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CURRICULAR DESIGN, A VIEW AT MEDICAL EDUCATION

DISEÑO CURRICULAR, UNA MIRADA DESDE LA EDUCACIÓN MÉDICA

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ABSTRACT

Introduction: the curriculum proposes an action plan, systematically selected and organized contents, with a view to a pre-established purpose. These contents can be considered independently of one another or related to each other, forming a system of interdependent subjects, in an integrating and global vision. Curricular integration aims at interdisciplinary, observe, research and apprehend reality as it occurs in practice where everything is related. In Cuba, work has been done to achieve a definition of curriculum based on the critical analysis of diverse conceptions and to recognize the reality of the context in which it develops. *Objective:* to analyze the bases of the curricular design of Medical Education in Cuba. *Development:* changes in education are important to adapt content, structure, strategies and values to the socio-historical context. The advance of science and technology leads to the conclusion that curricula lose relevance in correspondence with social needs. Currently, it is advocated to train professionals in health, with a comprehensive vision and a broad profile that allows them to face the vertiginous changes that occur in biomedical technology. *Conclusions:* Medical Education needs teachers, directors and students, who incorporate interdisciplinary aspects into their modes of action with a holistic vision of science and are capable of transposing it to all the processes that take place in universities, which enriches the design curriculum marked by a character of flexibility, diversification and internationalization.

Keywords: Curriculum, Medical Education, Interdisciplinary

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RESUMEN

Introducción: el currículo propone un plan de acción, se seleccionan y organizan contenidos sistemáticamente, con vista a una finalidad preestablecida. Esos contenidos pueden ser considerados de manera independiente unos de otros o relacionados entre sí, conforman un sistema de asignaturas y temas interdependientes, en una visión integradora y global. La integración curricular apunta a la interdisciplinaridad, observar, investigar y aprehender la realidad tal cual se da en la práctica donde todo está relacionado. En Cuba, se ha trabajado para lograr una definición de currículo a partir del análisis crítico de diversas concepciones y reconocer la realidad del contexto en que éste se desarrolla. *Objetivo*: analizar los fundamentos del diseño curricular de la Educación Médica en Cuba. *Desarrollo:* los cambios en educación son importantes para adaptar los contenidos, la estructura, las estrategias y los valores al contexto socio-histórico. El avance de la ciencia y la tecnología lleva a deducir que los planes de estudio pierden vigencia en correspondencia con las necesidades sociales. En la actualidad se aboga por formar profesionales en salud, con una visión integral y perfil amplio que les permita enfrentar los cambios vertiginosos que se producen en la tecnología biomédica. *Conclusiones:* la Educación Médica necesita de docentes, directivos y estudiantes, que incorporen a sus modos de actuación la interdisciplinariedad con una visión holista de las ciencias y sean capaces de traspolarla a todos los procesos que se desarrollan en las universidades, lo que enriquece el diseño curricular marcado por un carácter de flexibilidad, diversificación e internacionalización.

Palabras clave: *Currículo, Educación Médica, Interdisciplinaridad*

INTRODUCTION

The term curriculum comes from the Latin curriculum that means "career", was used for the first time in 1914 in the book of John Franklin Bobbitt "How to make a curriculum".[1] Bobbitt, in its definition, states that it is what allows to plan the academic activities in a general way, and in a concrete way in the adaptation to the specific conditions of a certain educational center. It does not refer only to the formal structure of the plans and programs of study, but to all the aspects that involve the choice of contents, their disposition, and the needs of society, educational or didactic materials and the available technology to achieve the objectives proposed.

In the 80s Stenhouse [2] declares contradictions within the curriculum between the theoretical and the practical: the methodology to be used and how it is perceived, understood and described what happens in the real context. Defines the curriculum as an attempt to communicate the principles and essential features of an educational purpose, so that it remains open to a critical discussion and can be effectively translated into practice; that is, a curriculum must be based on praxis. For him theory and practice must appear perfectly united. The improvement of teaching is achieved through the professional improvement of the teacher and not by attempts to improve learning outcomes. The curriculum just enables you to test ideas in practice; thus the teacher becomes a researcher of his own teaching experience. In his opinion, the teacher should be autonomous and free, must have clear objectives and always be guided by knowledge.

The curriculum is compound by subjects, which are divided for practical and didactic reasons, even if they are related to a common goal. It is common for students, and even the teacher, as they move away from what they have supposedly learned, without establishing connections between what they have learned and new knowledge. The curricular integration aims at interdisciplinary, to observe, research and apprehend reality as it occurs in practice where everything is related. Formulating an integrated curriculum favors meaningful learning because it stimulates the relationship between facts and objects, their comparison, and their spatial and dimensional temporal location, without the need to collect contents that have no practical use. While it is desirable to conduct an interdisciplinary curriculum, this requires a high level of commitment from all teachers so that they can work as a team, as required of students, in order to adapt the curriculum to the new demands of holistic learning.

An action plan is proposed in the curriculum that systematically selects and organizes a series of contents with a view to a pre-established purpose. These relevant contents can be considered independently of each other or

related to each other. These make up a system of interdependent subjects and subjects, in an integrating and global vision. With globalization education is seen as an investment, this is the so-called human capital, where certifications are the credentials that determine the value that the person has and that represents it in the labor market. Under this role, the professional loses his or her culture of origin and acquires the culture of the world community. [3]

In Cuba, work has been carried out with a view to achieve a definition of the curriculum based on the critical analysis of the different conceptions and the recognition of the reality of the context in which it develops. It has been taken as a theoretical reference to address research: current trends in higher education internationally and in Cuba, trends in medical education in today's world, the development of medical education in the country, the diversity of approaches and concepts on curriculum -by considering particularly those based on the Cultural Historical Approach that has been assumed- and the focus on the system, taking into account the elements that sustain the proposal scientifically. In the study carried out, the social character of the medical profession and of education is highlighted, which, appreciated within the system approach, constitute the basis of the model proposed. [4]

Within the Medical Sciences it is important to carry out a study of the behavior of the curricular design of each one of the careers in charge of the training of professionals who will work in the health area. Hence, the purpose of this research is to analyze the foundations of the curricular design of Medical Education in Cuba.

DEVELOPMENT

For universities, the curriculum is an educational proposal that emerges and develops in specific social conditions that determine it. This therefore must have a contextualized character that prints a particular stamp and limits its extrapolation to other different contexts. It responds to the requirements that the era, the type of society, country and region demand from universities in terms of training the professional human resources necessary for social development. It implies a construction, a proposal and a praxis that is based on epistemological, social, psychological and pedagogical assumptions that must be clearly specified by the educational institution.

This curriculum also implies a selection of culture (knowledge, skills, values, attitudes, feelings) that has an intentional character and that also responds to political determinants. Its purpose is to promote the training of a professional with a high scientific and technical level and a humanistic training that encourages their participation as an agent of development and social transformation. [5]

By contextualizing this study to the training of professionals for the health care of the population and the community, reference is made to Medical Education. This includes for Cuba at present the process of training doctors, dentists, nurses and health technologists. Previous years also included Psychology for clinical care. At the triumph of the Revolution, unlike what happened in other parts of the world, there was no process of training specialists in Dentistry and Medicine careers, most of the dentists and doctors were general practice with a few dedicated to certain specialties.

In 1967 the training of specialists in the Stomatology career was approved in four specialties: Maxillofacial Surgery, Orthodontics, Periodontics and Dental Prostheses, a process that began in 1968. These curricula were modular with a traditional approach and developed in Dentistry clinics and hospitals. In the 70s, the community medicine model was established. In 1984 the "Family Doctor and Nurse Program" was implemented as a new model of Primary Health Care, which has had a significant impact on the National Health System, and on Higher Medical Education of all careers of the medical sciences. [6]

Medical Education has not been absent from the analyzes developed in the world events of higher education and medical education, among which we can cite: Edinburgh Declaration of 1988, Edinburgh Declaration of the World Summit of Medical Education in 1993, Declaration of Santa Fe de Bogotá in 1995, Declaration of Rancho Mirage in 1997, the Report of the World Federation of Medical Education on the International Standards for

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Undergraduate Medical Education in 1999, the Declaration of Granada in 2001, the Declaration of Seville in 2002, and the Declaration of the World Medical Association on Medical Education in 2006. In all of them, its main elements could be summarized in:[7]

- Consider medical education as a continuum: undergraduate, postgraduate, permanent continuing education.
- Reformulation of the curricular designs making them pertinent, linking them more and more with the strategy of the Primary Health Care.
- Use of active teaching methods, centered on the student and based on problems.
- Less theoretical training and more linked to medical practice, so as to ensure the training of professional skills.
- Evaluation of the process, structure and results.
- Promotion of professionalism and humanism in medicine, with the development of human attitudes and values.
- Training of trainers and teachers in medical education.
- Promotion of research in students and teachers.

The curricular design in Medical Education is adjusted to the social context where it is developed, by identifying the needs and health problems of the population. The current curriculum of Medicine It is structured in six years and is based on the principles of comprehensive education that combines the humanistic and ethical with the scientific and technological. Its design starts from the identification of the main health problems of the population that the doctor must be able to solve. It is characterized by the exercise of critical thinking, flexibility and dialogue of knowledge, quality with equity and education throughout life. The training process is based on creativity, innovation and solidarity as axes of change and transformations that articulate teaching, formative research, social insertion, interdisciplinary and citizen formation at all times.[8]

In the period between 1985 and 1991, curricular tendencies of medical education are declared as guiding principles Education in the Workplace and Teaching - care - research integration. [7] The "Family Doctor and Nurse Program" means the transition from the biological and curative model and fragmented medical care to the family medicine model. Model that understands man as a bio psychosocial being and is based on the integration of health actions and to which Dentistry must necessarily be integrated. In order to articulate the Dentistry with the Family Medicine Model, and the dentist with the family doctor, the "National Dentistry Attention Program for the Population" emerged in 1992, however, from the point of view of the formation of human resources stays behind the Medicine that began a process of training in the specialty of Comprehensive General Medicine a decade earlier. [6]

From the curricular point of view, the training of dentists occurs in a similar way. The discipline of Comprehensive Dentistry is the backbone of the formative process; the logic of integration of its contents responds to the requirements of the profession, and the mastery of its exit objectives ensures the modes of professional performance of the graduate from a position of integration with respect to the other disciplines and subjects of the career. [9]

These programs are executed under the principle of linking study to work and the use of the research method. Its object of study coincides with the object of work of the profession, is eminently practical because the student assimilates the content by solving real problems, through interaction with the patient and his health-disease process, for which he must also overcome the theoretical contents of the subjects that comprise it. In spite of the short time of this study plan, there are gaps in its implementation, independently of its correct structuring in the curriculum; therefore, the future effort should be aimed at strengthening the work of the discipline group and the other groups in order to achieve methodological work with a system approach. [10]

In relation to the nursing career, since the end of the 19th century, the first preparatory schools were established in Cuba. Up to now, the training of Cuban nurses has been long and fruitful. The 21st century shows a national

and international context very different from the one that existed in the decade of the 70s, when the university studies of Nursing in Cuba began. The characteristics of this context impact the development of curricular theory.

Cuba began this century with the elaboration of numerous and accelerated transformations in the processes for the training of technical and professional nurse, in correspondence with the social order. The curriculum put into practice in the academic year 2003-2004 marked a new model of university education that integrated technical and professional training, with two intermediate degrees; after a first course of application it had a partial improvement, which was subsequently continued to transform it into a "D" study plan. In the frequent modifications of the needs declared to the university by the health system, the importance of the curricular improvement was considered, as an essential component oriented to the social relevance, of the quality of the training of nurses. [11]

For the area of technical and technological specialties before the triumph of the Cuban Revolution, the technological training programs were carried out by means of training and empirically. There was a preparation for the specialty of Optometry, but there is no record of the elaboration of study plans. Organized training begins in the 60s, with the creation of the Professional Technical Teaching system. This teaching was intended to create skilled workers and mid-level health technicians. At first, the level of admission was of the sixth grade and the centers were located in the care centers. The Training, for the different specialties of health, was carried out within the same jobs. Learning was closely linked to practice. [12]

However, the curricular design of the Health Technology professional training is revealed to be relatively new since, properly constituted, it does not appear until the end of the 80s. It is relevant in the development of the curricular design of these specialties the creation, in 1989, of the Degree in Health Technology with 6 output profiles: Optics and Optometry, Imaging, Laboratory and Blood Bank, Cytohistopathology, Rehabilitation and finally Hygiene and Epidemiology. [13] This training emerges as courses by meetings for technicians already trained in the sector. I had a basic training from first to third year. Common trunk. From the fourth year, they are verticalized to their starting profile, with a pre-professional practice course. He graduated with a degree in Health Technology with a specialization in the specialty studied. The main insufficiencies, limited number of profiles and income, as well as little differentiation in the labor market between the technical and the professional. [14]

In the year 2002, in response to new social needs, the emergent training of health personnel begins in four very necessary profiles in the care areas: Physical Therapy and Rehabilitation, Clinical Laboratory, X-Ray and Transfusion Medicine. In the act of graduation of these basic technicians, the Commander in Chief Fidel Castro Ruz has the idea of implementing a form of continuity of studies with the purpose of being constituted as graduates, this idea is carried out in the following course 2003 - 2004 and to which are added, new profiles to become 21: Physical Therapy and Rehabilitation, Podiatry, Logophonoaudiology, Nutrition, Social and Occupational Rehabilitation, Orthotics and orthopedic bandage, Traumatology, Clinical Laboratory, Microbiology, Cytohistopathology, Transfusion Medicine, Optometry and Optics , Pharmaceutical Services, Imaging, Medical Radio physics, Electro medicine, Hygiene and Epidemiology, Health Administration and Economics, Dental Prosthesis, Dental Care, Information Management in Health. [15] This training was carried throughout the country with a new training model that assumed technical training within itself, so it disappeared as independent studies.[14]

The projection of this curricular design responds to the principles of the Universalization of Higher Education. Organized knowledge by disciplines and subjects. There is an integrating main discipline according to the profile, that from the first years of the career works on the object of the profession at elementary levels with a technical vision and that as it goes through the different cycles taxed to the development of professional skills.[14] It incorporates the student early in a work universe with different characteristics, according to the territory and level of health care. It meant a social, inclusive program that responded to the satisfaction of the need for human resources in health, placing them as close as possible to their place of residence.

The training also included courses for technicians already trained in the system, that is, courses for workers. In these there was a complementary cycle with a duration of 2 years, in which the student received subjects that

were not included in the curriculum that served as the basis for his training as an average technician. Then the student began his professional cycle with a duration of 2 years, where the student received the same content as the professional cycle of the regular course. This training of technologists was valued as having a great impact due to the benefits it reported to the health system. It sustains the health services of young personnel with good preparation. However, its conception still did not meet the demands of society in pursuit of sustainable development and in order to improve the quality of these services.

In 2010, in line with the generation of Plan D indicated by the Ministry of Higher Education (MHE), the design and execution of new study plans are oriented with an implicit interdisciplinary character. Thus, there are eight careers that correspond to a more integrated training by joining several profiles in a wide profile professional output: Clinical Bio analysis, Nutrition, Logophonoaudiology, Health Rehabilitation, Optics and Optometry, Hygiene and Epidemiology, Health Information Systems and Medical Imaging and Radio physics. [16]

Plan D incorporates into these careers as distinctive features the training of professionals of broad profile, with modes of action determined by the fulfillment of four basic functions defined from the previous curriculum: assistance, teaching, research and administrative. It consists of a main integrating discipline to which other curricular axes are added: the humanist, the communication, the medical and social ethics, the environmentalist, languages, medical informatics and research, among others. The training is based on modes of action that characterize this professional in real scenarios where services are provided. It has an integration of interdisciplinary and trans disciplinary curricular axes that emphasizes the learning and the learners as a protagonist.

Within Plan D, a curricular design is also modeled that organizes courses by meetings, aimed at the graduated technicians of the different related professions, belonging to the health system, of equal duration and with similar characteristics. Distinguish to this plan, the use of study guides which enhances the independent work of the student, with a certain degree of teacher orientation and less face time that presupposes an optimization for learning. At the same time that these new careers are born, the national commissions of the same, were called to the design of the technician in this profession. It was governed by rules and resolutions pertaining to the Ministry of Education (ME). This training of health technicians lasts 2 years, of which the last semester deals with pre-professional practices.

In the 2011-2012 academic year, as part of the reorganization of human resources in the health sector and the improvement of the TPT of health, the training of health technicians is resumed, independently of university careers, the 12th grade as entry level and with a duration of 2 years, without compulsory continuing university studies, but with possible articulation with the 8 approved careers; in the case of profiles that do not have university degrees within the health sector, they can continue university studies in related MHE careers, after passing the entrance exams. [14]

However, although quality has been demonstrated in the educational process, the national and international socioeconomic context has negatively impacted Cuba and its Higher Education. On the one hand, a notable population aging, low birth rate and migration are factors that condition the demographic contraction of the young population. On the other hand, despite the development achieved in Higher Education in Cuba, access to it has decreased. A smaller number of students have been able to pass the entrance exams and many, although they have achieved it, drop out of school. As a result, there is not enough qualified personnel to cover the needs of the population. If we add to this the precipitous advance of biomedical science and technology, it can be deduced that these curricula are no longer in line with social needs. [17]

The demands of the time are to propose a curricular model capable of: generating proposals that guarantee the greatest possible number of competent people. This model must configure from the undergraduate level of higher education and throughout life, the rapid growth of information with the development of critical judgment. A professional with the competence to critically use the relevant information for a specific purpose. In the student must be induced thought structures that allow you to transform information into knowledge for good professional

practice. The operation of educational centers and the network of careers where university policy and management are incorporated should not obey bureaucracies. On the contrary, their common motive is to qualify a greater number of competent people, with constructive critical judgment, possessing a creative thinking to transform information into knowledge and with aptitudes for leadership. It is necessary to unlock the development of knowledge and democratize it. As an effect, this should strengthen pluralism, originality and academic and institutional innovation. [18]

That's why in the world, universities offer short careers that provide students with the necessary tools to enter the labor market in jobs with a specialized qualification. This training is an intermediate variant between a technician and the higher level, formed by universities and academies. Its creation responds to the "systematic shortening of the useful life of information proportional to the takeoff of knowledge economies." [19]

Short-cycle education is less expensive since less material and human resources are used in the training of this professional as a result of years of study by budget to be used. In addition, after analyzing what is referred to as experiences of other universities, it is considered by the authors that in this way students benefit by being able to access faster to the labor market and therefore to improve their economic situation.

That is why in the school year 2018-2019, the training of short cycle senior technicians throughout the country begins in the following 14 formations: Physical rehabilitation, Logophonoaudiology, Nutrition, Clinical analysis and transfusion medicine, Cytohistopathology, Radiology, Optometry and Optics, Hygiene and Epidemiology, Occupational Rehabilitation, Social Work, Medical Radio physics, Physiology and Immunology, Dental Prosthesis, Electro medicine. Three other formations are in design in this modality that will be incorporated in the next school year. These curricula are based on the legislations issued for the curricular design by the Ministry of Higher Education (MHE) and in line with the international context.

The authors coincide in thinking that the changes and the new needs that arise in Cuba and in the world, from epidemiological events, emerging and re-emerging diseases, as well as, what emanates from the knowledge society both in terms of information and new biomedical technologies and research, which include new technological procedures, lead to modifications that include curricular design, both undergraduate and postgraduate programs, so that health system professionals can comply with the principle of Medical Education of the permanent and continuous training of its labor resources.

If an event is explained from the confluence of knowledge, it is because there are points of convergence where the object is remade. Seen this way, multidisciplinary needs to be overcome by the interdisciplinary, because this latter position discovers points of convergence and relationship that allow the design of legitimate future alternatives, as they transcend particular disciplines and shape a new scientific identity and discourse. [20] Integration and Student-centered learning are imperatives of the time, due to the so-called "knowledge explosion", both quantitative and qualitative, of greater complexity and tendency to rapid obsolescence. The greater complexity in its structure imposes interdisciplinary as the appropriate way to respond to it. [21]

Interdisciplinary is a concept that emerged in the university environment as a criticism of fragmented teaching in subjects. The fragmented knowledge operated according to the particular logic of the disciplines prevents the link between the parts and the whole, must give way to a mode of knowledge able to apprehend the objects in their contexts. The main problems for the application of interdisciplinary lie in the dispersion of subjects in the curricula and in the short trajectory of team work of teachers. [22]

Even if a complete integration curricular structure is not adopted, preparation for teamwork is essential for health professionals and is an inherent element of curricula derived from a curricular model based on the historical cultural approach. The need for an integrating approach in the curriculum, both in the design and in the process, as well as in the application of student-centered learning strategies, allows a higher quality of learning. For the solidity, scientific character and flexibility that impresses the future professional in the solution of new problems.[11]

Ortíz and Sanz in 2016 state that "globalization rules transnational exchange mainly in advanced techno-scientific areas such as life sciences and new technologies." All this demands that curricular proposals have a marked character of flexibility, diversification and internationalization. [23]

The authors of this research consider that for universities, whose social purpose is the training of health professionals, it is a necessary but not sufficient condition to have sufficient infrastructure, organization and resources for the function they perform. First of all, teachers must be committed from their personal example as a paradigm of being human and willing to transmit knowledge and share the experiences of professional life. The contents and programs must have a logical sequence and show consistency in their development. The contents should be integrated in order to capture the essential knowledge for future professional performance.

CONCLUSIONS

For higher education institutions curricular design is a process that results in the curriculum, a document that integrates a set of elements that interact as a system and are essential to achieve a professional training that meet the expectations predictable for the society for which they are formed. The curricular design in Medical Education requires a flexible and contextualized thinking, present both in teachers, students, and in decision makers and organisms, where interdisciplinary becomes a dynamic force that promotes improvement, research, as well as individual and collective preparation of teachers. The teacher must be a researcher of their practice with the ability to synthesize the available experiences. The directional axis of medical education training should point to the social and humanistic commitment that is expected of it.

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