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ORIGINAL ARTICLE

Undergraduate teaching of pediatrics in medical schools of the state of Rio de Janeiro

Eneida Q. O. Veiga,[1] Nildo A. Batista[2]

Abstract

Objective: The aim of this study is to describe and analyze the teaching of pediatrics in medical schools of the state of Rio de Janeiro in terms of structure, hour load, insertion into the Medical course curriculum, objectives, syllabuses, learning scenarios, and evaluation methods.

Methods: A cross-sectional study of 16 pediatric courses of medical schools of the state of Rio de Janeiro was carried out using exploratory and descriptive research methods. The data were obtained at the investigated schools from the Teaching Coordinators of the Pediatric courses, and institutional documents were also analyzed.

Results: The insertion of pediatric education into the Medical course curriculum, the learning environments and the criteria for the selection of contents were not so different among the investigated courses. Pediatric education corresponds to 10.07% of the total hour load of the medical course; this rate is very close to the one recommended by Southern Cone pediatric associations. Pediatric medical education begins in the third year in most of the undergraduate courses. Cognitive development in the learning process and student-centered evaluation, predominantly based on written tests, are highlighted. Among the analyzed courses, the percentage of practical activities ranges from 0 to 60% in the pre-internship period.

Conclusions: The teaching of pediatrics in medical schools of the state of Rio de Janeiro gives priority to general medical education; in the pre-internship period, expositive lectures prevail; primary health care settings are used; evaluation is focused on written tests, placing special emphasis on cognitive aspects in most courses.

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Introduction

Currently, there has been an attempt to adjust the undergraduate teaching of pediatrics to the changes in the Brazilian Medical School curriculum, based on the implementation of nationwide guidelines for undergraduate courses.[1] These guidelines build up a profile of desirable characteristics for future physicians: "general, humane, critical, and reflective education; ability to follow ethical principles, to deal with the health-disease process at different care levels, with the aim of promoting, preventing, recovering and restoring health, seeking to integrate care, complying with the principles of social responsibility and commitment towards citizenship, as a way to fully promote the health of human beings."

To have such a profile, medical students must develop healthcare-related skills that allow them to make decisions on their own. They must be prepared to seek information actively and critically and to undergo continuing education.

These guidelines establish that new teaching/learning methods should be used, extending teaching activities to an out-of-hospital environment, especially the basic health system. This has sparked off intense debate in medical schools, and therefore educational projects for pediatric education have been launched.

In this century, two important documents about the teaching of pediatrics in undergraduate courses were published: one by the Pan American Health Organization (PAHO) in partnership with the Latin American Pediatric

1. Mestre, Universidade Federal de São Paulo, Escola Paulista de Medicina (UNIFESP/EPM), São Paulo, SP, Brasil. Professora auxiliar, Departamento Materno-Infantil, Faculdade de Medicina de Petrópolis (FMP), Petrópolis, RJ, Brasil.
2. Livre-docente. Doutor. Professor adjunto, UNIFESP/EPM, São Paulo, SP, Brasil.

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Association (ALAPE),[2] and another one by the American Academy of Pediatrics, called The Future of Pediatric Education II Project (FOPE II).[3] The characteristics of pediatric education were investigated in 253 Latin American programs (70% of the total), including 19 countries, and 56 medical courses in Brazil. The U.S. project assessed pediatric education in relation to continuing education, including medical residency.

The survey conducted by ALAPE revealed that there are a large number of students in medical courses, which often compromises integration and learning. The survey also showed lack of health promotion and prevention syllabuses in some courses, necessity for the upgrading of teaching materials by inclusion of new technologies, concentration of practical activities in hospitals, and necessity for the improvement of evaluation methods.

FOPE II shows that pediatric education at all levels must be based on the health needs of children in the context of family and community. On the other hand, it also highlights the necessity for active discussion about the curriculum, teaching methods, and evaluation tools. In this regard, the goal of pediatric education in undergraduate courses is to help students learn how to react with empathy and medical competence to situations that involve children, adolescents and young adults. It also recommends that: "every student should undergo a similar training schedule both in pediatrics and in internal medicine."

The aim of this study is to describe and analyze the teaching of pediatrics in medical schools of the state of Rio de Janeiro in terms of structure, hour load, insertion into the Medical course curriculum, objectives, syllabuses, learning environments, and evaluation methods, and thus to contribute towards the better understanding of the role of pediatric education in the general qualification of Brazilian physicians, in addition to encouraging the search of new paths that can add improvements to this field.

Methods

This cross-sectional study was carried out using exploratory and descriptive research methods. According to the reviewed literature, we take for granted that pediatric education in medical schools of the state of Rio de Janeiro "involves questioning reality, problematizing it and seeking to find explanations that may bring some improvement in terms of knowledge."[4] The data were collected at the investigated schools from 15 teaching coordinators of the Pediatric courses, offered at 15 schools (four of them public and 11 private), 16 medical courses and 17 pediatric disciplines (at one school, there are two medical courses and, one course runs two pediatric disciplines, each with its own coordinator; in four courses, one coordinator is in charge of two disciplines).

The selection of the coordinator was based on his/her potential role in the management of the teaching project, organizing, planning, conducting, assembling, assessing and reshaping such education in every moment and situation. As stated by Cunha,[5] "although it is not the only significant element in this process, we cannot deny that it is the major agent for field decisions" (p.33).

Initially, a search for information was made at the official websites of the medical schools, for collection of data such as: names of directors and coordinators of the medical courses, head professors of pediatric medical education, list of professors, curriculum framework, goals, description of disciplines and syllabuses. For the classification of goals, we used the taxonomy for educational goals proposed by Bloom, Krathwohl and Harrow,[6] considering them in the cognitive, psychomotor, and emotional domains. It should be underscored that this classification was outlined in some teaching plans, and that the goals were chosen by the researchers when not specified. The insertion of professors into the teaching project was assessed, as well as the learning environments, core contents and their planning, and evaluation methods used.

The quantitative variables were entered into Microsoft Excel spreadsheets and submitted to plain statistical analysis, using mean, standard deviation, and median. In order to increase reliability, the data were tabulated and re-sent to professors for checking. Each professor received the data about his/her school only.

From the very beginning, as stated in the informed consent form, we made it clear that we would not carry out a comparative study, but a descriptive analysis of pediatric education instead. For this reason, identification data are confidential and restricted and were therefore neither included in the analysis nor published. The study was approved by the Research Ethics Committee of Universidade Federal de São Paulo.

Results

Pediatrics, in compliance with the Brazilian guidelines for curriculum changes, is often included in reform proposals – some incipient and others already fully implemented – of most schools. It is part of the teaching department in 10 schools. Of these departments, six operate conjointly with obstetrics and gynecology (mother-child department), two of them belong to the Department of Medicine, whereas another two are stand-alone departments. In the remaining six courses, pediatric medical education is taught as a separate subject.

The course hour load, its distribution in the pre-internship and internship periods, and its relationship with the total hour load are shown in Table 1. The average course load consists of 870 hours, with a range between

600 and 1,640 hours, which corresponds, on average, to 10.07% of the total hour load of the medical course.

Based on interviews, curriculum frameworks, and on the description of the disciplines, we observed that pediatric medical education is distributed throughout the six-year course as follows: one course (6.25%) includes this subject in the second year, nine (56.25%) in the third year, and six (37.5%) in the fourth and fifth years, combining contextualized learning with practice.

By analyzing the goals of disciplines, we found that the cognitive development of students was a priority (81.81%). In 54.54% of teaching programs, psychomotor domain was a major goal, whereas emotional domain was highlighted in 31.81%. In most courses, the goals are more concerned with the specificity of pediatric practice than with the physician's general qualification. However, the criteria for the selection of core contents prior to the internship period give priority to general medical education, to the most prevalent diseases, and to basic health care.

In the third year, the most common issues are concerned with the introduction to pediatrics, focusing on medical history and physical examination, on basic health care (including breastfeeding in 87.5% of syllabuses), on childhood accidents (62.5%), on growth and development (50%), on the treatment of healthy newborn infants (50%), on immunizations and control of respiratory infections (37.5%) and on diarrheal diseases (12.5%). Topics related to psychomotor and emotional aspects, such as communication skills in the pediatrician-child-family relationship and normal and abnormal physical examination, are explicitly taught in five out of eight courses that include pediatric medical education in the third year (62.5%), implicitly embedded in one of them (12.5%) and not contemplated in two.

Topics related to basic health care are still taught in the fourth and fifth years, but the most common childhood diseases are also dealt with at this time. Focus is still placed on the pediatrician-patient relationship, upper airway infections, malnutrition, dehydration, anemias, infectious and parasitic diseases, child accident prevention, pediatric surgery, and on genetic symptomatology.

Medical schools are quite heterogeneous in the theory and practice they teach in the pre-internship period. On average, practical activities account for 42.5% of the course load (with a range from 0 to 60%, which are threshold rates found in one course only), as shown in Table 1.

In all courses, the classroom is the best place to learn, and the place where cognitive learning prevails. The classroom is also used for demonstration and simulation of practical activities.

Table 1 - Pediatric education in the medical course and its percentage values

Course	Total hour load of the course	Total hour load of pediatric education	Percentage of pediatric education	Pediatric practice – overall percentage	Hour load in pre-internship	Hour load in internship
01	9,439	1,024	10.84%	10%	304	720
02	9,540	680	7.12%	60%	200	480
03	8,400	600	7.14%	50%	160	440
04	7,650	820	10.71%	40%	280	540
05	9,680	760	7.85%	40%	320	440
06	8,796	836	9.50%	40%	396	440
07	9,759	860	8.81%	50%	320	540
08	9,135	1,350	14.77%	40%	720	630
09	8,030	867	10.79%	50%	317	550
10	8,180	680	8.31%	50%	240	440
11	8,180	680	8.31%	50%	240	440
12	9,380	1,640	17.48%	50%	1,160	480
13	8,247	840	10.18%	50%	360	480
14	7,780	680	8.74%	50%	240	440
15	7,952	790	9.93%	0%	120	670
16	8,016	820	10.22%	50%	240	580
Mean	8,635	870	10.04%	42.5%	351	519
Standard deviation	738.85	269.56	2.72	15.71	253.64	90.59
Median	8,323	820	9.72%	50%	292	480

The learning environments used are shown in Table 2, distributed according to course levels. Primary health care settings (health centers, day care centers), as well as outpatient clinics, first-aid stations and rooming-in facilities are used prior to internship in 93.75% of courses. In 62.5% of them, the introduction of students to practical activities occurs from the very beginning of the course (6.25% in the second year and 56.2% in the third year), focusing on the observation of outpatient treatment. In one course, the actual introduction of students to the practice of primary health care takes place in the basic health system at this stage.

An evaluation process centered on checking students' learning is used by the 16 courses investigated. The interviews with the coordinators revealed that evaluation of the teaching process was reported in 11 courses (68.7%). The participation of pediatrics in the assessment of institutions and/or undergraduate courses as a whole is underreported. Assessment of the discipline and professors, when available, is made by the course coordinators with the participation of students only. Self-assessment of students and professors was not referred as an evaluation tool.

The use of the written test, regarded as "official", adds to the evaluation process, whose objective is to check whether students achieved a passing score. There has been a tendency to evenly provide both multiple-choice and open-ended questions. Written tests during which students are allowed to take a look at their notes were not mentioned by the coordinators, and oral tests are not commonly used.

Among the investigated courses, only three (18.75%) use practical tests as an evaluation tool. In 14 courses (87.5 %), students receive scores, always together with the cognitive assessment. These scores are given based on structured report cards, where variables such as attendance, punctuality, behavior, respect, teamwork, wearing of appropriate clothes (white coat, gloves, etc),

Table 2 - Learning environments for pediatric education in medical courses of the state of Rio de Janeiro

Course	Period/Year	Environments								
		GP	PS	FA	ER	DS	FHP	RI	IU	C
01	3rd year	X					X	X		X
01	4th year	X						X		X
01	5th year	X	X	X				X	X	X
02	9th period	X		X	X			X		X
03	8th period	X		X				X		X
04	5th year	X		X	X			X		X
05	3rd year	X								X
05	4th year	X		X				X		X
06	6th period	X		X						X
06	7th period	X						X		X
07	4th year	X		X				X		X
08	5th period			X			X			
08	6th period			X			X	X		X
09	3rd period						X			
09	4th period	X		X						X
09	7th period	X		X				X		X
09	9th period	X	X							X
10	7th period	X								X
10	8th period	X								X
11	7th period	X								X
11	8th period	X								X
12	5th, 6th, 7th, 8th periods	X		X	X		X	X		X
14	6th period	X	X	X	X	X		X		X
14	7th period	X	X	X	X	X		X		X
15	9th period									X
16	7th and 8th periods	X		X	X			X		X

C = classroom; DS = day care center and schools; ER = emergency room; FA = first-aid station; FHP = Family Health Program; GP = general pediatric outpatient clinic; IU = intermediate unit; PS = pediatric specialty outpatient clinic; RI = rooming-in facilities.

search and growth are assessed. Also, students' learning can be assessed through other tools that were not explicitly investigated in this study.

Discussion

The changes to which medical education has been put through in Brazil are one of the reasons why we decided to investigate pediatric medical education in the state of Rio de Janeiro. The practices recommended by the Brazilian Educational Guidelines,[1] among other aspects, show that it is necessary to carry out an extensive reform in college education. In this regard, medical schools are challenged to review their teaching projects using the Brazilian guidelines for curriculum changes, thus including the teaching of pediatrics for the qualification of future physicians.

After analyzing pediatric education in Latin American medical schools, Puga et al.[7] assert that it is necessary to review the core contents of medical courses and to develop skills in conjunction with new health care assumptions.

In agreement with these findings, Johnson et al.[8] comment, among other critical points, that several projects for pediatric education have not contemplated theoretical and methodological improvements in medical education.

The hour load of pediatric education in relation to the total hour load of the medical course is of paramount importance. In the analyzed schools, pediatric education averaged 10.07% of the total hour load, with heterogeneous distribution between the pre-internship (mean of 351 hours, 40%) and internship (mean of 519 hours, 60%) periods.

This has been the object of study and recommendation in some forums on pediatric education cited by Marcondes:[9] the 1st Conference on Pediatric Education in Brazil, held in 1962, suggested that the hour load during the pre-internship period be between 200 and 300 hours; in 1969, the Expert Committee of the World Health Organization (WHO) recommended at least 600 hours for this period; the 2nd Conference on Pediatric Education in Brazil, held in 1972, did not accept the recommendations made by the WHO and preferred a 300-hour load, as had been suggested 10 years ago; the 1st Brazilian Symposium on Pediatric Education, in 1983, accepted the 600-hour load for the pre-internship period and a 700-hour load for the internship period, as recommended by the WHO, if the course could be run within one year. In an attempt to standardize pediatric education in undergraduate and graduate courses in Mercosur countries, the Southern Cone pediatric associations[10] held a meeting in 2004 for a final decision on this issue, and then recommended that the hour load should correspond to 15% of the total hour load of the medical course.

We observed that pediatric education begins in the third year in most courses, and often uses primary and secondary health care settings as learning environments. This is a current trend in the reorganization of medical education. The search for different learning environments aims to make the transition from education based on individual health care (provided at hospitals) to an educational approach that includes social, economic, and cultural aspects of the population, enabling health professionals to deal with problems related to the health/disease process.[7,8,11,12]

The analyzed curricula revealed that cognitive development is a priority in the learning process, and that psychomotor and emotional aspects are also contemplated, but at a smaller frequency. Even though the objectives of disciplines are concerned with the specificity of pediatric practice, there is a paucity of health promotion actions. However, the analysis of the core contents of these curricula shows that the general qualification of physicians is the major focus.

According to Marcondes,[9] "pediatric education, implemented in the clinical cycle and complemented especially by hands-on training during internship, aims to provide future physicians with general qualification, but with a broader view of the main problems found in pediatric practice, and to encourage vocational competences that will be developed in residency programs. It is crucial that such education also develops the ability to establish appropriate relationship with children and their families, following ethical and humane principles, mainly in cases of severe, chronic, or terminal diseases; a more preventive than curative attitude towards patients; ability to provide families with the necessary information; responsibility and commitment towards patients, which is essential in medical practice..." (p. 184).

The Southern Cone[10] pediatric associations recommend that such education should respect a holistic approach to health care, instead of subdividing it into specialties; this will allow medical students to contemplate the child as a whole, in his/her family environment and in his/her sociocultural context.

With regard to the core contents and their selection criteria, we noted that the necessity of providing medical students with general qualification, with the study of the most prevalent childhood diseases and of basic health care are the mainstay of the syllabus to be developed during the course. In general, the contents listed in the syllabus are quite similar, being only different in terms of when they are dealt with.

In the study conducted by ALAPE,[2] some issues related to health promotion and prevention were analyzed in the curriculum of medical schools. Thus, breastfeeding is included in 62.7% of the syllabuses, nutritional assessment

in 65%, growth assessment in 71.6%, development assessment in 73.9%, and immunizations in 56.5%.

Blair et al.[12] question the relevance of including subjects that deal with the rights and conditions for social equality within a broad view of children's health in pediatric education.

Toro et al.[13] state that the selection of the core contents should be made using an increasing level of complexity, establishing the scientific and humanistic bases upon which medical, health, and academic actions to be taken by future physicians will be founded.

In this context, the "elimination" of traditional methods and the expansion of learning environments are a challenge. Likewise, improvement of evaluation methods with the inclusion of other levels and tools may result in some changes. Such need, pointed out in several studies, is a crucial perspective for the implementation of innovative propositions regarding pediatric medical education.[7,8,14]

Conclusions

This study shows that pediatric education in medical schools of the state of Rio de Janeiro gives priority to contents that deal with the general qualification of students; this priority is not explicitly outlined in the objectives described in teaching plans; in the pre-internship period, expositive lectures, held in the classroom environment, prevail, despite attempts to use primary health care settings; evaluation is focused on the written test, placing special emphasis on cognitive aspects in most courses; assessment of disciplines and professors was reported in few courses and, whenever present, it is made by course coordinators.

Nevertheless, we perceived that most schools are willing to search for alternatives in order to improve education, showing the participation and leading role pediatrics has had in debates about medical education in Brazil.

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Correspondence:
Eneida Quadrio de Oliveira Veiga
Rua Buenos Aires, 231, Centro
CEP 25610-141 – Petrópolis, RJ – Brazil
Tel.: +55 (24) 2237.2226
Fax: +55 (24) 2243.4261 / +55 (24) 9263.1555
E-mail: pronep@compuland.com.br