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The Multicampi School of Medical Sciences of the Federal University of Rio Grande do Norte, Brazil, in the context of the More Doctors Program: challenges and potentialities

Lucas Pereira de Melo(a)
Marcelo dos Santos(b)
Rafael Barros Gomes da Câmara(c)
Liliane Pereira Braga(d)
Ana Luiza de Oliveira e Oliveira(e)
Tiago Rocha Pinto(f)
Pâmera Medeiros da Costa(g)
George Dantas de Azevedo(h)

(a,b,c,d,e,f,g,h) Escola Multicampi de Ciências Médicas, Universidade Federal do Rio Grande do Norte. Avenida Dr. Carlindo de Souza Dantas, 540, 2° andar, sala 204. Centro. Caicó, RN, Brasil. 59300- 000. lpmelo@ufrnet.br; msantos_bio@ yahoo.com.br; rafael_bgc@yahoo.com.br; lilibraga@gmail.com; aluloli@gmail.com; tiagorp@emcm.ufrn.br; pameramedeiros@ yahoo.com.br; georgedantas.faimer@gmail.com

This paper reports on the institutional and curricular experience of launching the Medical Course of the Multicampi School of Medical Sciences of the Federal University of Rio Grande do Norte (UFRN). This report is a way of documenting, monitoring and reflecting on the development of actions of expansion of seats and creation of new medical courses in federal universities, within the framework of the More Doctors Program. To that end, the teaching, research and extension actions already developed are critically described, as well as it is presented an overview of the course and the teaching-service-community integration, highlighting the achievements and challenges in the development of teaching, research and extension. Finally, we describe the difficulties inherent in the implantation of new courses outside urban centers in Brazil.
Keywords: Medical Education. More Doctors Program. Curriculum.

Introduction

According to the Federal Constitution of Brazil, in Article 200, § 3, it is the responsibility of the Brazilian National Health System (SUS) to "guide the education of human resources in the health area"[1]. This paper discusses the historical, political and institutional developments in the

field of professional training in health that are derived from the Federal Constitution and subsequent legislation.

Since the 1970s, it has been indicated the need for reformulations and changes in the Brazilian medical training model, something that gained traction with the promulgation of the Federal Constitution of 1988 and the creation of SUS. It has been pointed out the inadequacies of medical education to the realities of SUS and regarding the health needs of the Brazilian people as well. Thus, it has become imperative to adopt measures aimed at the training of the medical professional, through the feasibility of changes in graduate courses meeting the interests of the Brazilian health care model, based on the principles of Primary Health Care (PHC)[2].

Among these measures, it should be mentioned the More Doctors Program (PMM), launched in 2013 and considered the high point of the policies to reorient medical training and distribution of doctors in the national territory. The PMM aims to reduce the shortage of physicians in the priority regions for the SUS, to improve the medical training in the country and to provide greater hands-on experience in the SUS during the medical training process. The program is structured in three axes: 1) short-term provision; 2) investment in the infrastructure of the basic health services network; and 3) medical training[3,4]. The institutional and curricular experiences reported in this article derive from the actions and strategies of the Federal Government inserted in this last axis.

As a goal of the PMM it is planned to create by 2017 11,500 seats in Medical schools, mainly in the interior of the country as well as 12,400 medical residency places for specialist training until 2018. In view of the national PMM goals, increasing the medical ratio per 1,000 inhabitants from 1.8 to 2.7 by the year 2026, the North and Northeast regions are a priority due to the low number of medical school seats and the fact that these regions have ratios of 1.08 and 1.32 physician / 1,000 inhabitants respectively. In addition, more than 70% of physicians work in capitals and large centers in both regions[5].

The need for training and deploying physicians in the Brazilian countryside is in line with the ongoing process of creating more Federal University *campuses* out of the large urban centers. In this context, UFRN is well known for its presence within the State and effective collaboration in the state, regional and national development process. Thus, UFRN implemented the Multicampi

Medicine Course, involving the *campuses* of Santa Cruz, Currais Novos and Caicó (administrative headquarters of the course), starting their academic activities on July 25, 2014[i].

In the midst of transformations in the field of medical education[3] and the National Curricular Guidelines (DCNs) for undergraduate courses in Medicine[6], the UFRN's Multicampi Pedagogical Project of the Course of Medicine (PPC) is aligned with a set of new political-pedagogical experiences in Brazil, and especially with those driven by the PMM. Therefore, the PPC of the Multicampi Medicine course is based on the use of active methodologies in the teaching-learning process and in the community-based teaching, providing the student's insertion in PHC from the initial years of the course.

In this sense, the objective of this paper is to report on the institutional and curricular experience of the implementation of the Multicampi School of Medical Sciences of Rio Grande do Norte (EMCM) of UFRN, as a way of documenting, monitoring and reflecting on the development of expansion of enrollment and creation of new medical courses in Federal Universities, within the framework of the Mais Médicos (PMM) Program of the Federal Government. In order to achieve its objective, this article is organized in a way to highlight the teaching, research and extension activities developed within EMCM-UFRN, besides presenting an overview of its PPC and the integrated teaching-service-community actions.

From the methodological point of view, this is an experience report constructed from the point of view of a group of teachers from EMCM-UFRN. The main aspects were highlighted by these teachers, were highlighted from the perspective of their professional and institutional experiences.

Pedagogical project: implementation process

The implementation process of the EMCM-UFRN Medical Course started in 2012, with the creation of the Commissioning Group chaired by the then deputy dean, Maria de Fátima Freire de Melo Ximenes, and lecturers of the Medicine course of the central *campus* and the Department of Education of the Caicó *campus*. The role of this Group was key since it allowed the association of

[i]Based on Decree MEC / SESU No. 109, dated June 5, 2012, which provides for the expansion of enrollment in existing medical courses and the creation of new courses at Federal Universities.

the *expertise* of its members to innovative experiences in medical education, especially in rural and/or remote areas.

The work of the Commissioning Group also built upon the inputs of several public hearings held in the municipalities of the regions (Trairí and Seridó) of the state, where the Course would be inserted. At these hearings, representatives of the UFRN, the social movements, the municipal and state managers, the councils and class organizations and the community at large. As a result, it was possible to co-construct a pedagogical project that is more sensitive to the local realities and health needs of the population. An example of the results of these inputs was the inclusion of modules such as "Health and Environment", which addresses aspects of environmental health, workers' health and rural medicine; and "Integrated Community Experience", making possible to place the student longitudinally into the local health systems of the municipalities of the region.

In addition, the public hearings were spaces for presenting community demands, in order to guarantee the access of students from the region to the course. In view of this, UFRN created, based on the international literature[7-9], the Resolution 177/2013-CONSEPE, instituting the affirmative action policy "Argument of Regional Inclusion" (AIR). The aim of the AIR is to stimulate access to the University for students from countryside minor cities residents around the places where UFRN courses are offered. AIR is weighted in the Unified Selection System (SiSU) with a 20% increase in the candidate's grade. Candidates who qualify for AIR have completed elementary school (9th grade) and have completed all secondary education in regular and face-to-face schools in the microregions where the cities with UFRN's campus in the interior of the state are located (excluding the metropolitan region of Natal) or in all neighboring microregions, according to the definition of the Brazilian Institute of Geography and Statistics (IBGE)[10].

In the context of the EMCM-UFRN Medical School, AIR is also a strategy to encourage the placement of graduates in the region, especially in their cities of origin, contributing to the achievement of goals set forth in the PMM[9]. Since the implementation of this policy, 67.5% of the students of the course come from municipalities of the Sertão Potiguar and Paraíba.

Moreover, the selection process of teachers has privileged the composition of a multiprofessional teaching staff, in order to guarantee the planning of activities guided by the concepts of interprofessionality and interdisciplinarity. The participation of health professionals from the region, especially physicians, has been stimulated in public calls for selection of teachers. This incentive is due to the difficulty of permanence of teachers who reside in the state capital

(located 280 km from Caicó) in the course, which implies prolonged trips in addition to an unattractive remuneration for physicians. In spite of these challenges in April 2016, EMCM-UFRN had 33 faculty members, 27 staff members and six temporary staff/substitutes: 19 physicians, two nurses, two biologists, two biomedical staff, tree psychologists, two physiotherapists, two pharmacists and one veterinary doctor.

Alongside these actions, teacher training and development have marked the implementation process of the course. Since the first day of work of teachers to the present day, workshops and courses on active learning methodologies, teaching-service-community integration (IESC), student evaluation and integrated curriculum have been carried out. In addition, technical visits were made to Brazilian, North American and European universities that use problem-based learning (PBL) and other student-centered methodologies, with the objective of knowing and exchanging successful experiences and identifying potentialities, challenges and limitations in planning.

In addition, the iniative opened places in the Professional Master's in Health Teaching for EMCM-UFRN for professors who did not have post-graduate courses *stricto sensu*. The master's degree has contributed strongly to the improvement of the faculty, facilitating the appropriation of pedagogical approaches and granting degrees to all the team, especially the medical teachers.

As will be reported below, the PPC of the EMCM-UFRN medical course is based on the development of competencies and has the Teaching Tutorial, the Clinical, Morphofunctional and Communication Skills and the IESC as its pedagogical structural axes, in line with the DCNs for undergraduate courses in Medicine[6].

Teaching

Undergraduate teaching

The curricular structure of the course is divided into two sequential phases. The first one refers to the Fundamentals of Clinical Practice (FPC), which happens in the axes of tutorial teaching, teaching of skills and teaching in the community, and includes 31 interdisciplinary modules for the first four years of the course. The second phase refers to the Medical Internship (IM), which comprises the last two years of graduation.

The activities carried out in the modules are distributed weekly, according to a standard week, opening schedules for the three pedagogical axes of the PPC and the self-directed study schedules required by the ABP (Table 1).

Table 1. Model of a standard week. Multicampi School of Medical Sciences, Federal University of Rio Grande do Norte, Brazil, 2016

Period	Monday	Tuesday	Wednesday	Thursday	Friday
Morning	Tutorial session	IESC		Tutorial session	Conferences
Afternoon		Skills			

* Periods left blank correspond to self-directed study hours. These hours are not included in the student's work load. Optional curricular activities are also offered during these periods.

The Teaching Tutorial aims at the cognitive development of the students, causing them to know, describe and understand the theoretical foundations expected in medical training. The tutorial sessions take place in groups of eight students conducted by a tutor. They last four hours each being two hours for opening the problem and two hours for closing, and adopt the APB as pedagogical methodology[11]. In a complementary way to the tutorial sessions, weekly conferences are held in order to deepen the topics covered in each session or additional topics related to the problems. Teaching strategies are used at conferences such as lectures, *team-based learning* (TBL), seminars, round tables and *flipped classroom*.

The assessment of student cognitive performance is performed through activities using multiple choice test or essay questions. In addition, at the end of each tutorial session, formative evaluations of student performance are carried out through self-assessment, peer evaluation in the group, as well as feedback from tutors. Summative evaluations is done through the use of an evaluation tool developed by EMCM-UFRN faculty based on evidence and experiences from other universities[12,13].

Teaching skills occurs in laboratories or in real settings such as Basic Health Units (UBS), hospitals and clinics, depending on the topic addressed. This axis aims to integrate the cognitive, psychomotor and attitudinal dimensions necessary to develop the expected competencies of a physician. The activities also prioritize the use of active methodologies such as ABP, problematization, role-playing and supervised consultations. On the other hand, the evaluation in

this axis is realized through the Objective Structured Clinical Examination (OSCE), Objective Structured Practical Examination (OSPE) and Mini-Clinical Examination (Mini-CEx).

Community education seeks to place the student from the initial years of the course in PHC and is one of the strategies of IESC. The activities are carried out in community social facilities and in primary, secondary and tertiary care services. The community-based education (EBC) experience in the first year of the course was marked by close integration with the topics covered in the tutorial sessions. After evaluating the actions carried out, teachers in the area of Public Health and Family and Community Medicine reoriented community activities to fit the broader principles of the EBC, with educational planning as a result of community involvement and designed to combine community and university interests[14]. As a result, from the second half of 2015, teaching began to consider the health needs of the population and the work process of the teams, together with the programmatic contents to be worked, so that both pats do not overlap.

Consequently, the real situations experienced by the students have strengthened the development of skills that are more adjusted to the reality of health services and the population, and allowed reflection-action-reflection of the workers on their work processes. As a marker of this process, 15 professionals of the public health network of the municipalities that host the course graduated in the Graduate Program in Education, Work and Innovation in Medicine of UFRN. Ultimately, such directives have allowed new technical-assistance arrangements in the services and consolidated the IESC.

In addition to the field activities, theoretical activities are developed to instrumentalize teaching in the community and promote the discussion and evaluation of the actions performed. On this axis, student evaluation occurs through theoretical-practical activities, portfolios, field journals. Recently community-based learning objectives are being integrated into the OSCE, OSPE and Mini-CEx.

The implementation of curricula with these characteristics poses some difficulties for teachers and students, namely: initial resistance to the pedagogical model based on active learning methodologies, by all the actors involved; resistance of students to EBC-based activities; lack of teacher and technical-administrative training at the time of their hiring, lack of experience to work with active methodologies and integrated curriculum; greater demans for teamwork time to carry out the integrated planning of the modules; insufficient commitment of teachers to the course; overload of teaching work; study overload for students, resulting in little time for

extracurricular activities and self-care; and interpersonal conflicts that impacted on the progress of activities.

The strategies for coping with these difficulties have been built on a daily basis and consist as a priority, of courses for teacher and technical-administrative development, as well as dialogues with students. In addition, it has been sought the best dimensioning of the teaching effort (represented by the dedicated workload and hours of work in the institution) as a way of reducing the work overload and inclusion of those considered "less committed". For students, there has been a psycho-pedagogical follow-up and there is an ongoing project for the implementation of a mentoring program at EMCM-UFRN.

Graduate teaching

The first graduate teaching initiatives at EMCM-UFRN are focused on the implementation of health residency programs (medical and multiprofessional) and *sensu -strictu* postgraduate programs. These actions are based on the following evidences: 1) there is a tendency of the health professionals to settle in the region where they have done their undergraduate and/or residency programs; and (2) the existence of medical schools and out-of-town residency programs result in greater placement of health professionals in rural and/or remote areas[15-17].

In this sense, EMCM-UFRN submitted to the Ministry of Education (MEC) proposals for Medical Residency Programs (PRM) in Clinical Medicine, General Surgery, Family and Community Medicine, and Gynecology and Obstetrics, having been approved three PRMs so far. Two of them are already in operation: General Surgery (three positions) and Family Medicine in Community (12 positions).

In addition, EMCM-UFRN also implemented two Multiprofessional Health Residency Programs (PRMS) in the areas of Basic Care (44 positions/ten professional categories) and Maternal and Child Health (12 positions/six professional categories). Both will work in practice settings located in the municipalities of Caicó and Currais Novos. Both PRM and PRMS are developed with the partnership of the Faculty of Health Sciences of Trairí/UFRN, Santa Cruz *campus*, Rio Grande do Norte State University, Caicó *campus*, and Santa Terezinha Catholic University. It is important to emphasize the role of the municipal health managers of both municipalities in this process.

In the loco-regional context, these residency programs have faced *structural* challenges (health units with inadequate infrastructure, lack of inputs, transport logistics of residents between municipalities to carry out theoretical activities at the headquarters of EMCM-UFRN); *human* challenges (deficiencies in continuing education, difficulty in adhering to preceptors, insufficient number of teachers, need for postgraduate courses for health service practitioners and municipal management); and *institutional* challenges (administrative resistance, excessive bureaucracy, inefficiency and/or lack of municipal and state services to regulate teaching-service integration, absence of protocols and flow of services). However, the challenges inherent in the process and their confrontation necessarily trigger in the actors involved and in the organizational culture of health units possibilities for transformation and restructuring of the health work process.

As coping strategies, we can list: 1) participation and social control, together with the population in general; 2) offering continuing education actions from the needs expressed by professionals and management; 3) workshops and training courses for preceptors; 4) hiring of substitute and temporary teachers by UFRN and collaboration of teachers from the partner universities of the residency programs, through terms of cooperation; 5) Reservation of exclusive positions for preceptors in the Education Graduate Programs, Work and Innovation in Medicine, Professional Master's level, EMCM-UFRN; 6) signing of the Public Action Teaching-Service Action Contract (COAPES); and 7) co-construction of dialogues and tensioning spaces with municipal and state management, as ways to strengthen IESC.

University extension

At EMCM-UFRN, the university extension has received special attention, a feature that sets this experience apart from what has historically been seen in some Universities, where it occupies a space more directed to specific actions[18]. However, in a curricular experience in which the student has permanent and longitudinal contact with social reality, university extension is an effective way of critical reflection, of political intervention and of social transformation. As Freire states[19], man can only become aware of reality and his capacity to transform it by actively participating in history, society and the collective construction of action.

The initial difficulties reported by working teachers since 2013 at EMCM/UFRN are noteworthy. It is hardly a surprise, due to the young teaching staff with an academic background focused on the conduct of research projects, entering a course where everything was still to be done! There, the research, in its classic molds, was a secondary undertaking in view of the need to consolidate the undergraduate course. In this context, university extension proved to be a fertile field open to the reception of many "rookies". For some of these agents, the proposal and/or participation in extension projects allowed the re-signification of their knowledge and practices, as well as their insertions as researchers, radically transforming the profile of the research projects that would be developed in the institution.

In this way, the insertion of the medical student and the teaching activities in community and in the PHC services, since the initial years of the course, associated to the mission and the mandate of social responsibility of EMCM-UFRN, have allowed the production and execution of several extension actions (Table 1), coordinated by EMCM faculty and staff, or in partnership with other departments of the University, most of them with financial aid and fellowships from the Extension Office of UFRN and MEC (Proext 2016-MEC Edict) / SESu).

Table 2. Distribution of outreach activities, by type and year of implementation. Multicampi School of Medical Sciences, UFRN, 2014-2016.

	2014	2015	2016*	TOTAL
Projects	3	9	12	24
Events	2	7	2	11
Courses	0	2	3	5
Programs	0	1	1	2
TOTAL	5	19	18	42

*Implemented by April 2016.
Source: UFRN Dean for Outreach (www.sigaa.ufrn.br).

The thematic diversity of extension actions highlights the complexity of the social and health needs identified in practice scenarios and communities. In this sense, university extension has been a link between EMCM-UFRN and the community and, therefore, promotes the integral education of subjects “in the world” and the implementation of the practical foundations of

university extension, which are complementary to the integral cultural development of the student; to foster professional activities committed to the responsibilities and expectations of society in relation to the professional future; and to strengthen attitudes of commitment to social development[20]. Therefore, the university extension in the curricular and institutional experience of EMCM-UFRN is combined with other actions and strategies that strengthen and fulfill the mandate of social responsibility of the medical school, the daily construction of the desired graduate profile and the reorientation of health training for the SUS needs[3,6].

Research

In the initial years of EMCM-UFRN, research was not developed in the same proportion as the extension actions. Between 2014 and 2015, EMCM-UFRN had only four research projects, increasing to 15 in 2016. In 2014, the number of research projects represented 17% (n = 1) of the EMCM-UFRN projects, and the remainder being extension projects. In 2015, research represented 21% of the projects, corresponding to three projects out of a total of 11. In 2016, there was a reversal of this amount, with research accounting for 63% of EMCM-UFRN projects, totaling 15 out of the 24 existing through April.

This change in the scenario reflects a slow progress oriented towards the beginning of the research activities in a school during its process of implementation. Thus, the following are the main factors that influenced the development of EMCM-UFRN research.

Faculty's background

The course's implementation process initially had a faculty composed of 13 professors, with only one PhD, four masters' and eight specialists. Low faculty degrees contributed to the current picture of research activities, due to the need for a doctoral degree in public calls for proposals in research. It must be considered that the approval of projects in public calls for proposals is also difficult for new doctors, usually linked to the few or nonexistent experience of the same ones in coordinating research projects, an item of high score in many competitive calls. To date, EMCM-UFRN faculty do not count on research projects with resources coming from UFRN

or external calls for proposals. Faced with this the university stimulated training at the postgraduate level as well as the construction/participation in research networks.

Teaching priorities

In the process of implementing a course, teaching becomes a priority among all other teaching activities. This implies dedicating a large part of teachers' hours to training, pedagogical planning and administrative meetings, all of which negatively impact the scientific production of the staff. This is shown by the following numbers: in the period from 2013 to 2016 only 27 publications make up the scientific production of the course, broken down in: eight in 2013, five in 2014, 11 in 2015 and three from January to April 2016. It is possible to notice a significant decline in scientific production in 2014, year of implementation of the medical course, going up again in the following year, when new teachers were hired. The creation of research groups within EMCM-UFRN and the accreditation of teachers in post-graduate programs have contributed to the increase of scientific production.

Physical and technological structure

In the process of implementation of EMCM-UFRN, financial resources have been allocated primarily to the construction of a structure that includes teaching and administrative activities. Consequently, the construction of research laboratories, especially in basic and clinical areas is not yet a reality. It has also an impact on the scientific production of teachers. In addition, it is still necessary to move forward with regard to the organization of research groups that may have technological and structural needs. It is believed that this would contribute to a future structuring of the spaces dedicated to the practice in research, besides fostering a coordination of teaching forces for submission of proposals in calls for projects to promote and acquire technologies.

Financing

In general, the financing of research projects is an essential factor for their execution, which often requires the purchase of equipment, software and inputs. Thus, the under-funding of

research activities exposes part of the difficulties of establishing research centers in campuses located outside the major university and urban centers. In addition, it is indisputable that the current Brazilian scenario of political and economic crisis, as well as the consequent budget cuts, have a negative impact on national scientific production, especially in emerging centers, such as EMCM-UFRN.

Finally, it is worth of note that, despite the aforementioned difficulties, there was an increase in the number of EMCM-UFRN research projects from January to April 2016. This result is attributed to the joint production of faculty currently comprising ten doctors, six masters' (two PhD candidates) and 12 specialists (seven undergoing masters' degrees). Therefore, it can be observed that EMCM-UFRN has fulfilled the principle of the indissociability between teaching-research-extension.

Final considerations

This paper aimed to present the report of the experience of implementing a medical course in the northeastern semi - arid region of Brazil, allowing us to problematize the present through a critical and reflexive attitude. Since its inception, EMCM-UFRN has been triggering tensions in local health systems. We recognize that the use of the different health care settings allows for a critical-reflexive training linked to SUS principles.

The report made it possible to acknowledge the main events that marked the EMCM-UFRN medical course implementation process, notably the role of the Commissioning Group, in conducting public hearings in the municipalities of Seridó and Trairí regions, the creation of AIR as a modality of increasing the access of students to higher education in UFRN campuses in the interior, and the selection and development strategies of the teaching staff. In addition, it exposed the potentialities and limitations faced in teaching activities at undergraduate and postgraduate level. These experiences have favored the access of the local professionals to the permanent education, recognizing them as fundamental agents for the learning in service and for the legitimation of the formative role of SUS.

Despite all the potentialities and achievements, the obstacles and challenges to be overcome are still important in order for EMCM-UFRN to function in its full capacity and capacity, as discussed in the text. Nonetheless, the current experience in EMCM-UFRN shows the power of

the PMM, whose impact on medical training can only be effectively evaluated over the long term. Finally the experiences reported here serve as a basis for other academic communities that find themselves in the same process. It may also present the members of EMCM-UFRN with a "picture" of what has been lived along in the last few years, which ultimately will allow us to evaluate the course, redefine plans and redirect the paths.

Collaborators

Lucas Pereira de Melo, Marcelo dos Santos and Rafael Barros Gomes da Câmara participated equally in the preparation of the initial proposal of the article, the writing, the discussion of the experience report, the revision and approval of the final version of the text. Liliane Pereira Braga, Ana Luiza de Oliveira e Oliveira, Tiago Rocha Pinto, Pâmera Medeiros da Costa e George Dantas de Azevedo also collaborated in the discussion of the experience report and in the revision and approval of the final version of the text.

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