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Teaching pediatrics and child care in medical courses: discussing practical scenarios

Ensino de pediatria e puericultura no curso médico: cenários de prática em discussão

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ABSTRACT

Introduction: Comprehensive child health care is a guideline in pediatric teaching, and it is essential to develop practical activities considering all levels of health care in the Unified Health System.

Objectives: To describe the hours involved, practice scenarios and preceptorship in pediatric and childcare teaching in medical schools.

Method: A cross-sectional study using a questionnaire with 43 objectives and two open questions, sent by electronic forms to medical schools across the country that had already graduated at least one class in 2019.

Results: 37 (14.97%) medical schools with at least one graduated class answered the questionnaire (16 public and 21 private schools) from 14 states in the five regions of the country. A median of 940.5 hours was found for the teaching of pediatrics, equivalent to 11% of the total medical course; 13 schools included child health topics since the first year and the majority (75.8%) from the third year onwards. Practical activities predominated in the internship: 87.5% (5th year) and 88.8% (6th year). The used settings include primary health care, general and specialty pediatric outpatient clinics, inpatient units, neonatology units, emergency services and simulation laboratories. It was reported that childcare teaching is carried out in general pediatric outpatient clinics (32 schools) and basic community health units (32 schools), with an emphasis on primary care as the essential setting for teaching childcare. Pediatric teachers provide preceptorship in all practice settings; non-teaching pediatricians from the medical institution or the local health system are more present in inpatient units (70.3% and 54.0%, respectively) and specialty outpatient clinics (54.0% and 35.1%, respectively).

Conclusions: With the participation of 37 medical schools, this study has limitations for the generalizations about teaching in the country. Pediatric teaching is carried out in practice environments at all levels of care, demonstrating the importance of comprehensive child and adolescent health care, with an average of 11% of the course total workload allocated to this teaching. The predominant participation of pediatricians as teachers was observed. The learning of childcare has remained a relevant component of pediatric training and its development is significant in primary care, although there are challenges to preserving this practice setting.

Keywords: Education, medical; Pediatrics; Curriculum.

RESUMO

Introdução: *A integralidade da atenção à saúde da criança constitui diretriz para o ensino de pediatria, sendo essenciais as atividades práticas em todos níveis de atenção do Sistema Único de Saúde.*

Objetivo: *Este estudo teve como objetivo descrever carga horária, cenários de práticas e preceptoria utilizados no ensino da saúde da criança e do adolescente.*

Método: *Trata-se de um estudo transversal, com aplicação de questionário constituído por 43 questões objetivas e duas questões abertas, encaminhado por meio de formulário eletrônico para 247 escolas médicas do país que contavam com pelo menos uma turma formada em 2019.*

Resultado: *Responderam ao questionário 37 (14,97%) escolas médicas, sendo 16 públicas e 21 privadas de 14 estados da Federação e das cinco regiões. Verificou-se mediana de 940,5 horas direcionadas à saúde da criança e do adolescente, equivalente a 11% da carga horária total dos cursos; 13 escolas apresentaram inserção de temas de saúde da criança desde o primeiro ano, e a maioria (75,8%), a partir do terceiro ano. Atividades práticas predominaram no internato: 87,5% (quinto ano) e 88,8% (sexto ano). Os cenários incluíram unidades básicas de saúde, comunidade, ambulatórios de pediatria geral e especializados, unidades de internação, serviços de neonatologia, urgência e emergência e laboratórios de habilidades e simulação. Foi referido que o ensino de puericultura é desenvolvido em ambulatórios de pediatria geral (32 escolas) e em unidades básicas de saúde dos municípios (32 escolas), estas consideradas essenciais para formação. Docentes pediatras desenvolvem preceptoria na maioria dos cenários de práticas; pediatras da instituição de ensino ou do sistema local de saúde estão mais presentes em unidades de internação (70,3% e 54,0%, respectivamente) e ambulatórios especializados (54,0% e 35,1%, respectivamente).*

Conclusão: *Com participação de 37 escolas médicas, este estudo apresenta limitações para generalizações sobre o ensino no país. Neste estudo observou-se que o ensino sobre saúde da criança e do adolescente desenvolve-se em todos níveis de atenção à saúde, visando à integralidade, sendo destinados em média 11% da carga horária total do curso para esse ensino. Houve predominância de docentes e médicos pediatras na preceptoria, e a puericultura permaneceu como componente relevante na atenção básica, sendo apontados desafios para manutenção desse cenário de práticas.*

Palavras-chave: *Educação Médica; Pediatria; Currículo.*

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INTRODUCTION

The formal establishment of pediatrics as a specialty in our country occurred in 1881, with the founding of the General Polyclinic of Rio de Janeiro, carried out by Carlos Arthur Moncorvo de Figueiredo. The creation of the Child Disease Clinic discipline at the Faculty of Medicine of Rio de Janeiro, in 1882, almost 80 years after the beginning of the first medical courses in Brazil, is also the result of the significant work by Moncorvo Figueiredo[1,2]. In addition to the strong arguments regarding the specificities of diseases and child care, which required specific training, and the need for attention focused on hygiene guidelines for poor families in view of the growing urbanization of that period, Moncorvo Figueiredo emphasized the importance of the Polyclinic for the teaching and for the production of knowledge, highlighting that this type of care would have greater potential for case diversity, when compared to the hospitalization units of Santas Casas de Misericórdia. Moncorvo considered that these hospitalization units were insufficient and limited for training, with few beds for children, very severe cases and, also, with restrictions that compromised autonomy and hindered the development of teaching and research[3,4].

As part of this process, at the end of the 19th century, the Discipline of Pediatrics was created at the medical school in Bahia and this was the trend in other institutions in the country established throughout the following century, under different names – Children's Clinic, Medical-Surgical Pediatrics, Childcare and Pediatrics, Comprehensive Children's Medicine. Regardless of the name, the prevailing view was that it was a large area of medicine and not a specialty[5,6]. A guideline of equal importance, established in the organization of the courses, was that the activities should provide a comprehensive view of the child, in their family, social and cultural context, including health promotion activities, disease prevention, recovery, rehabilitation and care, being, thus, necessary to have a diversity of practice scenarios [6-9].

Although great heterogeneity was identified in the organization of courses in Latin America in a study carried out in the 2000s by the Pan American Health Organization[10], in Brazil, experiences and studies on the teaching of pediatrics at the undergraduate level have shown that the majority of schools have included practical activities of pediatrics and childcare, especially in basic health units, establishing the concept of comprehensive care as a guideline in the organization of activities. Some of them have also worked in practice scenarios linked to basic health units such as schools, daycare centers, homes and community facilities[11-15].

It is important to highlight that the historical contribution of pediatrics to public health services, its role in the development of public policies, its openness to the incorporation of concepts and concerns from the field of collective health, especially the principle of comprehensiveness in health care, show that Pediatrics anticipated the discussion and official actions and regulations for curricular changes that seek to break with the fragmentation of health care and medical education[16,17,18]. The interministerial programs of the Ministries of Education and Health[19,20], in the 2000s, promoted the inclusion of practical teaching activities in the health services network, closer ties with the community, and teamwork, strengthening and improving the process and existing pediatric initiatives.

In a document prepared by the Brazilian Society of Pediatrics (SBP, *Sociedade Brasileira de Pediatria*)[21], resulting from a workshop that had wide participation, including representatives of the Brazilian Association of Medical Education (ABEM, *Associação Brasileira de Educação Médica),* necessary competencies for the area of pediatrics were defined, which were classified according to the following categories: patient care, medical knowledge, interpersonal communication skills, professionalism, practice-based learning and improvement, and healthcare system-based practice. Among the competencies related to patient care, childcare and health promotion and disease prevention actions are highlighted, including the monitoring of growth and development, immunization, nutrition, oral health, physical activity and prevention of physical injuries due to external causes. The same document also addresses the minimum percentage of hours dedicated to pediatrics in relation to the total course hours and emphasizes that, for the development of established competencies, practical activities are necessary at all levels of health care, including basic care, with supervision being carried out by a pediatrician, considering the complexity of demands and health needs of children and adolescents in contemporary times, which was already foreseen in the National Curricular Guidelines (DCN, *Diretrizes Curriculares Nacionais*)[17,18]. The basic health unit is a non-exclusive setting, albeit essential, for the development of health promotion, disease prevention and renewed childcare actions. It has the potential to enable expanded actions in the territory and in the facilities linked to it, with emphasis on schools, daycare centers and community organizations.

The teaching of childcare constitutes a great challenge today and many discussions about its role in contemporary times and in our country have been the subject of reflections and studies. In its origins, childcare did not recognize the social and cultural diversity of children and their families, with a predominant view of government control and normalization of people's conduct. The significant changes

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in our society, with emphasis on the creation of the Brazilian Unified Health System, SUS (*Sistema* Único *de Saúde*) and the Child and Adolescent Statute, highlighted the need to update its concept, aiming to meet new demands in the context of health as a right and in the recognition of the child as an active subject of care, establishing itself with a scientific character, developed by a multidisciplinary team, in partnership with families and communities[22,23,24].

More recently, the National Policy for Comprehensive Child Health Care (PNAISC, *Política Nacional de Atenção Integral à Saúde da Criança*)[25] reaffirmed the concept of comprehensiveness, highlighting the importance of well-established links between the child, caregiver/family and professional and the co-responsibility as one of the fundamental principles of this approach, emphasizing basic health care as essential and responsible for care management. Conducting this policy, according to the established principles, reinforces the need for ongoing education for health professionals and the inclusion of primary care as a practice setting for undergraduate training and medical residency in pediatrics.

The implementation of the Family Health Strategy (ESF, *Estratégia de Saúde da Família*)[26,27], as a priority strategy for the expansion and consolidation of Primary Care, which does not include a pediatrician on the team, brought questions and challenges to the performance of this professional at this level of care. As a result, the teaching of pediatrics in the undergraduate medical course and in the pediatric medical residency with the direct participation of the pediatrician in the teaching-learning process has met difficulties in its implementation at this level of care. The pediatrician's role limited to the Family Health and Primary Care Support Center (NASF-AB, *Núcleo de Apoio à Saúde da Família e Atenção Básica*) is highlighted as a possible path, with positive points, but also with limitations[28], which impact pediatric practice and training that was previously developed in primary care.

Added to this situation is the great increase in the number of medical schools that has occurred in recent years, partly due to policies encouraging their creation, resulting in a growing demand for practice settings, notably those in primary care and general hospitals (*www.escolasmedicas.com.br*), considering that the majority of new schools do not have a teaching hospital or other health equipment under their management for this purpose[29].

Thus, considering the context of medical education in Brazil and changes in the organization of health services, this study aimed to describe teaching on child and adolescent health, in relation to the workload, practice scenarios used and preceptorship or teaching supervision, with emphasis on activities in basic health care.

METHOD

This study was carried out by the Undergraduate Coordination of the Brazilian Society of Pediatrics as part of the activities carried out from 2018 to 2022. This is a descriptive, cross-sectional study that considered medical schools in all regions of Brazil that had at least one class already graduated by the first semester of 2019; therefore, they had started the course by the first semester of 2014. All schools that met this requirement were contacted through the websites of the Brazilian Association of Medical Schools (ABEM), universities/educational institutions and , also, through contacts obtained through state affiliates of the Brazilian Society of Pediatrics. The questionnaire sent to schools, in the format of Google Forms, was available for completion at two moments – September to December 2018 (when schools that had started the course until 2012 and had a class graduated during 2017 were included) and, subsequently, from August to October 2019, when the questionnaire was re-sent to all schools aiming to increase their participation, defining it as including schools that had started the course before the first half of 2014.

According to the website www.escolasmedicas.com.br consulted during the data collection periods, 209 medical schools had started the course by 2012 and 247 schools by the first semester of 2014; therefore, this was considered the group of schools for the search. By email, the following were sent to 247 institutions: questionnaire, summary of the research project, a letter from SBP and the Free and Informed Consent Form (TCLE, *Termo de Consentimento Livre e Esclarecido)*. The questionnaire was completed by the coordinator or member of the medical course committee, representative of the structuring teaching core or equivalent representative that had knowledge of the details on the medical course pedagogical project.

The questionnaire consisted of 43 questions organized into five blocks: Block 1 – General identification of the medical school, with questions regarding the legal nature of the school, year of creation, number of places/year, location (municipality and state); Block 2 – Teaching about Child and Adolescent Health, with questions regarding the duration of the course, teaching hours on child and adolescent health, teaching-learning methods and practice scenarios; Block 3 – Teaching and professional activities in teaching about Child and Adolescent Health, with questions related to the profile of professionals who work in teaching, their employment relationship with the educational institutions and health services; Block 4 – Childcare Teaching, with questions regarding practice scenarios, teaching-learning methodologies, personnel involved in teaching and supervision of practical activity; Block 5 – Emerging topics, including questions related

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to the approach to contemporary topics regarding child and adolescent health. The questionnaire also contained two open questions: (a) Name the main advances in teaching about child and adolescent health in your institution and, (b) Name the main challenges of teaching about child and adolescent health in your institution.

The data obtained through the questionnaire were imported from the spreadsheet generated by Google Forms into the SPSS 25.0 IBM® statistical package. The results were presented as descriptive data, with an absolute number for the qualitative variables and as a median (minimum and maximum values) for the quantitative variables. Regarding the open questions, they were organized and classified by similarity of answers, after reading them.

Regarding the ethical aspects, the respondents confirmed their acceptance of participation in the research, after reading the Free and Informed Consent Form (TCLE) which constitutes the first part of the data collection instrument. The project was approved by the Research Ethics Committee - REC/ Unifesp number 0897/2018.

RESULTS

A total of 37 (14.97%) medical schools answered the questionnaire, 16 of which were public and 21 private. The median time since these schools were created was 19 (6; 212) years, with differences regarding whether they were public or private, 59.8 and 24.05 years, respectively (p = 0.02); the median number of places offered to incoming students was 110 (40; 298); the schools were located in 14 states of the Federation: Alagoas – 1, Bahia – 1, Ceará – 1, Espírito Santo – 2, Goiás – 1, Minas Gerais – 7, Mato Grosso do Sul – 1, Pará – 1, Paraná – 4 , Rio de Janeiro – 1, Rio Grande do Norte 1, Rio Grande do Sul – 3, Santa Catarina – 3 and São Paulo – 10, in the five regions of the country: Midwest – 2 (9.5%), Northeast – 4 (10.8%), North – 1 (2.7%), Southeast – 20 (54.1%) and South – 10 (27.0%).

Of the total workload of the courses, whose median was 8,540 hours (between 7,360 and 10,870), it was observed that 940.5 hours (between 92 and 2,540) are aimed to the teaching of pediatrics, equivalent to 11%; no difference was observed between public and private schools in terms of course duration – 8,675.25±1,029.37 hours and 8,612.33±887.45 hours, respectively, and in relation to the workload allocated to the teaching of pediatrics – 833.57±445.93 and 607.37±326.43, respectively; 13 schools introduced child health topics since the first year of the course and the majority from the third year onwards. Table 1 shows the workload related to child and adolescent health topics, according to the theoretical and practical components, with great variability between them. In the first years, the workload is lower and the median percentage of the theoretical workload observed was 50%. During internship (5th and 6th years) there was a predominance of practical activities (87.5% and 88.8%, respectively).

Table 2 depicts the scenarios used to develop teaching about child and adolescent health. The answers are non-exclusive; therefore, one or more scenarios were mentioned for each of the years. The classroom was mentioned in all years of the course, as well as basic health units, general pediatrics outpatient clinics and inpatient units, with care practice scenarios being mentioned more frequently from the 3rd year onwards. Hospital inpatient units constitute an important setting in the years that correspond to internship, as do neonatology and emergency services. In addition to the teaching-learning scenarios mentioned, table 2 also shows that specialty outpatient clinics also participate in the practical internship activities. Community extension activities are carried out in all years of the course, including internship. It was also observed that not all schools carry out teaching activities on child and adolescent health during the two years of internship, with 34 schools reporting pediatrics teaching in the 5th year and 29 schools in the 6th year. Skills and simulation laboratories were

Table 1. Median (minimum and maximum) percentage of child and adolescent health teaching hours in the total medical course (theoretical and practical) from the first to the sixth year. Medical Schools (n=37). Brazil, 2018-2019.

Child and adolescent health teaching per year of the medical course	%		
	Percentage in relation to the course workload	Theoretical	Practical
First	3.7 (1.4-50)	50 (31.8-100)	50 (20.0-100.0)
Second	11.2 (4.5-22.5)	50 (28.6-100)	50 (25.0-71.0)
Third	9.6 (1.4-100)	50 (14.3-100)	50 (18.2-100)
Fourth	12.4 (4.2-33.3)	38.0 (10.0-100)	61.9 (11.1-100)
Fifth	30.9 (15.3-67.8)	12.5 (4.8-100)	87.5 (37.5-100)
Sixth	32.2 (11.3-67.3)	11.1 (1.2-50.0)	88.8 (50.0-100)

Source: prepared by the authors.

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mentioned in all years of the course, especially from the 4th year onwards, disclosing their current importance.

Table 3 showed that teachers who were pediatricians develop preceptorships in all practice scenarios, with only three schools not reporting the presence of pediatrician teachers in urgency and emergency units; non-teaching pediatricians from the educational institution or linked to the local health system are more present in inpatient units (70.3% and 45.9%, respectively) and in specialty outpatient clinics (56.7% and 32.4%, respectively). In theoretical activities, simulation and active methodologies there is a greater presence of non-pediatric teachers (45.9%) compared to other practice scenarios.

In relation specifically to childcare teaching, it was found that it is taught in all years of the courses, predominantly in the third, fourth and fifth years: 1st year – 6 schools, 2nd year – 17 schools, 3rd year – 23 schools, 4th year – 27 schools, 5th year – 28 schools and 6th year – 20 schools. In relation to the practice scenarios where this teaching takes place, it was found that general pediatric outpatient clinics and basic health units in municipalities are the most frequently cited scenarios (Chart 1).

Regarding the insertion of new topics and teaching-learning strategies related to child and adolescent health, it was

Table 2. Scenarios used for child and adolescent health teaching activities, according to the course year. Medical Schools. Brazil, 2018-2019.

Scenarios**	Number of schools with activities per year of the medical course											
	1st year (n=13)	%	2nd year (n=19)	%	3rd year (n=28)	%	4th year (n=30)	%	5th year (n=34)	%	6th year (n=29)	%
Classrooms	11	84.6	19	100.0	25	89.2	30	100	30	88.2	29	100.0
Skills/Simulation Laboratory	6	46.1	14	73.7	13	46.4	21	70.0	24	70.6	20	68.9
Informatics Laboratory	3	23.1	2	10.5	3	10.7	3	10.0	6	17.6	3	10.3
Municipality BHU*	7	53.8	8	42.1	13	46.4	19	63.3	26	76.5	16	55.2
Institution BHU* or Health Center	3	23.1	2	10.5	8	28.6	5	16.7	13	38.2	9	31.0
General Pediatrics Outpatient Clinic	1	7.7	5	26.3	13	46.4	20	66.7	30	88.2	21	72.4
Specialty Outpatient Clinics	1	7.7	-	-	7	25.0	4	13.3	24	70.6	25	86.2
Hospital (hospitalization unit)	3	23.1	8	42.1	13	46.4	10	33.3	27	79.4	29	100.0
Emergency Room	1	7.7	1	5.3	5	17.8	5	16.7	23	67.6	29	100.0
Neonatology Unit	2	15.4	3	15.8	11	39.3	11	36.7	30	88.2	25	86.2
Extension with the Community	3	23.1	9	47.4	6	21.4	8	26.6	11	32.3	10	34.5

*BHU = Basic Health Unit;
** Scenario options are non-exclusive
Source: prepared by the authors.

Table 3. Professionals responsible for teaching topics related to child and adolescent health. Medical Schools (n=37). Brazil, 2018-2019.

	Theoretical activities, simulation, TBL*, PBL**, skills and simulation (N and %)	Outpatient practical activities (BHU and Primary Care) (N and %)	Practical Urgency/ Emergency activities (N and %)	Practical hospitalization activities (N and %)	Practical activities in specialty outpatient clinics (N and %)
Teachers pediatricians hired by the Educational Institution	37 (100.0)	37 (100.0)	34 (92.0)	37 (100.0)	37 (100.0)
Pediatricians hired by the Educational Institution	18 (48.6)	18 (48.6)	18 (48.6)	26 (70.3)	21 (56.7)
Pediatricians hired by the Local Health System	7 (18.9)	13 (35.1)	17 (45.9)	17 (45.9)	12 (32.4)
Teachers doctors (not pediatricians) hired by the Educational Institution	17 (45.9)	8 (21.6)	4 (10.8)	0 (0.0)	2 (5.4)

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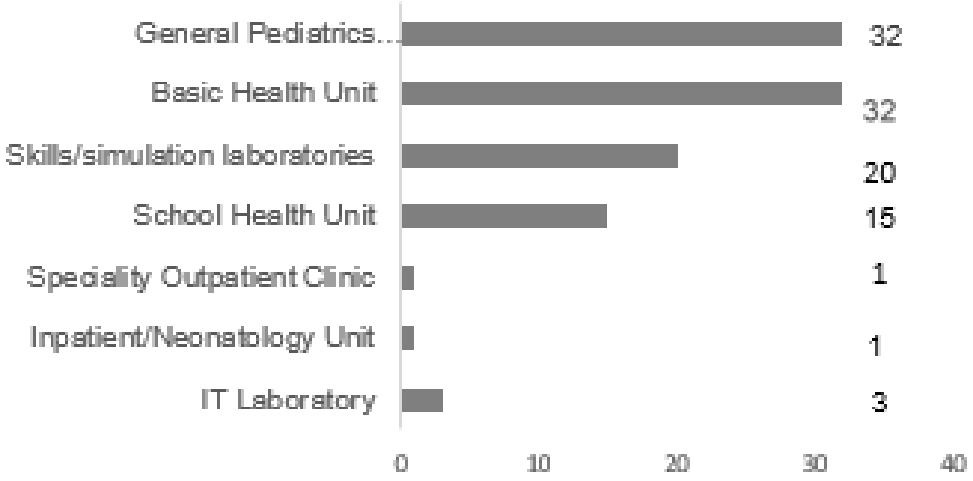
Tabela 3. Continuation

	Theoretical activities, simulation, TBL*, PBL**, skills and simulation (N and %)	Outpatient practical activities (BHU and Primary Care) (N and %)	Practical Urgency/ Emergency activities (N and %)	Practical hospitalization activities (N and %)	Practical activities in specialty outpatient clinics (N and %)
Non-pediatric doctors hired by the Educational Institution	3 (8.1)	7 (18.9)	1 (2.7)	0 (0.0)	1 (2.7)
Non-pediatric doctors hired by the Local Health System	2 (5,4)	3 (8,1)	4 (10,8)	0 (0,0)	1 (2,7)
Other teaching health professionals hired by the Educational Institution	13 (35.1)	7 (18.9)	2 (5.4)	3 (8.1)	1 (2.7)
Other health professionals hired by the Local Health System	0 (0.0)	1 (2.7)	2 (5.4)	1 (2.7)	1 (2.7)

*TBL: Team Based Learning**;** **PBL: Problem Based Learning.
Source: prepared by the authors.

Chart 1. Childcare teaching practice scenarios. Medical Schools (n=37). Brazil, 2018-2019.



Source: prepared by the authors.

found that the majority of schools participating in the study have sought to incorporate current topics, diversify activities beyond medical consultations, also considering the territory facilities in which the basic health unit is located, revealing the perception of epidemiological changes in the pediatric population and the appreciation of these changes for medical training (Table 4).

The open questions addressed advances and challenges recognized by the study participants in the curricular change processes, with predominantly complementary and non-divergent answers being obtained.

The main points related to the question about the advances observed in the respective institutions are shown below.

- **Performance at different levels of health care** – the development of activities at different levels of care were identified as advances, with emphasis on basic care, which favored teaching about health

Table 4. Teaching topics and methodologies – learning for teaching about child and adolescent health. Medical Schools (n = 37).Brazil, 2018-2019.

Topics	N (%)
Patient safety	36 (97.3)
Doctor-patient relationship	37 (100)
Specific semiology of children and adolescents	37 (100)
Palliative care in pediatrics	21 (56.7)
Prevention of chronic non-communicable diseases	36 (97.3)
Alcohol and illegal drug abuse	35 (94.6)
Impact of social media	32 (86.5)
Comprehensive care for children (SUS)	37 (100)
Home visits	21 (56.7)
Planned activity with other health professionals	30 (81.1)
Gender identity and sexual orientation	25 (67.6)

Source: prepared by the authors.

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promotion, disease prevention, multidisciplinary teamwork, as well as getting closer to the reality and context where the child and their family live.

- **Importance and stimulus for teaching and course development** – it was recognized that curricular changes and the construction of new pedagogical political projects constituted a stimulus for teaching development, aiming at their performance in new scenarios and the appropriation of concepts about expanded health and comprehensive health attention.
- **Strengthening the articulation of the teaching-health service relationship** – it was recognized that the curricular changes favored the integration of teaching – health services, with a general approach to pediatrics.

Regarding the question about the challenges, below are the main points mentioned by respondents.

- **Expansion of interprofessional teaching scenarios and approach to emerging topics** – the need to include current and complex topics in the curricula that require an approach and construction of scenarios for interprofessional and interdisciplinary action was highlighted.
- **Adequacy of the structure and physical space in basic health units and articulation between educational institutions and service network** – the respondents highlighted insufficient practice scenarios at this level of care, inadequacy of structures for care and teaching, in addition to instability, resulting in discontinuity of actions and frustration in planning activities.
- **Sufficiency and quality of child health care services** – difficulties were mentioned in the teaching of pediatrics, especially childcare, at this level of care, especially when the adopted care model is the Family Health Strategy (ESF), without inclusion of the pediatrician in the team. Possible actions aimed at overcoming these difficulties pointed to different paths. There are statements that propose ongoing education for ESF professionals; however, the predominant statements considered that this care and teaching of child health care practices should be carried out by pediatricians.
- **Adequate preceptorship in outpatient settings and basic health units** – difficulties were identified in encouraging preceptorship of teachers and professionals in these settings, which is a limiting factor for expanding outpatient activities, especially outside the hospital.

DISCUSSION

The results of the present study brought information that can contribute to the understanding and reflection on teaching child and adolescent health. Regarding pediatrics workload, it was found that the medical schools in this study allocate an average of 11% (eleven percent) of the total course workload, exceeding the 10% (ten percent) proposed by the Brazilian Society of Pediatrics[21]; however, there is great variability between schools. This result was similar to that found in studies that used information from the official websites of higher education institutions and that considered the universe of medical schools in the country. Del Ciampo et al.(2010)[30], analyzed data from 126 medical courses active in 2008 and which had already graduated at least one class of students, having found that the average workload of Pediatrics discipline corresponded to 876.8 hours, equivalent to 10.06% of the total workload of the medical course. Campos and Grosseman (2020)[31] analyzed information from 294 medical schools in 2017 using the same methodology. These authors included 151 schools (51.4%) in the study that contained information on the total course load and the pediatrics course load and found that the average proportion between pediatrics and the course load was 9.7% (SD = 2.2). Other studies, covering states or regions, such as those by Veiga et al.[15] who analyzed 16 medical schools in the state of Rio de Janeiro and the study by Silva et al.[32] who analyzed six schools in Recife and the Metropolitan Region, found similar data in in relation to the duration of the course and the proportion of the pediatrics workload.

In the present study, topics on child and adolescent health in the 1st year of the course were mentioned by only 13 schools, with these topics predominating from the third year onwards. The practical activities were concentrated in the internships in inpatient units, in urgency and emergency, as well as neonatology services and also in general pediatric and specialty outpatient clinics, and in basic health units, noting that part of the schools do not comply with the minimum percentage of 80% of practical activities in the internship, as recommended by the DCN[17,18]. The nationwide study by Campos[31] showed that 44.4% of the schools starts teaching pediatrics in the fourth year and 41.7% in the third, with few offering practical activities in a longitudinal manner during the four years before internship, which was also observed in the study of schools in Rio de Janeiro[15]. On the other hand, in a more recent study of regional scope, carried out by Silva et al. (2019)[32], it was observed that the majority of schools developed teaching activities aimed at children and adolescent's health since the first year of the course, possibly due to the growing acceptance and adherence to the methodologies that favored the inclusion of students in the initial years of the course into practice locations.

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In the 37 participating schools, in relation to the practice scenarios, there was a diversification of the latter, especially from the 3rd year of the course onwards. These findings coincide with studies of schools in Rio de Janeiro[15] and Recife[32], which showed that practical activities aimed at children's health are developed in outpatient services, primary care, hospital inpatient units, urgency and emergency and neonatology services and that this inclusion occurs, mainly, from the third year of the undergraduate course onwards.

The diversification of practice scenarios for undergraduate teaching is highlighted by authors from other countries and in different health system models, particularly the need to expand operations in university-owned outpatient clinics or external services through partnerships[33]. While it is recognized as essential for the training in acquiring skills when dealing with children, adolescents and their caregivers, teaching in the outpatient clinic is also considered a major challenge for these authors[33,34,35]. Advances in medical practices over the last few decades, particularly in the field of diagnostic and therapeutic resources, have resulted in a new and significant transformation in medicine. There has been a progressive reduction in the number and duration of hospitalizations as a result of this evolution, as well as changes in the profiles of hospitalized patients. There is a greater presence of chronic patients with complex diseases[36] in hospitalization units. Several authors state that clinical teaching at universities should be more focused on outpatient clinics and that education centered on inpatient units would be limited and insufficient to achieve complete medical education[37]. In our country, the DCN[17,18] also establish the importance of teaching in medical courses and other health professions, which includes the entire complexity network of the SUS, with emphasis on basic care, considering the implemented model.

It was observed that, in the present study, outpatient and primary care services were the most frequently cited scenarios, demonstrating this is in line with the trend observed in other countries, largely driven by the DCN. However, the implementation and consolidation of these activities were also cited as challenges, which are recognized as difficulties and barriers in the global literature on the subject. Bardgett, Dent (2011)[33] highlight the insufficient time due to the demands of the services, the lack of space available for students to care for patients individually and the overload of care and teaching activities. Franco et al (2019)[34], in a review of articles on medical education, published between 1993 and 2018, identified reports of barriers to the development of this teaching in outpatient clinics, which were categorized into four types by the authors: environment-institution (support, recognition, valorization, long distance, adequacy of the physical area), teaching staff or preceptorship (preparation, patient overload, training), students (commitment and number of students in internships) and patients (absenteeism, continuity of care). The teaching or preceptorship barrier was one of the most frequently mentioned obstacles. In our study, similar difficulties were reported, especially in primary care, in addition to issues related to the instability of teaching-health services integration, generating the discontinuity of actions and frustration in planning activities.

The changes resulting from the 2014 DCN in relation to teaching about child and adolescent health in primary care and, possibly, preceptorship require greater depth and new studies. The 2014 DCN states that the activities of the internship regime focused on Primary Care must be "coordinated and focused on the Family and Community Medicine area and the remaining 70% (seventy percent) of the internship must include essential aspects of the major areas of internal medicine, surgery, pediatrics, gynecology and obstetrics, public health and mental health". This guidance implemented a change in relation to the major areas of medicine, when compared to the 2001 DCN. With this new guidance from the 2014 DCN, teaching aimed at children and adolescents in primary care is included in the area of General Family Medicine and Community, unlike what was stated in the 2001 DCN, which established that "the essential aspects in the areas of Internal Medicine, Surgery, Gynecology-Obstetrics, Pediatrics and Public Health should include activities at the first, second and third levels of care in each area"[17,18,38]. The participants of this study pointed out that the current model of the Family Health Strategy has brought difficulties to the development of teaching in primary care with the participation of pediatricians. Studies indicate that there are experiences in basic health units with the work of pediatricians and teachers from large areas in conjunction with the ESF teams[39], and it has been observed in others that, when the model of care is the ESF, child health teaching also occurs without the presence of a pediatrician[32].

Even though these issues were raised as challenges, in our study 32 schools maintain childcare teaching in basic health units, and it is not yet possible to state that these changes to the 2014 DCN have had impacts in relation to scenarios and preceptorship, even though it may constitute a discouraging factor for pediatricians to work at this level of care. Even so, in our study, it was reported that preceptorship is carried out mainly by pediatric teachers and pediatricians from the educational institutions in all practice scenarios, disclosing the value of this professional in physician training.

In relation to teaching about health promotion, prevention activities and, specifically, the practice of childcare,

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their presence was significant, being developed preferably in general pediatric outpatient clinics and in primary care, providing a comprehensive view of the public health system and comprehensive care, in accordance with other studies and recommendations[15,17,18,21,3-32].

Even though comprehensive care and attention must be present at all levels of care, the basic health unit expands the possibilities of action, favors the bond with the population assigned to it, allows knowing and considering indicators of morbidity and mortality of the territory and creates opportunities to develop actions for the community[21,39,40]. In general pediatric outpatient clinics in general or teaching hospitals, childcare takes on another role, also important for training. It has an individual nature, often aimed at medium-risk children or children and adolescents with chronic diseases. In this condition, it can provide the experience of articulating childcare care with pediatric specialties, respecting the guidelines of comprehensive care – the patient and their family, accountability, continuity of care and care networks[21]. These two services can be considered complementary in the training of doctors to teach childcare.

The present study also showed that some schools develop activities in specialty outpatient clinics. These, when prepared for teaching, concentrating in a systematic way the care of children with more frequent chronic conditions, is a scenario that can contribute to training, as long as the premises of comprehensive care and articulation with health care networks are guaranteed. It is an opportunity for the student to learn about future possibilities for pediatricians to work with[26,35].

With the participation of 37 medical schools, this study has limitations for generalizations about pediatrics teaching in the country. Even though the participating institutions came from 14 states of the federation and all regions of the country, the origin was uneven, with the predominance of schools from the southeast region. The questionnaire did not detail the teachers' employment relationship and respective workloads in the educational institutions, which could impact on teacher development and involvement with the construction and improvement of teaching plans. Even so, it provides valuable information that allows an understanding of the main issues involved with teaching pediatrics at the undergraduate level and its challenges.

One can positively note the ongoing concern with curricular changes and the inclusion of emerging topics, with the aim of training professionals with skills for an updated approach to the main topics related to child and adolescent health. The changes that occurred in the curricula of the medical schools in this study were considered positive ones and advances are recognized, highlighting the inclusion of contemporary topics, the permanent process of curricular and teaching development, the use of practice scenarios that include all levels of health care, thus favoring experiences within the community, working in a multidisciplinary team and intersectorality. The full development of these activities, at the same time, are cited as challenges, due to the need for constant construction, permanence and training of preceptorship in these scenarios, including encouragement for teachers.

FINAL CONSIDERATIONS

It was observed that the schools participating in this study allocate an average of 11% (eleven percent) of the course total workload to teaching child and adolescent health, exceeding the 10% (ten percent) proposed by the Brazilian Society of Pediatrics[26], although great variability was observed between schools. Most cover the content and include scenarios necessary for medical training in the child and adolescent health care area, considering their family, social and cultural context. Childcare remains an important component of practical activities and its development in primary care is highly valued, while it is also a challenge given the limitations of services and, in some cases, the impossibility of direct action by the pediatrician, considered essential for the teaching of child and adolescent health.

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AUTHORS' CONTRIBUTIONS

Rosana Fiorini Puccini: Participated in all stages of research development and preparation of the manuscript. **Alessandra Carla de Almeida Ribeiro**: Participated in all stages of research development and preparation of the manuscript. **Angélica Maria Bicudo**: Participated in all stages of research development and preparation of the manuscript. **Rosana Alves**: Participated in all stages of research development and preparation of the manuscript. **Silvia Wanick Sarinho**: Participated in all stages of research development and preparation of the manuscript. **Suzy Santana Cavalcante**: Participated in all stages of research development and preparation of the manuscript. **Maria Wany Louzada Strufaldi**: Participated in all stages of research development and preparation of the manuscript. **Fabíola Isabel Suano de Souza:** Participated in all stages of research development and preparation of the manuscript. Statistical analyses.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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