

Training of human capital for health in Cuba*

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ABSTRACT

The distinctive features of the training system of health professionals and technicians in Cuba are characterized, and the adaptations of the educational models to meet the needs of health services and their adaptation to the socio-economic and scientific-technical environment are described. Education for health is universal, free and is closely linked to the National Health System. The curricula focus on the interrelation between academic training and clinical practice and community activity, whose fundamental form of teaching-learning is based on education at work. The fundamental principle of medical education is the integration of teaching, health care, and research within the health system, which ensures that students are embedded into the teaching-care scenarios through the interaction of the university with society. The curricular plans are based on the main health problems of the population and the environment, with emphasis on primary health care. Since 1959, nearly 350 000 professionals have graduated, including 41 000 foreign students. In addition, more than 30 000 students are trained in 12 countries with the Cuban international medical brigades. Currently, high enrollments increase professors' teaching and health care load. Recruitment of young teachers and tutors, and training of basic science professors, need to be encouraged.

Keywords

Teaching care integration services; students, health occupations; education, medical; human resources; Cuba.

Educational policy for training health professionals and the allied health workforce in Cuba has been shaped by

various influences, including the following: impact studies of Flexner's educational model (1)—and its contribution to consolidation of the curative, individual, clinical, biomedical paradigm,—which has remained nearly unchanged for more than a century; the Argentine University Reform of 1918 (2), with its strong socially-oriented curriculum design; the Declaration of Alma-Ata, Kazakhstan, in 1978 (3); meetings of the United Nations Educational, Scientific, and Cultural

Organization (UNESCO), such as the Regional Conference on Higher Education in Latin America and the Caribbean (4); and the ideas and actions of Fidel Castro Ruz. All of these helped establish primary health care (PHC) as Cuba's health professions education and training paradigm.

Before 1959, there was only one medical school in Cuba, created in 1728, and one dental school, founded in 1900, both located in the capital. The cost of tuition

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and high textbook prices limited the number of students, and graduates were either employed in the provincial capitals or had to emigrate to find work. Curricula were theoretical and essentially curative, focusing solely on the biological aspects of disease, and prepared professionals for private practice with no consideration for social aspects of health (5, 6).

The year 1959 marked the beginning of a new era in public health and university medical education. The Ministry of Health and Welfare had been established in Cuba as early as 1909. In 1960, however, it had to be reorganized as the Ministry of Public Health (MINSAP) in order to create a single, national, state-run health system that sets short-, medium- and long-term policies. In 1962, the Higher Education Reform Act became law, giving future health professionals the social and humanist orientations the country needed (7). In 1982, when Fidel Castro Ruz, president of the Council of State of the Republic of Cuba said, "The purpose of teaching is to provide care..." he was defining the main objective of training human capital in health care (8).

The Cuban approach to medical education is scientific and humanist. Curricula cover the social sciences and specific health sciences, ethics learning in social practice, and group work supervised by tutors (9). Health professions schools promote an internationalist attitude and spirit of solidarity that are strengthened in practice as Cuban and foreign students work, learn and interact with one another. Graduates are morally and scientifically committed to practice in Cuba or other countries through internationalist cooperation. Another fundamental feature is student placements in real patient care settings within the three service environments: the community, hospitals and research institutes (9, 10).

This article describes the distinctive features of the health professions education and training system in Cuba, including modifications to educational models that have been made to meet the needs of health services, and its adaptation to the socioeconomic and scientific-technical environment.

HEALTH PROFESSIONS EDUCATION AND TRAINING

Beginning in 1959, tuition was eliminated at all universities, and textbooks

were also provided free of charge, which gradually enabled widespread admission to higher education. This led to the need to provide universal medical education and extend it to reach students in every province of the country. To meet this need, the university scholarship plan was established.

A national network of higher medical education centers was gradually created and has been instituted under MINSAP since 1976. Its methodology, however, is governed by the Ministry of Higher Education. The network consists of 13 medical sciences universities that include 23 medical schools, four dental schools, one nursing school, one health professions school, three nursing and allied health professions schools, and 15 medical sciences affiliates offering only the clinical-epidemiological years of coursework in each health profession, plus two independent medical schools. There are two other universities: the Latin American Medical School, created in 1999, which trains students from Latin America and the Caribbean, Africa, Asia and the United States, free of charge, to become general practitioners in PHC; and the National School of Public Health, which develops human capital in public health through postgraduate training, such as doctoral programs, specializations, master's degree programs and other organizational teaching modes (11). Each school is structured by academic departments and is linked to properly accredited health institutions where instruction takes place. These institutions consist of 451 polyclinics, 10 782 family doctor offices, 111 dental clinics and 150 hospitals (general, clinical-surgical, obstetric-gynecological and pediatric) (11).

Since 1959, approximately 350 000 professionals have graduated (Table 1), and more than 76 000 students were enrolled in higher education during the 2016–2017 academic year (Table 2). Every graduate of these educational institutions receives an immediate job placement with an employment contract.

Principles of health professions training in Cuba

To understand the training of human capital in health care in Cuba, the characteristics of the National Health System (SNS) and its successive improvements need to be considered. Its foremost change was to declare health a right of

TABLE 1. Health professional graduates in Cuba, 1959–2016

Program	Graduates
Medicine	158 171
Dentistry	24 863
Bachelor's Degree in Nursing	82 704
Bachelor's Degree in Psychology	80 515
Bachelor's Degree in Allied Health Professions	3 008
Total	349 261

Source: Created by the authors based on reference 11.

the people and an obligation of the State. Additionally, health care was reoriented toward a preventive-curative-rehabilitative approach, aimed toward health promotion (12, 13).

Since 1959, medical education in Cuba has been linked to development of the SNS, and, since the Declaration of Alma-Ata, has benefitted from the concept of primary health care and family medicine (3). Building human capital, therefore, is aligned with SNS needs and emphasizes strengthening community-based medicine in conjunction with hospital care, in accordance with PHC strategy (12–14).

The most prominent educational principles on which health professions education and training in Cuba are founded include the following (9):

- Integration of education, health care and research in the SNS (including universities): Educational, health care and research institutions become "health complexes" on which this integration is founded (12, 15, 16).
- Scientific educational process: The educational process must be scientifically up-to-date, philosophically and in terms of content and teaching methods. Professors must know the latest scientific advancements in their discipline and be able to communicate essential content to learners without overwhelming them with information, as well as demonstrate how such content applies to social reality.
- Systemic approach to instruction: From an educational perspective, *why*, *what* and *how* to teach form a single unit which determines how well the university responds to the society's demands.
- Theory linked to practice: achieved when study and work are combined in health services and in the community.

TABLE 2. Student enrollment in medical sciences programs in Cuba, 2016–2017 academic year

Program	Number of students	No. of years in program
Higher education		
Medicine	60 098 ^a	6
Dentistry	8 289	5
Bachelor's Degree in Nursing	3 763	
Other bachelor's degrees ^b	4 148	5
Total	76 298 ^c	
Foreign students by program (higher education)		
Medicine	8 941	6
Dentistry	44	5
Bachelor's Degree in Nursing	11	5
Bachelor's Degree in Health Technology	286	5
Total	9 282	5
Health technicians		
22 programs (for high school graduates) ^d	10 508 (includes 61 foreign students)	2.3
5 programs (for middle school graduates) ^e	11 617	3.3
Total	22 125	

^a Of these, 2 626 study at the Latin American School of Medicine.

^b Other bachelor's degrees: Includes programs in Clinical Bioanalysis, Hygiene and Epidemiology, Medical Imaging and Radiological Physics, Speech-Language Pathology and Audiology, Nutrition, Optometry and Optics, Health Rehabilitation, and Health Information Systems.

^c Includes foreign students.

^d 22 programs: Includes training of technicians in Nursing, Clinical Analysis, Medical Biophysics, Hygiene and Epidemiology, Transfusion Medicine, Podiatry, Occupational Therapy, Vector Surveillance and Control, Cytotechnology and Histotechnology, Allergy and Immunology, Optometry and Optics, Dental Prosthetics, Pharmacy Service, Social Work, Dietetics, Human Physiology, Speech-Language Pathology and Audiology, Radiology, Physical Therapy and Rehabilitation, Traumatology, Electromedicine and Health Statistics.

^e 5 programs: Includes training of technicians in Orthopedic Prosthetics, Health Statistics, Dental Care, Electromedicine, and Vector Surveillance and Control.

Source: Created by the authors based on Reference 11.

TABLE 3. Main needs and challenges in training health care personnel for Cuba

- High enrollments of undergraduate and graduate students resulting in an overloaded teaching and health care infrastructure
- Shortage of basic sciences professors
- Professors' heavy teaching and health care load in both clinical and community areas
- Pedagogical preparation of teachers and young tutors below proposed objectives
- Sub-optimal time management among students engaged in workplace learning
- Insufficient study time, lack of appropriate study methods, and even limited use of educational literature
- Insufficient number of computers and simulators to meet the educational needs of such high enrollment
- Deficiencies in the learning evaluation process

Source: Created by the authors.

TABLE 4. Main achievements in Cuban medical education through workplace learning

- Professors have developed a comprehensive vision of the training processes, and specific teaching resources have been created for each curriculum unit.
- Higher quality scientific explanations of hypotheses and theories have been favored.
- Student interaction with patients and their families has been encouraged in the various academic modalities.
- Workplace learning has led to the understanding that health care ethics are learned not only in the classroom, but also through work in health services and the community. In this practice-based framework, learners acquire and strengthen a work ethic and human values.
- Learners maintain proper professional, moral, humane and solidary conduct, and feel the need to surpass themselves throughout their careers.
- Learners have developed competencies that they put in practice through diverse modes of professional action.
- Students have adopted the work methods of health professionals and have become familiar with technologies used at each level of health care.
- Learners have developed critical, reflective, creative and independent thinking, and have learned to work in multidisciplinary teams.
- Students have learned to identify problems in their thinking and to apply scientific methods in professional practice.

Source: Created by the authors

- Workplace learning: understood as learning in practice in health care (community and hospital) based on theoretical classes, thereby enabling learners to deepen and reinforce their knowledge, intellectual skills, values and professional conduct in actual health services. This is the academic dimension of the principles of workplace learning and theory linked to practice, developed in the teaching and health care unit and the community (16, 17). *Action-based* (learning by doing) and *communicative* (professor-learner and learner-patient-family) pedagogical models underpinning these educational processes result in better assimilation of content, since educational activities are related to future professional practice (16, 17).

While providing health care, a professor is educating learners and helping them advance. To this end, he or she applies scientific and critical thinking with professional methods (clinical, epidemiologic, nursing care and technological support, depending on the particular school). Workplace learning is more than a teaching mode; it is the guiding principle of medical education in Cuba (16).

In training human capital, Cuba has had to face shortcomings and difficulties, predominantly high enrollment, overburdened teaching and health care infrastructure, shortages of basic science faculty, and poor pedagogical preparation of teachers and young tutors (Table 3). Despite these, the success of health professions education and training in Cuba is undeniable. Its main achievements are summarized in Table 4.

HEALTH PROFESSIONS EDUCATION AND TRAINING PROGRAMS

The medical sciences educational model was merged with the health system model (promotion, prevention, cure and rehabilitation), and all curricula are organized in cycles according to the Flexner framework: basic, basic clinical, clinical, and preprofessional practice, as developed under particular historical conditions in Cuba. Coursework culminates with a state exam, applied nationally, covering theory and practice (17, 18). Although the quality of the curriculum influences the quality of the professionals being trained, the real determining

factors are the attitude and commitment of professors and learners. All health professions education and training curricula are uniform, national and mandatory in all universities; and created by the most distinguished professors from those institutions.

The quality of teaching, however, also depends on the quality of the faculty as a whole. The Ministry of Higher Education has established three main teaching categories in Cuba (19): assistant professor, associate professor and full professor. There is also the temporary category of instructor, for those beginning their teaching career. Scientific and pedagogical development is ensured by an educational system for professors offering a basic course, diploma course, master's degree and doctoral degree (9).

In addition to teaching and medical care, research is also encouraged as part of professional training. Student research is structured in two ways: 1) students collaborate on research conducted by residents, specialists and the teaching faculty; and 2) students participate in extracurricular scientific activities that train them to apply the scientific method to solving health and educational problems. Students are guided by professors and present their work at annual student scientific forums held at school, university and national levels. The best projects are published in the student scientific medical journal *16 de Abril*, created in 1961.

Medicine

The medical school curriculum is based on health problems in the population, and is designed to train general practitioners with humanist aptitudes and attitudes from a health-oriented rather than disease-oriented approach, characterized by diagnostic, therapeutic and communication skills developed through problem-solving. The six-year program is centered around the health of individuals, families, the community and the environment, and focuses on the PHC strategy. Learners analyze each individual or collective health problem from a biopsychosocial perspective, combining humanist and ethical considerations with scientific and technological knowledge (17).

As the characteristics and demands of the SNS and international commitments have changed, the curricula have kept

pace with improvements (18). Curriculum design is characterized by social responsibility, critical thinking, flexibility and academic exchange, as well as the principle of continued education throughout one's professional career. First-year students are introduced to health and disease processes at the community level through a core course taught in every year of the program: Comprehensive General Medicine.

The training process is based on the concept of learning how to learn and creativity as drivers for required changes and transformations, along with students' social commitment and citizenship training (9, 17). Graduates can work in any SNS unit, providing clinical care, teaching, conducting research, managing public health or practicing in a more specific field, such as disaster medicine.

Dentistry

The first school of dentistry was created in 1963 in what was then Oriente province (now composed of Granma, Guantánamo, Holguín, Las Tunas and Santiago de Cuba provinces), followed in 1975 in Las Villas (now Cienfuegos, Sancti Spíritus and Villa Clara provinces), and in 1976 in Camagüey (now Camagüey and Ciego de Ávila provinces). Today there are dental schools in 15 provinces (20, 21).

New ideas and the population's need for oral health care led MINSAP to implement a health-oriented rather than disease-oriented dental policy. Curricula were redesigned to prepare general dentists who could achieve the proposed goals as the oral health situation and the dental care model were changing under the PHC strategy (22, 23). The current curriculum went into effect in 2011, organized as a basic curriculum of professional training content and a specific curriculum for workplace learning, adapted to varying territorial and institutional characteristics. This curriculum also allows each school to design elective subjects (23).

Bachelor's degree in Nursing

This four-year, full-time, on-site program for training nursing staff began in 1976; for the first time, nurses' working method focused on the nursing care process (24).

This program is now taught in two types of courses:

Full-time five-year course: initiated in Havana in 1987 using an on-site, daytime training model and gradually expanded to the rest of the country beginning in 1988 (25). The entrance requirement is a high school diploma; prior nursing studies are not needed. Instruction is fundamentally organized as practice-based learning, and the last year of study is devoted to full-time preprofessional practice in the workplace.

Sessions course: also five years duration, is for health workers with an associate degree in nursing. Students attend on-site sessions consisting of classes and practical training, three-to-five days a month while continuing to work in their regular nursing jobs. During the last semester, students work full-time in SNS teaching and health care settings (26).

Bachelor's degree in Allied Health Professions

As hospitals and community health centers acquired modern medical equipment, professionals with better scientific and technological training were needed to handle high tech diagnostic and therapeutic devices. This led to creation of the Bachelor's degree program in Allied Health Professions in Havana in 1989, offering on-site courses in six health technology programs taught in monthly one-week sessions. In 2003, the curriculum was updated, and the program was expanded to include 21 allied professions (27). Since the beginning, the program has consistently developed the technological method as learners' professional work objective.

There were many obstacles to overcome, however, due to the variety of technologies covered with no overlap between them. The program failed to prepare professionals across the disciplines, nor did it achieve an interrelationship between basic disciplines taught in a centralized way and specific disciplines. Common core training was achieved only in general disciplines. As a result, training in these professions was too narrow and inadequate for responding to current technological developments (27).

Consequently, eight allied health professional programs had to be designed, which were implemented nationwide in the 2010-2011 academic year as full-time 5-year programs (Clinical Bioanalysis,

Hygiene and Epidemiology, Medical Imaging and Radiological Physics, Speech-Language Pathology and Audiology, Nutrition, Optometry and Optics, Health Rehabilitation, and Health Information Systems). These include hours of workplace learning in which knowledge acquisition and practical skills are combined. Some courses are also taught in part-time sessions for working technology professionals.

FOREIGN STUDENT EDUCATION AND TRAINING

Cuba has trained health professionals not only for the nation but also for the world, in one of the most humanitarian programs to gain international recognition. As of 2015, more than 41 000 professionals from 121 countries had graduated, 24 402 of them from 10 graduating classes of the Latin American School of Medicine (11, 28). In the 2016–2017 academic year, 9 282 foreign students were enrolled in health professions education and training programs in Cuba (Table 2).

In addition to these programs for foreigners conducted in Cuba, since 1976, educational work has been done in 12 countries, resulting in 31 117 professionals trained, 28 762 at the undergraduate level and 2 355 at the graduate level. According to information provided by MINSAP’s National Department of Education, 1 787 Cuban professors and teachers currently work in internationalist medical brigades in 14 countries.

Cuban professors have also collaborated in the creation and development of several medical schools in other countries, including Angola, Eritrea, Ethiopia, the Gambia, Ghana, Guinea-Bissau, Equatorial Guinea, Guyana, Haiti, Timor-Leste, Uganda, Venezuela and Yemen. It should be noted that more than 20 000 community-based family doctors have been trained in the Bolivarian Republic of Venezuela (29).

HEALTH TECHNICIAN EDUCATION AND TRAINING

As previously mentioned, beginning in 1959, an accelerated training policy was established for nurses and other health technicians, and education was decentralized so that personnel needed in the provinces could be trained in the same location where they would later work. Education of health technicians

followed the same workplace learning principles, integrating teaching activities with clinical care.

In the 1990s, the medical universities took on the technical education of these students, and polytechnic health institutes were created (27).

Technical nursing studies date from 1902, and until 1976, this was the only type of nursing training. The current program for students who finish high school (12 grades) takes 2 years and 15 weeks; the program for students who finish middle school (9 grades) takes 3 years and 15 weeks. In both cases, preprofessional practice is performed in the health services where students will later work. All graduates have an employment contract once they have completed their studies (26).

There are currently 22 technical programs for students who have completed high school, and 5 programs for those who have finished middle school. The curriculum for the technical specialties has a comprehensive focus, with predominantly practical content. The second semester of the final year is fully devoted to preprofessional practice (26).

GRADUATE EDUCATION

In 1962, MINSAP began training specialists in medical and dental residencies, which met the needs of that time. Later on, beginning in 1987, a graduate-level education system was implemented in Cuba, directed by the medical universities. Of doctors who graduated in Cuba from 1962–2013, 71.9% studied a specialty in the residency system in the provinces where they lived (15).

There are now 63 medical and dental specialty programs, including Family

Medicine and Family Dentistry, which stand out due to their size and role in the SNS. The educational process in these specialties is a continuation of undergraduate training and is entirely workplace learning in health services and the community. It is also characterized by independent thinking in learning, with the support of a tutor. From 1962 to 2016, 105 419 medical and dental specialists graduated from these programs (11).

Master’s and doctoral degrees have been part of graduate education since 1976. Master’s degree programs are created at the initiative of each university, and must meet objective educational or SNS needs. Currently, there are 56 master’s degree programs. However, doctoral studies in science have not advanced enough to meet SNS needs, since there are too few trained graduates of doctoral programs (9).

To ensure the quality of graduates, academic graduate programs need high-quality health services where specialists train. Therefore, professional growth opportunities for both university and technical program graduates are free of charge. Health professionals can systematically update their scientific and technical knowledge, and thus improve job performance (30). During the 2014–2015 academic year, 295 819 health professionals participated in 49 665 professional growth activities in the SNS (31).

Table 5 lists the main lessons learned from training human capital in health care in Cuba.

CONCLUSIONS

Educational policy for training human capital in health care in Cuba has been aimed toward meeting the needs

TABLE 5. Lessons learned

- Education and training of health professionals and technicians must respond to social responsibility and population needs rather than the particular interests of each university.
- The purpose of teaching is to provide care; when professors and learners work in health services and the community, the quality of health care improves for the population.
- Teaching and health care models must be taken into account when revamping curricula. Curricula must be more health-based, while still addressing the problems that graduating professionals must be able to solve, and must include community-based care within the PHC strategy.
- Curricula must focus on learning, as well as identifying and solving the health problems of individuals, families, the community and the environment. They must also include natural disaster work and international cooperation.
- The quality of professionals in training depends more on the attitude and commitments of the professor-learner team than on the quality of curriculum design.
- The teaching staff must be guaranteed systematic training and professional growth in health sciences education.
- The keys to success in the health professions education and training process are: integration of teaching, health care and research (university-health system-society), or at least coordination among these; a scientific and systemic educational process; and workplace learning in teaching and health care institutions and the community (learning by doing).
- In every educational process in the health field, ensuring learners’ ethical, moral, solidary, humanist and civic training—based on the teaching staff’s example—is essential.

Source: Created by the authors.

of the population and the SNS. Students receive comprehensive, humanist training carried out primarily in the health services and the community. All graduates are guaranteed an employment contract.

The curricula are designed to address health problems in the population and are structured according to PHC strategy, which has been systematically improved over time. The educational process focuses on integration of teaching with clinical care and research, the use of methods specific to each profession, workplace learning, and interaction of medical schools with the community. At present, high enrollment has made integration of students into teaching and health care settings more complicated.

About 350 000 health professionals have graduated since 1959, including more than 41 000 foreigners. In addition, more than 30 000 students in 12 countries have been trained by Cuban internationalist medical brigades.

Medical school faculties are known for their ongoing professional development. However, professors are now carrying heavy teaching and clinical care loads, which is presenting new challenges for maintaining faculty quality and aspiring to raise it to a higher level.

RECOMMENDATIONS

The established educational policy should be maintained while improving the integration of universities with health

services and the community. Given increased enrollment, strict adherence to curricula is essential. There is a need to train more basic science teachers; encourage hiring of young, well-prepared teachers and tutors; increase the number of doctoral degree graduates in the sciences; and strengthen professors' comprehensive, systematic professional growth.

Conflicts of interest. None declared.

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RESUMEN

Formación del capital humano para la salud en Cuba

Se caracterizan los rasgos distintivos del sistema de formación de los profesionales y los técnicos de la salud en Cuba, y se describen las adecuaciones de los modelos educativos para satisfacer las necesidades de los servicios de salud y su adaptación al entorno socioeconómico y científico-técnico. La educación para la salud es universal, gratuita y está vinculada estrechamente al Sistema Nacional de Salud. Los currículos se enfocan en la interrelación entre la formación académica con la clínica y la actividad comunitaria, cuya forma fundamental de enseñanza-aprendizaje es la educación en el trabajo. El principio fundamental de la educación médica es la integración docente, asistencial e investigativa en el sistema de salud, lo que garantiza que los estudiantes se incorporen a los escenarios docente-asistenciales mediante la interacción de la universidad con la sociedad. Los diseños curriculares están basados en los principales problemas de salud de la población y el medioambiente, con hincapié en la atención primaria de salud. Desde 1959 se han graduado cerca de 350 000 profesionales; de ellos, 41 000 extranjeros. Además, en 12 países se forman más de 30 000 estudiantes con las brigadas médicas internacionalistas cubanas. En la actualidad, existen elevadas matrículas que incrementan la carga docente-asistencial de los profesores. Se necesita fomentar el empleo de docentes y tutores jóvenes y la formación de profesores de ciencias básicas.

Palabras clave

Servicios de integración docente asistencial; estudiantes del área de la salud; educación médica; recursos humanos; Cuba.

Formação de capital humano para a saúde em Cuba

RESUMO

As características distintivas do sistema de treinamento de profissionais e técnicos de saúde em Cuba são caracterizadas e as adaptações dos modelos educacionais para atender às necessidades dos serviços de saúde e sua adaptação ao ambiente sócio-econômico e científico-técnico são descritas. A educação para a saúde é universal, gratuita e está intimamente ligada ao Sistema Nacional de Saúde. Os currículos centram-se na inter-relação entre o treinamento acadêmico com a prática clínica e a atividade comunitária, cuja forma fundamental de ensino-aprendizagem é a educação no trabalho. O princípio fundamental da educação médica é a integração do ensino, do cuidado de saúde e da pesquisa no sistema de saúde, o que garante que os alunos sejam incorporados nos cenários de ensino-cuidado através da interação da universidade com a sociedade. Os projetos curriculares são baseados nos principais problemas de saúde da população e do meio ambiente, com ênfase na atenção primária à saúde. Desde 1959, cerca de 350 000 profissionais se formaram, incluindo 41 000 profissionais estrangeiros. Além disso, mais de 30 000 alunos são treinados em 12 países com as brigadas médicas internacionalistas cubanas. Atualmente, há altas matrículas que aumentam a carga de ensino-cuidado dos professores e mudanças frequentes são feitas na faculdade, o que complicou os desafios para manter um treinamento de alta qualidade. A escassez de professores de ciências básicas também afeta o treinamento. O emprego de professores e jovens tutores deve ser encorajado.

Palavras-chave

Serviços de integração docente-assistencial; estudantes de ciências da saúde; educação médica; recursos humanos; Cuba.