

Higher Medical Education of Pediatricians in the BRICS Countries

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Abstract

The aim of the study is a comparative analysis of the organization of training in medical universities of the BRICS countries for future pediatricians. What are the common characteristics and differences between higher medical education in Brazil, Indonesia, China, Egypt, India, Iran, Russia, United Arab Emirates (UAE), Ethiopia and Republic of South Africa?

The study has revealed that the Bologna education system has been fully preserved only in China and the UAE, while Russia plans to abolish it from 2025. Pediatric faculties are organized in three countries: Brazil, Russia, and China. If basic medical education lasts from four to six years, then further training in pediatric residency is required, the duration of which is an additional 2–4 years. In almost all countries (except China), the objective and structured clinical exam (OSCE) is recognized as the major examination for obtaining a pediatrician's diploma and specialist board certification.

All in all, each BRICS country has its own educational standards. The level of accessibility of higher medical education varies, but initiatives are being taken to improve the quality of education, including a unified educational system and assessment of learning, exchange of experience.

Keywords

BRICS countries, higher medical education, pediatricians, accessibility of education, residency, board certification, OSCE

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BRICS is an association of ten major developing economies (as of May 2025), characterized by common features in the organization of higher education, including the professional training of pediatricians. The first level of medical higher education is based on a fairly broad concept and plays a fundamental role in obtaining basic skills and abilities, on the basis of which further board certification in narrower specializations is possible. Pediatrics is one of the most important and complex areas of medical science. As an independent specialty, it arose relatively recently, since previously the same doctor had been engaged in the treatment of children and adults [Mikirtichan, Suvorova, 1998]. At present, medical higher educational institutions include pediatric departments, students of which feel more competent and confident than their colleagues decades ago. The organization of the educational process is to ensure training of many highly-qualified pediatricians. Against this background, the professionalism of the faculty has become particularly important. Professors are assigned a variety of tasks and responsibilities in teaching [Bryman, 2007] in addition to developing the skills and competencies of examining and treating students, and subsequently creative development and self-realization in the profession [Bagrationi, Filonovich, 2024].

The aim of the study was a comparative analysis of the organization of pediatric training in medical universities of BRICS countries. What are the similarities and differences between pediatric higher medical education in Brazil, Indonesia, China, Egypt, India, Iran, Russia, UAE, Ethiopia, and the Republic of South Africa? To answer this question, we set the following research objectives:

- 1) to assess the availability of basic higher medical education in the BRICS countries;
- 2) to determine the availability of the Bologna system and pediatric specialization in undergraduate medical education, program duration and diploma confirmation procedure upon completion;
- 3) to clarify the availability of residency in pediatrics and evaluate training duration;
- 4) to analyze the control over the system of pediatric education in BRICS countries through OSCE (Objective Structured Clinical Examination).

1. Methodology

At the first stage of this study, we searched and analyzed scientific literature available in bibliographic databases (PubMed, Scopus, Web of Science, Google Scholar, eLibrary, Googlescholar, CyberLeninka), summarizing and assessing information on training medical personnel in the field of pediatrics in various countries. In particular, more than 60 sources were studied without language restrictions, which included one monograph and 34 full-text articles. In addition, we performed a thematic search on 35 official Internet websites.

We found that the existing studies are not systematized and overlook some BRICS member countries. This prompted us to conduct a comprehensive analysis, systematization, and generalization of disparate data from publications, as well as the official websites of the leading medical educational institutions.

For our study, we selected 10 countries that are full members of the organization. Our research does not cover the “partner countries” of BRICS. In our view, the first criterion for a comparative assessment of pediatric education in the countries under study is the general availability of education. This term means a combination of such factors as the total number of higher education institutions offering pediatric training, their geographic accessibility, and the preferential basis for training — state (financed from the country’s budget) or commercial (financed by students).

The next evaluation criterion is the duration of pediatric training and the degree of its compliance with the Bologna system (as the most widespread educational arrangement in the world). The presence of residency/internship in pediatrics, as well as the format of training, including medical practice, are also, in our opinion, an important comparative criterion. Finally, the form of knowledge assessment, specifically, if there is a panel-held examination, is also considered. The abovementioned criteria allow us to obtain a comprehensive understanding of the pediatric personnel training system in the BRICS countries and to structure our analysis.

2. Research results

2.1. Pediatric education in Russia

The history of pediatric education in Russia began with the creation of the pediatric faculty at Second Moscow State Medical Institute (currently Pirogov Russian National Research Medical University) in 1930, which initially included two departments: the protection of motherhood, infancy and childhood and the protection of the health of children and adolescents. Since last century, pediatric education has undergone many changes, including those in the number of disciplines studied and the duration of training. As medical science progressed, the training of young specialists acquired a dynamic character because any major discoveries and innovations in medicine in a certain way influenced both the qualifications of medical doctors in future.

In Russia, the generally accepted standard for obtaining higher medical education is completing a unified specialist course, which lasts 5–6 years on average. The training in the specialty “Pediatrics” (currently coded under number 3.1.21) differs from instruction in other fields. Instruction within the subject area involves training directly at the patient’s bedside in children’s hospitals. The presence of pediatric training programs in multidisciplinary state universities indicates the availability of medical education. Below is a list of the highest rated Russian medical universities (2025 Rankings):

- 1) I. M. Sechenov First Moscow State Medical University (Moscow);
- 2) Pirogov Russian National Research Medical University (Moscow);
- 3) Saint Petersburg State Pediatric Medical University (Saint Petersburg);
- 4) Kazan State Medical University (Kazan);
- 5) Pavlov First Saint Petersburg State Medical University (Saint Petersburg); and some others.

Importantly, clinical and fundamental medicine cannot exist without each other, being mutually complementary. As a result, many universities have developed training programs in many fundamental sciences that are directly or indirectly related to medicine. The main feature of educational fundamental areas is their training structure, mainly rooted in the Bologna system.

The range of Bologna-based master's and bachelor's programs, both in medical and non-medical universities, has expanded (Table 1).

Table 1. Educational programs of the Bologna system integrated into the educational system of medical universities in Russia

Stage	Program cipher
Bachelor's degree	12.03.04 <i>"Biotechnical systems and technologies"</i>: Engineering in biomedical practice 03.19.01 <i>"Biotechnology"</i>: Biotechnology of biologically active substances, medical biotechnology, Technology of medicinal preparations 09.03.02 <i>"Information systems in technology"</i>: Information systems and technologies 03.45.02 <i>"Linguistics"</i>: Linguistics 22.03.01 <i>"Materials Science and Materials Technology"</i>: Materials Science and Materials Technology 38.03.02 <i>"Management"</i>: Healthcare Management, Organization Management, Healthcare Management 01.03.03 <i>"Mechanics and Mathematical Modeling"</i>: Mechanics and mathematical modeling in medicine 03.28.03 <i>"Nanomaterials"</i>: Nanomaterials 09.03.03 <i>"Applied Informatics"</i>: Applied informatics in healthcare 03.37.01 <i>"Psychology"</i>: Psychology 34.03.01 <i>"Nursing"</i>: Preschool and school medicine, organization of nursing activities, pedagogical activities in the system of medical education, nursing, management of nursing activities 39.03.02 <i>"Social Work"</i>: Medical and social work with the population, social work 38.03.07 <i>"Commodity Science"</i>: Commodity science and examination of goods
Master's degree	09.04.02 <i>"Information systems and technologies"</i>: Intelligent information systems in medicine 45.04.02 <i>"Linguistics"</i>: Foreign language and intercultural professional communication, Language of medicine: communication in the media environment 22.04.01 <i>"Materials Science and Materials Technology"</i>: Bionic systems in medicine 04.38.02 <i>"Management"</i>: Strategic management and marketing in healthcare, strategic management of quality of medical activities and risks in healthcare 33.04.01 <i>"Industrial Pharmacy"</i>: Industrial production of medicines, radiopharmaceuticals, specialist in industrial pharmacy in the field of quality control of medicines, pharmaceutical technology

Stage	Program cipher
	39.04.02 "Social Work": Clinical social work and social rehabilitation, social security, social work with different groups of the population, Management of social work in the health care system
	34.04.01 "Management of Nursing Activities": Nursing management
	49.04.02 "Physical education for individuals with health problems (adaptive physical education)": Sports training for people with disabilities (including the disabled) and others

Notably, only a few medical specialties are subject to the Bologna education system — as a rule, they are those branches of medicine that are mostly related to fundamental sciences. The acquisition of higher medical education is regulated by federal laws¹, as well as local regulatory and legal acts that form specific sets of rules for educational activities in each medical educational organization.

After completing a specialty in pediatrics, any specialist can either immediately take up primary; health care (a district pediatrician in a polyclinic; a pediatrician in a hospital admission department), or complete a residency program in any narrow specialization — either adult or pediatric. It is noteworthy that graduates of the «General Medicine» direction can also complete residency programs in any of the pediatric specialties, since their basic training program, although to a lesser extent, also includes disciplines related to the study of children's health.

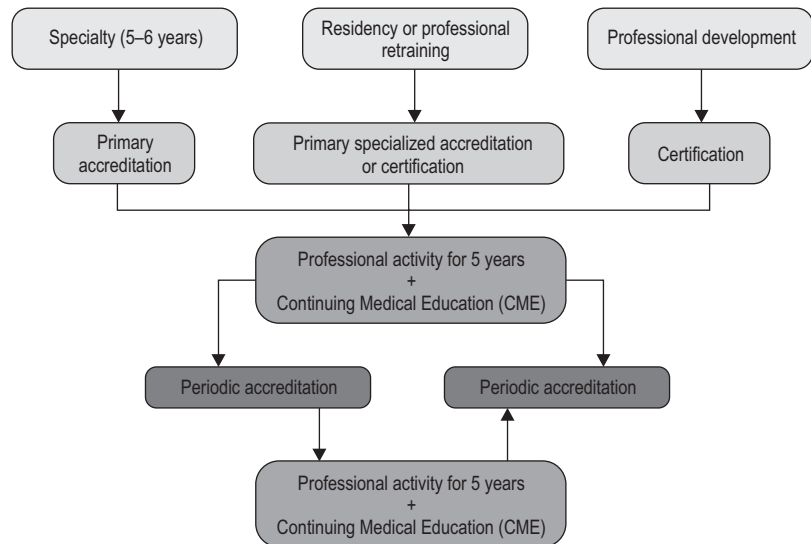
Each student has an opportunity to join an international internship program in pediatrics, which is aimed at receiving experience from foreign specialists. This helps in mastering language skills, thereby facilitating participation in international conferences and/or cooperation with foreign medical research centers. Internships contribute to the development of both domestic and foreign medicine as they help share innovations and new approaches to the medical process. In addition to internships, in order to acquire new knowledge and skills, students can do various courses and training programs in narrow specializations at any educational institution in Russia.

Board certification of specialists is a key link in the implementation of professional activities of each medical doctor. It determines the compliance of each specialist with the standards for the implementation of medical activities in a specific medical specialty or pharmaceutical activity. Thus, there is the first personal (upon completion of basic higher medical education), primary specialized (upon completion of residency, master's or professional retraining programs) and periodic

¹ Federal Laws: No. 273-FZ (as amended on 08.08.2024) of 29.12.2012 "On Education in the Russian Federation" Art. 69 and Art. 82: <https://minzdrav.gov.ru/ru/>; No. 323-FZ (as amended on 24.07.2024) of 21.11.2011 "On the Fundamentals of Health Protection of Citizens in the Russian Federation" Art. 69 and Art. 100: <https://minobrnauki.gov.ru/> (accessed 01.10.2025).

board certification (Fig. 1)². The procedures and stages of board certification of specialists are similar; the differences are only in the specialization obtained, since the primary board certification determines the broadest possible format for demonstrating the acquired skills. All future Russian medical doctors perform OSCE to assess their clinical competence.

Fig. 1. Admission to professional activity through specialist board certification³



Between accreditations, each medical doctor constantly improves their own skills and knowledge, which implies a system of continuous medical education. In order to update information in the field of healthcare, doctors are offered various options, such as advanced training courses, interactive educational modules, or participation in conferences⁴.

Considering Russian pediatric education, we can conclude that it is accessible to all segments of society due to the large number of state-funded places, including targeted-admission ones. The educational institutions are adequately equipped for admitting and training students. High intellectual demands are placed on applicants and students, which has a positive effect on the further level of training of specialists and the development of their proper professional compe-

² Official website of federal accreditation centers: <https://fca-rosminzdrav.ru/> (accessed 01.10.2025).

³ Portal of continuous medical and pharmaceutical education of the Ministry of Health of the Russian Federation: <https://edu.rosminzdrav.ru/specialistam/vo/> (accessed 01.10.2025).

⁴ Adapted from the portal of continuous medical and pharmaceutical education of the Ministry of Health of the Russian Federation: <https://edu.rosminzdrav.ru/> (accessed 01.10.2025).

tencies. The training of a medical doctor is a continuous six-year specialist program, which does not fit into the structure of the Bologna system. For all specialists, obtaining proper qualifications is confirmed by board certification under the OSCE system. After that, the medical university graduate can choose between providing assistance at the level of primary medical and social care and further training under the residency program with the achievement of greater opportunities in the provision of specialized medical care. Clinical residency in both pediatrics and other specialties lasts two years.

The system of medical education in Russia has been reformed several times and is still being improved by executive state bodies. The need for changes is directly related to the introduction of innovations into the healthcare sector, which will eventually have a positive impact on the provision of medical care to the population.

2.2. Pediatric education in China

The prevailing trend in Chinese education in recent years has been active cooperation with Russia, in particular within the BRICS alliance, aimed at drug research, internships for medical specialists, import and export of medical products, safety and telemedicine⁵. Well-coordinated joint work allows us to complement each other's advantages in each of the priority areas of healthcare, which is likely to accelerate the modernization processes in Russian and Chinese medicine. Since 2014, the Russian-Chinese Association of Medical Universities (RKAMU) was established, which promotes cooperation in a number of areas, such as joint research (more than 200 major projects annually) or scientific and practical conferences⁶.

Below is a list of the best medical universities in China that focus on training pediatricians⁷:

- 1) Sun Yat-sen University, Guangzhou: master's degree;
- 2) Sichuan University, Chengdu: master's and doctoral studies;
- 3) Southern Medical University, Guangzhou: master's and doctoral studies;
- 4) Wuhan University, Wuhan: master's and doctoral programs.

Clinical medical education in China almost completely follows the Bologna system (Fig. 2), namely, the standardized training model "5 + 3": the first five years include training for the bachelor's degree,

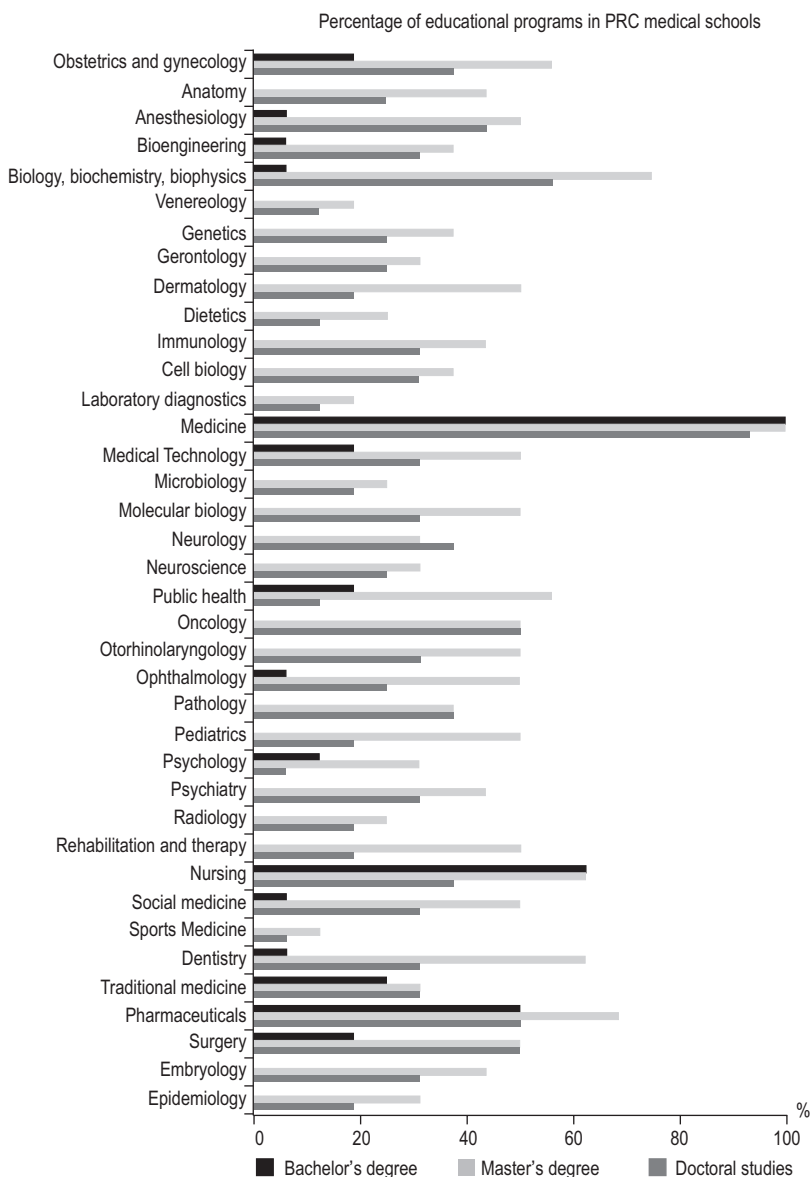
⁵ Official website of the Representative Office of the Russian Federation in the BRICS association in 2024: <https://brics-russia2024.ru/> (accessed 01.10.2025).

⁶ Official website of the Russian-Chinese Association of Medical Universities: <https://asrmu.ru/> (accessed 01.10.2025).

⁷ Official website of EduRank — independent ranking of universities worldwide, section "China's 100+ best Pediatrics universities (2025 Rankings)": <https://edurank.org/medicine/pediatrics/cn/> (accessed 01.10.2025).

and the remaining three years involve training in one of the programs, standardized residency or professional master's degree.

Fig. 2. The share of disciplines in the educational programs of the Bologna system integrated into the educational system of medical universities in the PRC⁸



⁸ Official website of EduRank — independent ranking of universities worldwide, section “100+ Best Medical Schools in China (2024 Rankings)”: <https://edurank.org/medicine/cn/> (accessed 01.10.2025).

Figure 2 demonstrates the current three-level education system, with each of the medical fields presented allowing students to achieve the degree of “Doctor of Science”, or as is customary in foreign countries — the PhD (Doctor of Philosophy) degree, similar to the “candidate of science” degree in Russia. It is also possible to obtain the MD (Doctor of Medicine) degree, which is focused only on medical practice. Notably, pediatrics is not included in the list of bachelor’s degree programs. Consequently, in China, graduates who have completed a master’s or doctoral program in pediatrics become full-fledged pediatricians.

The clinical practice of students is integrated into the basic training program after Year Three. In Year Five, an internship program is completed, which can be regarded as a “pre-residency” that previously existed in Russia.

An important link in obtaining specialist qualifications worldwide is board certification, including OSCE. We have not received reliable data from official sources on the presence of the OSCE system throughout China as a generally accepted accreditation measure although there are studies that confirm the implementation of OSCE for graduates⁹, including pediatricians.

Due to the fact that the training of young specialists is uneven and pre-graduate pediatric education according to one of the training models lasts three years, there is a serious shortage of qualified specialists. Based on this, close cooperation with the BRICS countries will help accelerate these processes and eliminate this insufficiency, including active participation of foreign specialists.

Being one of the most densely populated countries in the world, China has a large number of medical universities and clinical sites that train specialists in various fields, which makes medical education more accessible. Implementation of national projects, redirection of the economy, and active international cooperation allow students to improve the quality of education, thereby honing competencies of specialists-to-be.

2.3. Pediatric Education in Indonesia

Indonesia, the largest and most populous country in Southeast Asia, joined the BRICS association in early 2025¹⁰. Medical education in the country is subject to the Bologna system only at the undergraduate level: theoretical knowledge training lasts five years and clinical prac-

⁹ How to Design and Apply an Objective Structured Clinical Examination (OSCE) in Medical Education: <http://www.iberroamericanjm.periodikos.com.br/article/10.5281/zenodo.4247763/pdf/iberroamericanjm-3-1-51.pdf> (accessed 01.10.2025).

¹⁰ ASEAN Centre at MGIMO MFA of Russia: https://asean.mgimo.ru/opinions/koldunova-zarubejom-02-25?ysclid=m9uyskmkhc610201609&utm_source=yandex.ru&utm_medium=organic&utm_campaign=yandex.ru&utm_referrer=yandex.ru (accessed 01.10.2025).

tice — 1.5 years¹¹. Pediatrics students do a specialized residency program with an emphasis on clinical skills and research activities. Below are the main universities that allow students to study pediatrics:

- 1) University of Indonesia, Jakarta (Universitas Indonesia);
- 2) Universitas Airlangga, Surabaya;
- 3) Universitas Gadjah Mada, Yogyakarta, etc.

Further education in more specialized areas involves completing master's and doctoral courses, depending on the availability of university programs. The duration of study varies depending on the university — from 1–2 to 3.5 years. Upon completion of residency, pediatricians are awarded the title of “child specialist” (Specialist Anak — Sp.A.). After completing residency, the specialist is required to do a one-year internship, and only after that are they entitled to engage in independent clinical practice. Since 2014, Indonesia has been conducting a national exam for professional suitability for medical doctors to accredit specialists — Indonesia Medical Doctor National Competency Examination (IMDNCE). Board certification is carried out in two stages: computer-based testing (MSQs-CBT) and OSCE. The country has problems with the availability of pediatric education, especially for low-income groups.

2.4. Pediatric education in the UAE

In the UAE, higher medical education takes place in several stages and includes a combination of international and local standards of training. Basic medical training lasts six years, followed by one year internship. Specialization in pediatrics takes place over the next four years.

The leading institution is the University of Sharjah, which was founded in 1997 with the vision to developing the qualities that are shared by renowned universities around the world¹². The educational process in pediatrics includes both theoretical classes and clinical practices in hospitals and medical centers. Doctors undergoing training are required to pass exams to obtain a license from the UAE Council for Medical Professions. The university cooperates with foreign educational institutions to provide opportunities for student exchange and semester training in them. The University of Sharjah is actively implementing the Bologna system, aimed at harmonizing educational programs and improving the quality of education. The training program is organized by levels, including bachelor's, master's, and doctoral studies¹³. OSCE

¹¹ Universities in Indonesia — Howtomove: <https://howtomove.help/ru/articles/universities-in-indonesia> (accessed 01.10.2025).

¹² Official website of the University of Sharjah: https://www.sharjah.ac.ae/en/Medical_Campus/Pages/default.aspx (accessed 01.10.2025).

¹³ British educational portal Smapse Education: <https://smapse.ru/university-of-sharjah-universitet-shardzhi/> (accessed 01.10.2025).

at university is an important element of training and knowledge control of future medical doctors.

Thus, in the UAE, the medical education system is subject to the Bologna system. To confirm their qualifications, students take the OSCE. The extremely small number of educational institutions in the UAE dictates the active recruitment of medical specialists from other countries, who are paid high salaries.

2.5. Pediatric education in Brazil

As in all BRICS countries, most Brazilian students study at public universities, and most of their medical practice and clinical training takes place in public hospitals. The following institutions offer specialization in pediatrics:

- 1) University of Sao Paulo (University of São Paulo);
- 2) The University of Campinas (Universidade Estadual de Campinas)¹⁴.

Medical education in Brazil consists of two main stages: undergraduate and residency (specialization stage). The duration of the undergraduate degree is six years, of which the first three years are spent studying theoretical disciplines. From Year Four to Year Six, students work in hospitals and clinics under the supervision of experienced doctors. As in Russia, after completing a bachelor's degree, students can enter residency to obtain a narrow specialization. As for pediatrics, it takes 2–3 years to train for this profession.

After completing their undergraduate studies, medical doctors must pass a national examination (Exame Nacional de Revalidação de Diplomas Médicos — Revalida)¹⁵. Revalida is a government exam consisting of theoretical and practical tests that verifies the acquisition of knowledge, skills and competencies necessary for medical practice. The examination revalidates diplomas of doctors who have studied abroad and wish to work in Brazil¹⁶. Re-recognition of medical degrees is also carried out by public higher education institutions that adhere to Revalida. OSCE is also recognized in Brazil as one of the most valid, reliable, and effective tests for assessing clinical skills.

Summing up the system of training healthcare workers in Brazil, we note the capacity of the respective institutions, and as a result, the growth of personnel, including pediatricians in remote and low-income regions. Despite the lack of formal participation in the Bologna process, the medical education is divided into two stages: bachelor's de-

¹⁴ Data about the Brazilian universities offering specialization in pediatrics were obtained from publicly available databases: <https://educationplanet.ru/brazil-2/> (accessed 01.10.2025).

¹⁵ Ministério da Educação: <https://www.gov.br/mec/pt-br> (accessed 01.10.2025)

¹⁶ Ministério da Educação: <https://www.gov.br/mec/> (accessed 01.10.2025).

gree and residency. The key elements of the knowledge assessment system are the national Revalida exam and OSCE.

2.6. Pediatric Education in India

To become a pediatrician in India, a doctor needs to obtain Basic medical education, the so-called MBBS (Bachelor of Medicine and Bachelor of Surgery). The program includes knowledge of pediatrics, though at a basic level. After receiving the MBBS degree, medical doctors can continue their education by enrolling in one of the postgraduate programs in pediatrics. The main options are MD (Doctor of Medicine) in pediatrics — a three-year program that specializes in the education and training of pediatricians; Diploma in Child Health (DCH) — a two-year program for those who want to quickly gain qualifications in pediatrics. The MD degree is considered more prestigious and provides opportunities for career growth¹⁷.

Departments of Paediatrics are present in all medical universities in India. Almost all of them offer a DCH pediatric specialty after completing the bachelor's degree program¹⁸. The list of leading medical universities where students master pediatric programs most thoroughly, includes:

- 1) All India Institutes of Medical Sciences (AIIMS) in New Delhi;
- 2) Christian Medical College (CMC).

Medical education is built on a two-stage model: an undergraduate degree (MBBS) lasting 5.5 years, followed by specialization (a 3-year MD or a 2-year DCH program). Education is strictly regulated by government bodies, such as the Medical Council of India (MCI), which oversees the board certification of medical schools and educational standards. MD and DCH programs must be accredited by the MCI to ensure that they meet high standards of training.

The Medical Commission of India plays a key role in control over education quality and certification of specialists, regulating the administration of the unified entrance exam (NEET — National Eligibility Cum Entrance Test) for both undergraduate and residency programs¹⁹. Clinical skills are assessed during both training (through OSCE) and final certification.

¹⁷ Best Colleges for Paediatrics in India: <https://leverageedu.com/discover/indian-universities/best-colleges-for-paediatrics-in-india/> (accessed 01.10.2025).

¹⁸ Best Diploma in Paediatrics and Child Health Universities in India: <https://university.careers360.com/colleges/list-of-diploma-in-paediatrics-and-child-health-universities-in-india/> (accessed 01.10.2025).

¹⁹ National Eligibility Cum Entrance Test: <https://neet.nta.nic.in/> (accessed 01.10.2025).

2.7. Pediatric education in Egypt

The basic educational program of higher medical education in Egypt takes five years, and residency training in pediatrics lasts for 3–4 years.

The leading medical universities in Egypt that offer world-class education, as well as postgraduate training and research programs in pediatrics include:

- 1) Cairo University;
- 2) Alexandria University;
- 3) Ain Shams University²⁰.

A bachelor's degree enables its holders to work or continue their education in postgraduate higher education programs. About 20% of bachelors of medicine continue their education in these programs, obtaining academic degrees in a particular specialty, and the remaining 80% begin working as general practitioners²¹.

In postgraduate medical education in Egypt, there are two options: an academic pathway, leading to a degree (Master's-Doctorate) coordinated by a university (with a dissertation) and a scholarship program, coordinated by the Ministry of Health²².

As in other BRICS countries, OSCE is used in Egyptian medical educational institutions to assess students' mastery of clinical and practical skills²³. There are no distinctive features in the OSCE procedure itself as compared with this in other countries.

The availability of medical education in Egypt is quite high. The educational model is gradually strengthening the practice-oriented approach, providing training for pediatricians, who are able to work in both urban and rural medicine, approaching the principles of the Bologna system, with a clearer division into theoretical and practical stages. To obtain the qualification of a pediatrician after completing a bachelor's degree, a student does residency, access to which is regulated through entrance examinations, including OSCE, and competitive selection.

²⁰ Data on medical universities in Egypt is obtained from publicly available sources: <https://www.egyptianeducation.com/top-medicine-universities-egypt> (accessed 01.10.2025).

²¹ Medical Education in Egypt: Historical Background, Current Status, and Challenges: https://www.researchgate.net/publication/322335361_Medical_Education_in_Egypt_Historical_Background_Current_Status_and_Challenges (accessed 01.10.2025).

²² Medical Education in Egypt: Historical Background, Current Status, and Challenges: https://www.researchgate.net/publication/322335361_Medical_Education_in_Egypt_Historical_Background_Current_Status_and_Challenges (accessed 01.10.2025).

²³ The Egyptian Journal of Hospital Medicine: https://applications.emro.who.int/imemrf/Egypt_J_Hosp_Med/Egypt_J_Hosp_Med_2018_71_7_3554_3558.pdf (accessed 01.10.2025).

2.8. Pediatric education in South Africa

Higher medical education in South Africa contributes to the diverse healthcare system, where pediatricians undoubtedly play a key role in ensuring the health of children. The largest medical institutions include:

- 1) University of the Witwatersrand;
- 2) University of Cape Town²⁴.

Basic medical education lasts six years, offering theoretical disciplines and practical classes in hospitals. After going to university, students receive a bachelor's degree and do a mandatory internship. The pediatric specialty requires additional training, including the following four years of training in a residency program²⁵.

In order to receive a diploma after completing a bachelor's degree, a student must pass exams consisting of two stages: a written test and a practical part — OSCE. Then, the student is required to work for one year in a rural hospital or small medical institution²⁶.

Although the system of training pediatricians in South Africa is quite effective, the following problems exist: uneven access to educational resources and a lack of funding. In this regard, new approaches and directions are being developed that contribute to improving the quality of medical care for children in the country²⁷. South Africa is not part of the Bologna system. The country's pediatric education focuses on gradual acquisition of competencies and assessment of knowledge, including clinical skills, through OSCE.

2.9. Pediatric education in Iran

To obtain medical education in Iran, it is necessary to pass several stages of training. After successful completion of the national Konkoor exam, which is highly difficult and competitive and is conducted by the Iranian Ministry of Health and Medical Education, and admission to a medical university begins the six-year course of study to become a general practitioner (MD). Below is a list of the leading medical universities offering pediatric education:

²⁴ Top 10 Medical Universities in South Africa: <https://studygreen.info/best-universities-in-south-africa-to-study-medicine/> (accessed 01.10.2025).

²⁵ Main trends in the development of higher education in sub-Saharan Africa at the present stage: <https://scipress.ru/pedagogy/articles/osnovnye-tendentsii-razvitiya-vysshego-obrazovaniya-v-stranakh-afriki-yuzhnee-sakharyna-sovremennoy-etape.html> (accessed 01.10.2025).

²⁶ Medical Education, Reflections and Perspectives from South Africa: A Review: <https://bmcmmededuc.biomedcentral.com/articles/10.1186/s12909-025-06910-8> (accessed 01.10.2025).

²⁷ Journal of modern science: <https://cyberleninka.ru/article/n/tendentsii-razvitiya-v-sisteme-obrazovaniya-v-sovremennoy-yuar-mesto-religii-v-obrazovatelnoy-politike-gosudarstva/viewer> (accessed 01.10.2025).

- 1) Tehran University of Medical Sciences (Tehran University of Medical Sciences);
- 2) Shiraz University of Medical Sciences (Shiraz University of Medical Sciences)²⁸.

The first two years are devoted to studying theoretical subjects, and the next three years are spent in clinical training, where students begin working with patients under the supervision of senior doctors. In the sixth year of internship, students gain practical skills in hospitals.

The specialty of pediatrics often requires high scores due to the popularity of this field, so students take entrance exams for residency, the duration of study for which is four years. After completing the residency, the medical doctor takes state exams and receives a license to practice medicine from the Iranian Medical Council²⁹. Iran is not an exception in that OSCE is an important part of medical education and assessment of physicians' skills.

In general, medical education in Iran is formally accessible, as admission to universities is through the Konkoor entrance exam. As in other countries, applicants from rural and remote areas face challenges due to unequal access to quality training and resources. Officially, Iran is not a participant in the Bologna Process, but the structure of medical education reflects its principles: gradual acquisition of competencies, early involvement of students in clinical practice, and mandatory state examinations. Assessment of clinical skills and knowledge of future pediatricians includes written tests, oral examinations, and OSCE.

2.10. Pediatric Education in Ethiopia

Higher medical education for future pediatricians in Ethiopia includes several stages. The basic course of medical sciences lasts six years and includes theoretical study of disciplines and practical training, upon completion of which students receive a bachelor's degree. Specialization in pediatrics requires a three-year residency. Here, pediatrics students gain in-depth knowledge of childhood diseases and treatment methods and also spend a lot of time practicing in children's hospitals³⁰. Programs that meet modern medical standards for training pediatricians are offered at several institutions, including the following universities:

- 1) Addis Ababa (Addis Ababa University);
- 2) Gondar (University of Gondar)³¹.

²⁸ Best Global Universities for Clinical Medicine in Iran: <https://www.usnews.com/education/best-global-universities/iran/clinical-medicine> (accessed 01.10.2025).

²⁹ IRI Medical Council: <https://irimc.org/en/Regulations/Medical-Education> (accessed 01.10.2025).

³⁰ World Education News + Reviews: <https://wenr.wes.org/2018/11/education-in-ethiopia> (accessed 01.10.2025).

³¹ Ethiopian Universities Ranking: <https://www.universityguru.ru/universitety-ethiopia> (accessed 01.10.2025).

Pediatric medical education in Ethiopia is affordable as most universities are publicly funded. The only limiting factor is the geographical barrier. The OSCE is the basic medical examination administered to senior medical students. Higher education does not comply with the Bologna system. Unfortunately, the quality of education is limited by the lack of qualified teachers and necessary teaching materials, as well as the insufficient number of universities.

2.11. Summary of research results

To summarize the analysis of higher medical education in the BRICS countries, we offer the following table (Table 2).

Table 2. Characteristics of higher medical education in the BRICS countries

Country/ Criterion	Brazil	Egypt	India	Indonesia	Iran	China	Russia	UAE	Ethio- pia	South Africa
Availability of basic medical education	+	+	+ MBBS*	+	+	+	+	+ MBBS*	+	+ MBCHB***
Faculty of Pediatrics	+	—	—	—	—	+	+	—	—	—
Bologna system	—	—	—	—	—	+	—	+	—	—
Duration of study in the bachelor's degree	6 years	5 years	5.5 years	5 years	6 years	5 years	6 years	6 years	6 years	6 years
Residency in pediatrics	+	+	+	+	+	+	+	+	+	+
Duration of training in the residency course	2–3 years	3–4 years	MD — 3 years DCH — 2 years **	1–3.5 years	4 years	3 years	From 2 to 4 years old	3 years	3–4 years	4 years
Availability of OSCE	+	+	+	+	+	—	+	+	+	+
Exams at the end of training	Reva-lida, OSCE	Internship — 2 years, then OSCE	OSCE	OSCE	Gosek-replacements + OSCE	State Examination Commission Replacements	Gosek-replacements + OSCE	OSCE	OSCE	OSCE

Notes: * MBBS — Bachelor of Medicine and Bachelor of Surgery; ** MD — Doctor of Medicine, DCH — Diploma in Child Health; *** MBCHB — Bachelor of Medicine and Bachelor of Surgery.

3. Discussion

3.1. The role of the Bologna system in organizing the education of pediatricians in the BRICS countries

The Bologna system of education is a pan-European model of higher education aimed at standardizing educational models, improving the quality of education and facilitating the academic mobility of students and teachers. Accordingly, the first stage of study is a bachelor's degree, lasting 3–4 years; the next one is a master's degree (1–2 years); research work and dissertation defense take place at the next stage of study — doctoral studies (3–5 years). In developed countries of Western Europe (such as Germany, France, Italy, or Belgium), the Bologna system is fully implemented and is the basic standard of higher education [Vyazovskaya, Ivanova, 2018]. The United States of America does not participate in the Bologna process, but their education system is quite close to this model.

The Russian pediatric school, its history, and the established system of maternal and child health care are the pride of the national healthcare system and one of the best practices in training medical personnel [Roshal et al., 2015]. Russia was a participant in the Bologna Process for almost twenty years. This period was marked by considerable developments in medical education.

After joining the Bologna process, Russia needed to create equal conditions for admission to higher education institutions, which led to the introduction of a unified state exam (USE) for all graduates, replacing entrance exams. It turned out to be difficult to introduce certain principles inherent in European education³² in the country. Finally, on June 6, 2022, it was announced that Russia was withdrawing from the Bologna Process^{33,34}.

In China, as in other BRICS countries, healthcare plays a key role [Tikhonova, Kalinina, 2023]. The population density is very high, and the distribution of pediatricians across the country is extremely uneven [Zhang et al., 2019]. The Healthy China 2030 program will help achieve a balance between quality, cost savings, and the healthcare system itself, as well as accelerate the overall socio-economic development of the country [Tan, Zhang, Shao, 2019; Wang, 2021].

Regarding the Bologna education system in China, the authorities are considering a separate experimental eight-year training scheme aimed at training highly qualified specialists in the field of innovative medical technologies; upon completion of this program, graduates are awarded a bachelor's or doctoral degree [Wang, 2021]. In 2018, Peking

³² Aisin K. Bologna education system: pros, cons and Russian characteristics / RBC Trends: <https://trends.rbc.ru/trends/education/6295da569a7947202c6b2a0f> (accessed 01.10.2025).

³³ The Ministry of education and science announced the development of its own education system in the Russian Federation / Izvestia: <https://iz.ru/1339382/2022-05-24/minobrnauki-zaiavilo-o-razrabotke-v-rf-svoei-sistemyobrazovaniia> (accessed 01.10.2025).

³⁴ Ministry of science and higher education of the Russian Federation: <https://minobrnauki.gov.ru/press-center/news/novosti-ministerstva/72668/> (accessed 01.10.2025).

Union Medical College launched a pilot project “4 + 4” project, which involves 4 years of non-medical and 4 years of clinical medical education. However, this initiative did not bring any benefits in terms of educational quality; therefore, the “5 + 3” model remains the most popular educational model to this day [Hu, Du, 2020]. The three-stage education system in China allows students to achieve the degree of “Doctor of Science” or as is customary in foreign countries — the PhD (Doctor of Philosophy) degree, which is similar to the Candidate of Sciences degree in Russia [Simagina, Skorobogatova, 2023]. Notably, different training programs have some inconsistency with each other, which is why there is a difference in the quality of professional training of doctors [Wang, 2021]. A significant difference of this model from the Russian one is sticking to the Bologna system, which assumes that the graduate will subsequently receive a PhD and MD degree.

The stages of students’ education in Indonesia include studying according to the Bologna system with passing the examination of the Medical College of Indonesia (Kolegium Dokter Indonesia) [Kittrakulrat et al., 2014]. Upon completion of due training in India, a Bachelor of Medicine and Surgery is awarded, but graduates must complete an additional two years of internship program before receiving a medical license [Badrawi et al., 2023]. The role of the Bologna system in medical education in Brazil, Ethiopia, UAE, Iran, Egypt, and South Africa has not been described in literature.

3.2. Accessibility of medical education in BRICS countries

Access to higher medical education in the BRICS countries is an important aspect of the healthcare systems. Each country has its own unique characteristics, including curriculum diversity, funding levels, language barriers, and accessibility for international students. While some countries offer high-quality education with an emphasis on international standards, others face challenges of limited resources and high competition for university places.

In the BRICS countries, the availability of medical education in pediatrics is significantly limited by geographical and financial barriers. In public universities, where training is financed by the state, there are high requirements for the achievement levels of applicants. It is typical for all countries that the poor strata of the population living in small settlements far from large cities, who also receive an insufficient level of secondary education, are limited in obtaining medical education. The National Medical Commission Bill (NMC Bill) in India encourages the establishment of medical schools in underserved areas [Sabde et al., 2020].

The medical education system in Egypt is a network of public and private universities, institutes and colleges, which implement professional educational programs aimed at developing the ability of future healthcare professionals to perform professional activities in com-

pliance with international standards [Hassan, Zakiryanova, 2021]. Access to higher medical education in Iran is easy thanks to the national entrance exam Konkoor [Farrohi-Hajeh-Pasha et al., 2017].

In the UAE, given the growing child population, training opportunities and access to higher medical education are limited, but employment opportunities are very high [Ibrahim, Al Tatari, Holmboe, 2015]. The shortage and inequitable distribution of physicians is an obstacle to universal health coverage, especially in low- and middle-income countries. In Brazil, medical school enrollment has increased in underserved areas [Figueiredo et al., 2021]. For other countries, access to education is poorly described in literature.

3.3. Residency and postgraduate education in BRICS countries

The main goal of residency is for the doctor to gain complete independence in all professional actions³⁵. In all BRICS countries, residency is required to obtain a pediatric specialty.

Direct clinical practice of students in Russia begins from the moment of training in a higher educational institution, which involves integration into a healthcare facility to master the related soft and hard skills [Schildmann, Kampmann, Schwantes, 2004]. In fact, students rise through the levels, starting with the lowest one (junior medical personnel), gradually reaching the position of a medical doctor.

Importantly, after completing the basic stages of education in the PRC, doctors-to-be join the system of continuing medical education. Undergraduate and graduate programs are regulated by national and provincial departments of education, whereas standardized residency and continuing medical education programs are supervised by health departments at the same levels [Wang, 2021]. Just like Russia, the PRC has adopted board certification of medical education. In 2006, a pilot accreditation project was introduced in China based on the Global Standards of Basic Medical Education according to the World Federation for Medical Education (WFME).

The analysis revealed that board certification of medical personnel in all areas, including pediatrics, in all the BRICS countries under study is carried out through OSCE. Regarding historical aspects, in 1975 Ronald Harden first introduced OSCE to assess clinical competence. All medical students in Russia and other BRICS countries, starting from their junior years of study, go through several dozen stations where practical skills are comprehensively tested using various medical simulators and training devices that imitate real-life situations (situational tasks) and simulated (or standardized) patients. Under the rules of OSCE, the examiner evaluates the student's performance using a checklist or checklists [Harden et al., 1975].

³⁵ Academy of Medical Education. How doctors undergo advanced training abroad: <https://medobr.com/news/kak-prokhorodit-povyshenie-kvalifikatsii-vrachey-zagranitsey/> (accessed 01.10.2025).

The Working Committee for the Accreditation of Medical Education (WCAME) was formed in China, and since 2016, the adopted document “Accreditation Standards for Basic Medical Education in China” has been in force. In 2020, WFME recognized WCAME as the executive body for board certification in China, which means that professional medical accreditation has become equivalent to international accreditation [Wang, 2021].

Drawing an analogy with the Russia, board certification according to the OSCE system has also been introduced in China [Zhang et al., 2025], as in many countries around the world according to the Global Minimum Requirements for Medical Education [Stern, Wojtczak, Schwarz, 2003]. However, we have not established whether this practice is applied throughout the country. Accreditation is carried out in two stages, including OSCE [Utomo et al., 2022].

Research into medical education in Brazil has revealed a shift from the teacher-centered and hospital-based approach to the student-centered and community-based one, focusing on clinical training [Mariani, Pego-Fernandez, 2011]. Most often, OSCE is conducted for students in Years Four and Five, as well as for bachelor’s graduates before receiving a medical diploma [Troncon, 2004]. Postgraduate qualification examinations are taken upon completion of residency and entitle successful candidates to independent practice and registration with the medical council [Singh, Singh, Natu, 1998].

OSCE in India, as well as in other BRICS countries, is recognized as a reliable and effective multi-station test for objective and transparent assessment of practical skills in future doctors [Bhatnagar, Saoji, Banerjee, 2011; Juhi et al., 2023]. OSCE in Iran is part of the final examinations of medical residents before obtaining a license. OSCEs in Ethiopia make extensive use of standardized patients to improve assessment of students’ communication skills in the context of the local culture [Dejene et al., 2024].

In recent years, countries in the Asia-Pacific region have been striving to advance medical care through the introduction of innovative medical technologies. A likely exception is Indonesia, which, according to research, does not have high rates of readiness for the integration of personalized medical care. The main approach to solving this problem is to establish an exchange of best practices with nearby, more developed countries in the region (for example, Singapore) in order to obtain optimal solutions in reforming the healthcare system [Pryazhnikova, 2022].

4. Conclusion

An analysis of medical education programs in the BRICS group shows that each country has its own unique approach to training health professionals, both general practitioners and pediatricians. Our analysis of education in ten countries also reveals similarities and some differences.

The Bologna education system has been preserved only in China and the UAE, and Russia plans to abolish it from 2025. Pediatric faculties are organized in only three countries: Brazil, Russia and China.

The duration of training for a pediatrician is quite long in all the countries studied. Basic medical education lasts between four and six years. Then, further training in clinical residency in pediatrics is required, which is 2–4 years long. In almost all countries (except China), OSCE is recognized as the leading examination for obtaining a diploma in pediatrics.

The diversity of educational programs in the BRICS countries determines special approaches to teaching pediatrics, which may be due to cultural differences. Each country faces the need to modernize medical curricula and increase clinical practice in order to improve personnel training. However, there are also common problems, such as the need to enhance the quality of training of specialists and university teachers, the introduction of modern technologies in the educational process, including distance learning, and the adaptation of educational programs to changes in the healthcare system. One of the solutions to these issues is cooperation between the BRICS countries, which can create opportunities for knowledge sharing in the field of training specialists in medical institutions. The development of joint programs, including international training standards, student and teacher exchange programs could lead to an improvement in the quality of pediatric care at the national and international levels, thereby

References

- Badrawi N., Hosny S., Ragab L., Ghali M., Eldeek B., Tawdi A.F. et al. (2023) Radical Reform of the Undergraduate Medical Education Program in a Developing Country: The Egyptian Experience. *BMC Medical Education*, vol. 23, Article no 143. <https://doi.org/10.1186/s12909-023-04098-3>
- Bagrationi K., Filonovich S. (2024) How Leadership in Higher Education Is Different from Leadership in Traditional Business Organizations? *Voprosy obrazovaniya / Educational Studies Moscow*, no 2, pp. 42–74 (In Russian). <https://doi.org/10.17323/vo-2024-16271>
- Bhatnagar K., Saoji V., Banerjee A. (2011) Objective Structured Clinical Examination for Undergraduates: Is It a Feasible Approach to Standardized Assessment in India? *Indian Journal of Ophthalmology*, vol. 59, no 3, pp. 211–214. <https://doi.org/10.4103/0301-4738.81032>
- Bryman A. (2007) Effective Leadership in Higher Education: A Literature Review. *Studies in Higher Education*, vol. 32, no 6, pp. 693–710. <https://doi.org/10.1080/03075070701685114>
- Dejene D., Ayalew F., Yigzaw T., Woretaw A., Versluis M., Stekelenburg J. (2024) Assessment of Clinical Competence of Medical Graduates and Their Related Factors in Ethiopia. *BMC Medical Education*, vol. 24, Article no 17. <https://doi.org/10.1186/s12909-023-04939-1>
- Figueiredo A., McKinley D., Massuda A., Azevedo G. (2021) Evaluating Medical Education Regulation Changes in Brazil: Workforce Impact. *Human Resources for Health*, vol. 19, Article no 33. <https://doi.org/10.1186/s12960-021-00580-5>
- Farrokhi-Khajeh-Pasha Ya., Nedjat S., Mohammadi A., Rad E.M., Majdzadeh R., Monajemi F. et al. (2012) Validity of the National University of Iran (Conjuncting)

- Entrance Exams to Predict the Academic Performance of Medical Students. *BMC Medical Education*, vol. 12, Article no 60. <https://doi.org/10.1186/1472-6920-12-60>
- Harden R., Stevenson M., Downie W., Wilson G. (1975) Assessment of Clinical Competence Using Objective Structured Examination. *British Medical Journal*, no 1, pp. 447–451. <https://doi.org/10.1136/bmj.1.5955.447>
- Hassan M., Zakiryanova A. (2021) Medical Education System in Egypt. Proceedings of the VI International (76th All-Russian) Scientific and Practical Conference “Topical Issues of Modern Medical Science and Healthcare” (Yekaterinburg, April 8–9, 2021), pp. 444–449. Available at: https://elib.usma.ru/bitstream/usma/5055/1/USMU_Sbornik_statei_2021_3_106.pdf (accessed 02.10.2025).
- Hu X., Du B. (2020) 4 + 4 Medical Education: A Word of Caution. *Lancet*, vol. 395, iss. 10225, p. 688. [https://doi.org/10.1016/S0140-6736\(19\)32996-4](https://doi.org/10.1016/S0140-6736(19)32996-4)
- Ibrahim H., Al Tatari, Holmboe E. (2015) The Transition to Competency-Based Pediatric Training in the United Arab Emirates. *BMC Medical Education*, vol. 15, Article no 65. <https://doi.org/10.1186/s12909-015-0340-3>
- Juhi A., Pinjar M., Marndi G., Hungund B., Mondal H. (2023) Evaluation of Blended Learning Method Versus Traditional Learning Method of Clinical Examination Skills in Physiology Among Undergraduate Medical Students in an Indian Medical College. *Cureus*, vol. 15, iss. 4, Article no e37886. <https://doi.org/10.7759/cureus.37886>
- Kittrakulrat J., Jongjatuporn W., Jurjai R., Jarupanich N., Pongpirul K. (2014) The ASEAN Economic Community and Medical Qualification. *Global Health Action*, no 7, Article no 24535. <https://doi.org/10.3402/gha.v7.24535>
- Mariani A., Pêgo-Fernandes P. (2011) Medical Education: Simulation and Virtual Reality. *Sao Paulo Medical Journal*, vol. 129, no 6, pp. 369–370. <https://doi.org/10.1590/s1516-31802011000600001>
- Mikirtichan G., Suvorova R. (1998) *History of Russian Pediatrics*. St. Petersburg: Saint Petersburg State Pediatric Medical University (In Russian).
- Pryazhnikova O. (2022) Directions for the Development of Medical Services in the Countries of the Asia-Pacific Region. *Russia: Trends and Development Prospects*, iss.17, part 3, pp. 396–397 (In Russian). Available at: <https://inion.ru/ru/publishing/publications/rossiia-tendentsii-i-perspektivy-razvitiia-ezhegodnik-vyp-17-ch-3> (accessed 02.10.2025).
- Roshal L., Baranov A., Polunina N., Albitskiy V. (2015) The Eighty-Fifth Anniversary of Pediatric Education in Russia. *Russian Medicine*, vol. 21, no 5, pp. 4–8 (In Russian). <https://doi.org/10.17816/rmj38238>
- Sabde Y., Diwan V., Mahadik V., Parashar V., Negandhi H., Trushna T., Zodpey S. (2020) Medical Schools in India: Pattern of Establishment and Impact on Public Health — a Geographic Information System (GIS) Based Exploratory Study. *BMC Public Health*, vol. 20, Article no 755. <https://doi.org/10.1186/s12889-020-08797-0>
- Schildmann J., Kampmann M., Schwantes U. (2004) Teaching Courses on Aspects of Medical History Taking and Communication Skills in Germany: A Survey among Students of 12 Medical Faculties. *Zeitschrift für ärztliche Fortbildung und Qualitätssicherung*, vol. 98, no 4, pp. 287–292. URL: <https://pubmed.ncbi.nlm.nih.gov/15295931>
- Simagina N., Skorobogatova M. (2023) The System of Training Scientific Personnel in China. *Scientific Notes of the VI Vernadsky Crimean Federal University. Sociology. Pedagogy. Psychology*, vol. 9 (75), no 2, pp. 84–91 (In Russian). Available at: <https://sn-spp.cfuv.ru/2683-2/> (accessed 02.10.2025).
- Singh T., Singh D., Natu M. (1998) A Suggested Model for Internal Assessment as Per MCI Guidelines on Graduate Medical Education, 1997. Medical Council of India. *Indian Pediatr*, vol. 35, no 4, pp. 345–347. Available at: <https://pubmed.ncbi.nlm.nih.gov/9770889> (accessed 02.10.2025).

- Stern D., Wojtczak A., Schwarz M. (2003) The Assessment of Global Minimum Essential Requirements in Medical Education. *Medical Teacher*, vol. 25, no 6, pp. 589–595. <https://doi.org/10.1080/0142159032000151295>
- Tan X., Zhang Y., Shao H. (2019) Healthy China 2030, a Breakthrough for Improving Health. *Glob Health Promotion*, vol. 26, no 4, pp. 96–99. <https://doi.org/10.1177/1757975917743533>
- Tikhonova N., Kalinina A. (2023) Healthcare in China and Russia. Commonality, Differences, and Collaboration. *Medicine and Healthcare Organization*, vol. 8, no 2, pp. 26–36 (In Russian). <https://doi.org/10.56871/MHCO.2023.70.59.003>
- Troncon L. (2004) Clinical Skills Assessment: Limitations to the Introduction of an “OSCE” (Objective Structured Clinical Examination) in a Traditional Brazilian Medical School. *Sao Paulo Medical Journal*, vol. 122, no 1, pp. 12–17. <https://doi.org/10.1590/s1516-31802004000100004>
- Utomo P., Randita A., Riskiyana R., Kurniawan F., Aras I., Abrori C., Rahayu G.R. (2022) Predicting Medical Graduates’ Clinical Performance Using National Competency Examination Results in Indonesia. *BMC Medical Education*, vol. 22, Article no 254. <https://doi.org/10.1186/s12909-022-03321-x>
- Vyazovskaya T., Ivanova O. (2018) Organizational-Legal Bases of the Higher Education in the European State — Parties of Bologna Process: Comparative-Legal Analysis. *Law and Practice*, no 4, pp. 35–42 (In Russian). Available at: <https://helri.com/pip/pip-2018-4-opisanie.pdf> (accessed 02.10.2025).
- Wang W. (2021) Medical Education in China: Progress in the Past 70 Years and a Vision for the Future. *BMC Medical Education*, vol. 21, Article no 453. <https://doi.org/10.1186/s12909-021-02875-6>
- Zhang H., Li S., Zheng G., Chen X., Zhong L., Li J., Li Y. (2025) Network Analysis of an OSCE-Based Graduation Skills Assessment for Clinical Medical Students. *BMC Medical Education*, vol. 25, Article no 605. <https://doi.org/10.1186/s12909-025-07091-0>
- Zhang Y. Huang L., Zhou X., Zhang X., Ke Zh., Wang Zh. Et al. (2019) Characteristics and Workload of Pediatricians in China. *Pediatrics*, vol. 144, iss. 1, Article no e20183532. <https://doi.org/10.1542/peds.2018-3532>