents of paediatric dentistry developed in Brazilian undergraduate dental courses. For data collection, an electronic questionnaire was sent to each course and answered by the teacher of the discipline. In January 2017, according to the E-MEC website, 372 institutions offered dental courses in Brazil. Of these, 76 answered that the course was new and the contents had not yet been actually offered. Thus, the total sample was initially reduced to 296 institutions, among which 139 answered the questionnaire (response rate = 47%). The discipline of paediatric dentistry was generally offered in two semesters (42.4%), with an average workload of 84.5 hours for theoretical activities, 34.2 hours for laboratory practices. It was observed that 35.3% of the courses did not have laboratory activities. With regard to clinical activities, 38.1% did not provide care to children aged 0 to 3 years old and the average hours of clinical care for children older than 3 years old was 119.3 hours. The elements and dimensions discussed here should guide further investigation into the quality of training of the general dentist on the one hand, and on the other, into the curriculum of the discipline of paediatric dentistry.

Descriptors: Educational Measurement. Education, Higher. Paediatric Dentistry. Dentistry. Curriculum.

1 INTRODUCTION

The first dental course in Brazil was established by means of a decree of 25 October 1884, according to number 9311, regulating the creation of new courses of dentistry, pharmacy and obstetrics linked to medical schools. At the time, the country's only two schools of medicine were in the cities of Rio de Janeiro and Salvador. That decree listed the subjects to be taught in the dental course on a mandatory basis, but the discipline of paediatric dentistry still did not exist.

With the creation of dental courses unlinked to medical schools, the dentistry curriculum was widened. Since then, this curriculum has been increased and with the foundation of the University of São Paulo in January 1934 and curricular reformulation, the 12th discipline of orthodontics and paediatric dentistry was created⁴. In 2002, with the advent of the National Curriculum Guidelines for Undergraduate Dental Course (according to resolution number 3/2002), basic standards were established for dental course and among these, the following main contents should be taught³: I - Biological and Health Sciences; II - Human and Social Sciences; and III - Dental Sciences (Clinical Propaedeutics, Dental Clinics and Paediatric Dentistry).

The guidelines were aimed at establishing minimum competencies for surgeon-dentists at the end of their undergraduate course, but without specifying the objective of each discipline. On the other hand, the curriculum guidelines published in 2009 by the European Academy of Paediatric Dentistry (EAPD)⁵ specify objectives of the disciplines as well as skills and competencies each student is expected to acquire during the undergraduate course. In Brazil, there is nothing similar to that.

In this sense, considering the competencies to be developed during the undergraduate course

regarding the paediatric dentistry contents, the objective of this study was to collect and compare information on the curriculum of this field in the institutions offering dental courses in Brazil.

2 METHODOLOGY

This is a cross-sectional descriptive study approved by the research ethics committee of the University of São Paulo Faculty of Dentistry (FOUSP) according to protocol number CAAE 83759418.7.0000.0075 and approval number #2523026. A 30-item electronic questionnaire was initially elaborated by using the Google Forms platform, in which 23 questions were open-ended and seven multiple-choice ones. The questionnaire's main themes were grouped as follows: general information on the dental course; content and framework of the theoretical classes in paediatric dentistry; content and framework of the practical classes in paediatric dentistry; content and framework of the distance learning in paediatric dentistry; content and framework of the practical classes in paediatric care for children younger than 3 years old; and content and framework of the practical classes in paediatric care for children older than 3 years old.

The answers were mandatory for all questions and anonymity was ensured with no identification prior to sending the questionnaire.

The questionnaire was tested in a pilot study with paediatric dentistry postgraduate students of the FOUSP to assess whether the elaborated questions were clear and easy to fill in.

Data on the courses were collected from the e-MEC system⁶. In 2017, when the study was initiated, there were 372 institutions offering dental courses. Because some offered both daytime and evening courses, there are a total of 381 undergraduate courses in dentistry in Brazil.

To keep contact with a professor of paediatric dentistry of each course, we had support

from the Brazilian Association of Paediatric Dentistry (*ABOPED*), who asked the regional chairmen to try to find the electronic mail of at least one of the professors of paediatric dentistry in each dental course in its respective state.

In addition, the main researcher called the secretariat of several institutions in order to obtain contact information of the paediatric dentistry professors. Of the 372 institutions, 76 replied that

the dental course was new and they did not have the discipline of paediatric dentistry, meaning that the total sample was initially reduced to 296 dental courses. In addition, in 115 institutions we did not succeed in obtaining contact information of any professor of paediatrics, and those of 42 institutions which were invited to participate did not respond. Therefore, the final sample consisted of 139 respondents (Figure 1).

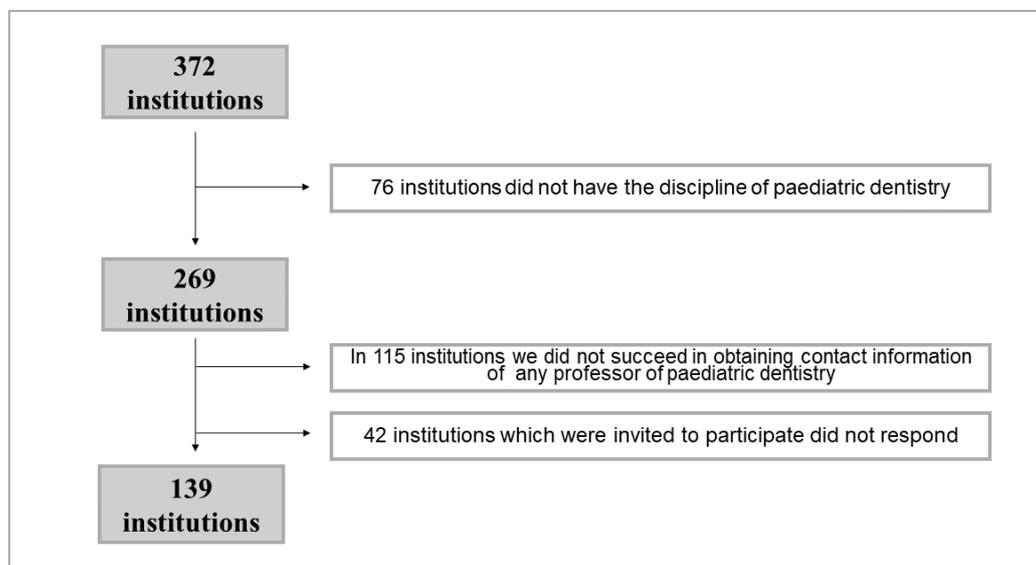


Figure 1. Flowchart with sample description

The professors were e-mailed an invitation to participate in the survey, which informed the objectives and methodology used as well as the links to access an informed consent form and the electronic questionnaire.

The answers were entered into Excel spreadsheets (Redmond, WA, USA) and submitted to descriptive analysis. If more than one professor of the same institution had responded, then only the first answer was considered.

3 RESULTS

Of the 296 dental courses potentially eligible for our study, 139 responded the questionnaires, that is, the overall response rate

was 47%.

Of the institutions offering dental courses, 317 are private ones and 55 are public ones, corresponding to 85.2% and 14.8%, respectively, in the total sample. Among the public institutions, 45 (81.8%) participated in the study and one offered the course. Figure 2 shows the distribution of the institutions offering dental courses by state.

Of the 139 institutions who responded the questionnaire, 100 (71.9%) offered only one dental course, 32 (23%) offered two and seven (5%) offered three, totalising 185 dental courses. Of these, 104 (56.2%) are full-time, 32 (17.3%) are

in the morning, 21(11.4%) are in the afternoon and 28 (15.1%) are in the evening.

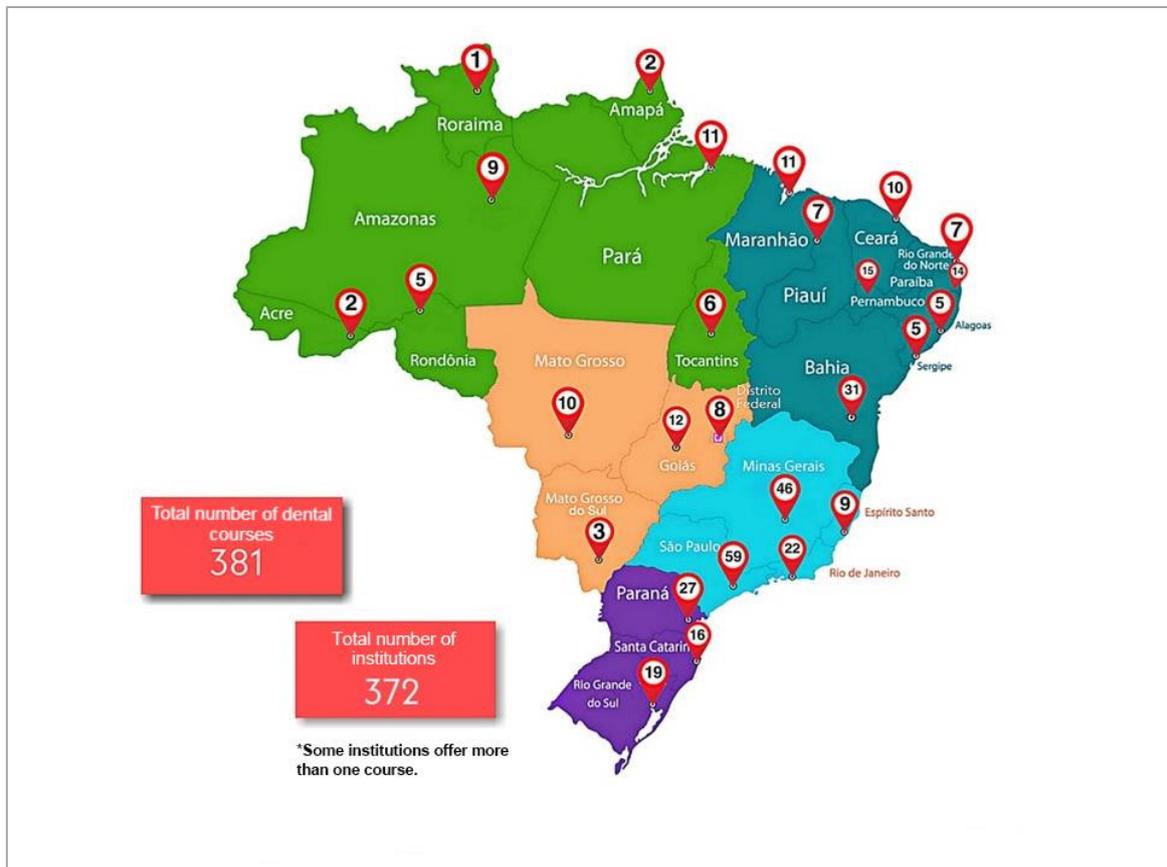


Figure 2. Distribution of undergraduate dental courses in the Brazilian states

The discipline of paediatric dentistry occurs in one semester in 13 dental courses (9.4%), in two semesters in 59 dental courses (42.4%), in three semesters in 45 dental courses (32.4%), in four semesters in 16 dental courses (11.5%) and in five or more semesters in six dental courses (4.3%), being more frequently taught between the 6th and 9th semester. In 45 dental courses (32.4%), the discipline of paediatric dentistry was taught in conjunction with orthodontics.

The course workload of theoretical classes was 84.5 hours on average, ranging from 12 to 320 hours. With regard to laboratory activities, the average course workload was 34.2 hours, ranging from 0 (49 dental courses; 35.5%) to 384 hours, with 49 dental courses (35.3%) having no

laboratory activities. The most common laboratory activities were endodontic treatment, manufacture of removable orthodontic appliances, use of dental materials and direct and indirect techniques, and diagnosis of caries lesions.

With regard to clinical activities, 53 dental courses (38.1%) responded that they do not treat children younger than 3 year old during the undergraduate course, 22 (15.8%) offer 1-4 hours of clinical activities regarding this age group, seven (5%) offer 4-8 hours, six (4.3%) offer 8-12 hours, and 51 (36.7%) offer more than 12 hours (table 1). Clinical care provided for children older than 3 years old had an average workload of 119.3 hours, ranging from 0 to 600 hours.

Table 1. Distribution of the workload of the discipline of Paediatric Dentistry

Variables	0 hours		1 – 4 hours		4 – 8 hours		8 – 12 hours		> 12 hours		Total
	N	%	N	%	N	%	N	%	N	%	
Laboratory activities	53	38.1%	5	3.6%	10	7.2%	12	8.6%	59	42.4%	139
Clinical care for infants (0-3 years-old)	53	38.1%	22	15.8%	7	5%	6	4.3%	51	36.7%	139
Clinical care for children (older than 3 years)	1	0.7%	0	0.0%	2	1.4%	5	3.6%	131	94.2%	139

Table 2 shows the distribution of the theoretical workload in hours for each topic. With regard to prevention, diagnosis and treatment of erosive tooth wear, 48 dental courses did not

address this subject, whereas 24 offer more than two hours/class for it. A minimum intervention approach for all contents was reported by 133 dental courses (95.7%).

Table 2. Distribution of the theoretical workload in class hours for each subject of the discipline of Paediatric Dentistry

Tema	None		1 hour		2 hours		> 2 hours		Mean	Total
	n	%	n	%	N	%	n	%		
Prevention of dental caries	1	0.7%	3	2.2%	23	16.5%	112	80.6%	6.9	139
Diagnosis of dental caries	3	2.2%	8	5.8%	36	25.9%	92	66.2%	3.9	139
Treatment of dental caries	0	-	1	0.7%	24	17.3%	114	82%	5.4	139
Prevention, diagnosis and treatment of dental trauma	0	-	3	2.2%	22	15.8%	114	82%	4.8	139
Prevention, diagnosis and treatment of dental malocclusion	24	17.3%	7	5%	22	15.8%	86	61.9%	6.3	139
Prevention, diagnosis and treatment of erosive tooth wear	48	34.5%	24	17.3%	43	30.9%	24	17.3%	1.5	139
Prevention, diagnosis and treatment of MIH	27	19.4%	34	24.5%	50	36%	28	20.1%	1.8	139
Non-pharmacological management of the patient	3	2.2%	5	3.6%	45	32.4%	86	61.9%	3.8	139
Pharmacological management of the patient	37	26.6%	24	17.3%	48	34.5%	30	21.6%	1.9	139
Endodontic treatment	0	-	2	1.4%	17	12.2%	120	86.3%	5.3	139
Low complexity surgical treatment	2	1.4%	15	10.8%	60	43.2%	62	44.6%	2.9	139
High complexity surgical treatment	20	14.4%	14	10.1%	62	44.6%	43	30.9%	2.3	139
Patients with special needs	70	50.4%	10	7.2%	28	20.1%	31	22.3%	2.5	139
Dentistry for infants	9	6.5%	6	4.3%	61	43.9%	63	45.3%	3.9	139
Medicine prescription	7	5%	15	10.8%	55	39.6%	62	44.6%	3	139
Radiographic techniques and image interpretation	2	1.4%	11	7.9%	60	43.2%	66	47.5%	3.1	139
Anesthesiology	0	-	12	8.6%	68	48.9%	59	42.4%	3	139
Distance learning	108	77.7%	1	0.7%	2	1.4%	28	20.1%	2.7	139

On average, 2.7 hours are aimed for distance learning, but 108 dental courses (77.7%) did not use this type of complementary learning. Among those dental courses using distance learning, the aim was to provide texts and exercises to complement the theoretical classes.

For the question about the existence or not of any subject of the paediatric dentistry curriculum which had not been addressed and was believed to be important, the majority of the answers pointed to periodontics in childhood and adolescence, temporomandibular disorder and bruxism, pathology, anatomy of deciduous teeth, odontohebiatry, prosthetic rehabilitation, approach and motivation of child patients and family, child maltreatment, pregnancy and pre-natal dental care, biosafety, and medical emergency.

4 DISCUSSION

The data collected in the present study allow us to glimpse how the discipline of paediatric dentistry has been administered in Brazil. It was found that there are quantitative and qualitative discrepancies between the curricula developed by several undergraduate dental courses.

Quantitatively, it was observed that there is an expressive difference in the workload for teaching paediatric dentistry. There are institutions offering dental courses in which the discipline of paediatric dentistry is taught in only one semester (9.3%), whereas others do it in five or more semesters (4.3%), meaning that there is a great variability in the course workload. The majority of the institutions (42.4%), however, teach the discipline of paediatric dentistry in two semesters. By analysing the workload for each course separately, one can observe that such differences are even greater. With regard to theoretical classes, there is not only a quantitative discrepancy, but also a qualitative one.

With regard to theoretical workload,

although the average has been 84.5 hours, there are institutions offering 12 class hours only, whereas others offer 310 hours. This discrepancy is also reflected in the content in view of the amount of hours assigned to certain subjects, such as erosive tooth wear, molar-incisor hypomineralisation and special patients, which are not even addressed by some dental courses. If we consider that the objective of undergraduate dental courses is to graduate surgeon-dentists so that they can promote oral health care in the general population³, including the child population, the lack of such contents can compromise the understanding of the minimum intervention principle and the full overview of oral health of the children.

With regard to laboratory activities, it was also observed that there are differences between the dental courses as 49 (35.3%) of them did not have laboratory practices. The literature points to the importance of pre-clinical training for dental surgeons⁸, which contributes to the application and integration between theoretical content and processing so that undergraduate students can acquire skills and apply them to clinical practice.

With regard to clinical activities, clinical care for infants was the subject with the highest discrepancy. In fact, 38.1% of the institutions did not provide clinical care for children younger than 3 years old. According to these institutions, the main reasons for not doing so are the lack of enough professors to assist the undergraduate students in this type of care and insufficient workload, in addition to the fact that clinical care for infants might be provided during internships or extension courses.

Clinical care for children younger than 3 years old is important during undergraduate education as the surgeon-dentist is expected to be capable of recognising aspects of normality and disease as well as of knowing about growth and development. In fact, parents usually go to their

own dentist for initial guidance on the oral health of their infants³, but this happens in the private context. It is also important to highlight that the surgeon-dentists working in the public sector are responsible for disease prevention and promotion of oral health care among all members of the family seen in the health care service.

According to the American Academy of Paediatric Dentistry^{9,10}, the first visit to the dentist should be made when the infant's first tooth begins to erupt within the first year of life. The follow-up of tooth eruptions and dental occlusion, preventive measures and early treatment of caries lesions all improve the oral and general health of the infant, which reinforces the importance for the dental practitioner to acquire some knowledge about this population.

The quantitative expansion of dental courses across the country^{2,11} and the results found in the present study, showing great discrepancies in the workload among the different activities as well as in the contents of the discipline of paediatric dentistry, raise the question on how to assess whether the different dental courses have achieved the undergraduate objectives by training surgeon dentists accordingly so that they can provide oral health care for infants, children and adolescents.

The National Curriculum Guidelines do not advocate the standardisation of hermetic and prescriptive contents, but rather more contemporary approaches by taking into account a series of conditions, such as characteristics of each population in which the dental course and educational institution are inserted, socio-epidemiological profile and healthcare needs of the population, among others.

The National System of Higher Education Assessment (*SINAES*) contemplates the diversity of the institutional development plans as well as the political-pedagogical projects of the courses.

The Brazilian Association of Paediatric Dentistry has been publishing the Clinical

Procedure Manual for Paediatric Dentistry¹² in an attempt of all Brazilian specialists to address subjects of the specialty, always updated with the best scientific evidence. Paediatric dentistry is a specialty with a relatively recent history in Brazil, but which largely advanced into the body of knowledge, including experience and philosophy for full attention to the oral health care of infants, children and adolescents in both public and private services¹³, achieving international projection and acknowledgement.

The initial diagnosis from the present study leads us to the perception that new studies are necessary so that one can assess the quality of undergraduate dental courses regarding the discipline of paediatric dentistry by using complementary approaches from the perspectives not only of professors and co-ordinators, but also of the undergraduate students.

5 CONCLUSIONS

The comparison between several undergraduate dental courses has demonstrated that there is a huge discrepancy in the paediatric dentistry curriculum regarding the total workload and its distribution among theoretical, laboratory and clinical activities as well as regarding the lack of relevant contents in some dental courses. The complementary use of distance education is not available yet in the majority of the cases, and undergraduate students are not trained to provide oral care for infants in more than one-third of the dental courses. The aspects and extent addressed here should guide and deepen the investigations on the quality of the undergraduate education regarding the generalist profile on the one hand and the paediatric dentistry curriculum on the other hand.

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RESUMO

Currículo de Odontopediatria nos cursos brasileiros de graduação em Odontologia

O objetivo deste estudo foi coletar informações relativas aos conteúdos de Odontopediatria desenvolvidos nos cursos de graduação em Odontologia brasileiros. Para a coleta dos dados foi utilizado um questionário eletrônico, enviado a cada curso com a solicitação de que fosse respondido por um professor da área. Em janeiro de 2017, segundo registros no sistema e-MEC, 372 instituições ofereciam o curso de Odontologia no Brasil. Dessas, 76 responderam que o curso era novo e que esses conteúdos ainda não tinham sido ofertados. Assim, a amostra total foi inicialmente reduzida para 296 instituições, entre as quais 139 responderam o questionário (taxa de resposta=47%). A disciplina de Odontopediatria foi geralmente oferecida em dois semestres (42,4%), com carga horária média de 84,5 horas para atividades teóricas e 34,2 horas para a parte laboratorial. Observou-se que 35,3% dos cursos não possuíam atividades laboratoriais. Sobre o atendimento clínico, 38,1% não atendiam a crianças de 0 a 3 anos e a média de horas de atendimento clínico a crianças maiores de 3 anos foi de 119,3 horas. Os elementos e dimensões aqui tratados devem nortear o aprofundamento das investigações sobre a qualidade da formação no que diz respeito ao perfil generalista por um lado, e por outro, ao currículo da disciplina de Odontopediatria.

Descritores: Avaliação Educacional. Educação Superior. Odontopediatria. Odontologia. Currículo.

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