



## Corresponding to Author

<sup>1</sup> Antonio Vanderley Moreira  
Federal University of Ceará, Brazil  
E-mail: vanderley@sobral.ufc.br  
CV Lattes  
<http://lattes.cnpq.br/4075601738358191>

<sup>2</sup> Maxweel Veras Rodrigues  
Federal University of Ceará, Brazil  
E-mail: masweelveras@gmail.com  
CV Lattes  
<http://lattes.cnpq.br/0145509726999114>

<sup>3</sup> Conceição de Maria Piheiro Barros  
Federal University of Ceará, Brazil  
E-mail: conceicaoomb@ufc.br  
CV Lattes  
<http://lattes.cnpq.br/4653165007810299>

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## The Impact of Interiorization of Medicine Teaching: The Case of the Municipality of Sobral – CE

Antonio Vanderley Moreira<sup>1</sup>  <https://orcid.org/0000-0002-5415-748X>

Maxweel Veras Rodrigues<sup>2</sup>  <https://orcid.org/0000-0003-1999-6832>

Conceição de Maria Piheiro Barros<sup>3</sup>  <https://orcid.org/0000-0002-4515-5829>

### ABSTRACT

The Federal University of Ceará Medical School, located in Sobral, Ceará, has been training doctors in the countryside of Ceará State for 20 years, as a result of the interiorizing process of this Federal Institution of Higher Education (FIHE) that began in 2001. Currently, the course has got 720 graduated doctors by December 2020. In view of the above and considering the transformative role of the university in the society in which it is inserted, this article aims to analyze the interiorizing through the contributions of a UFC Medical School in the levels of primary, secondary and tertiary health care in the municipality of Sobral, given the period from 2007 to 2020. The methodology of the study is characterized by a descriptive, qualitative and quantitative research, anchored in a documental analysis in the National Curriculum Guidelines for the Undergraduate Course in Medicine (DCN), UFC resolutions and in the National Registry of Health Establishments (CNES) and in field research with application of questionnaires to medical graduates. The results of the study showed that the Sobral Medicine Course is a successful model of the interiorizing process of higher education in Brazil. carried out by a FIHE. As a conclusion, it is observed the contribution of the Federal University of Ceará Medical School of the to the improvement of health care in the city of Sobral, in Ceará State, through its graduates in public health.

### KEYWORDS

Higher education. Medical course. Medical training.

## O Impacto da Interiorização do Ensino de Medicina: O Caso do Município de Sobral – CE

### RESUMO

O Curso de Medicina da Universidade Federal do Ceará (UFC), em Sobral, há 20 anos vem formando médicos no interior do estado do Ceará, resultado do processo de interiorização desta Instituição Federal de Ensino Superior (IFES) que teve início em 2001. Atualmente, o curso conta com 720 médicos graduados até dezembro de 2020. Diante do exposto, considerando o papel transformador da universidade na sociedade em que está inserida, este artigo tem como objetivo avaliar a interiorização do ensino superior por meio das contribuições de um Curso de Medicina da UFC nos níveis da atenção à saúde primária, secundária e terciária no município de Sobral, dado o período de 2007 a 2020. A metodologia do estudo caracteriza-se por uma pesquisa descritiva, qualitativa e quantitativa, ancorada em uma análise documental realizada nas Diretrizes Curriculares Nacionais do Curso de Graduação em Medicina (DCN), resoluções da UFC e no Cadastro Nacional dos Estabelecimentos de Saúde (CNES) e em uma pesquisa de campo com aplicação de questionários à egressos de medicina.

Os resultados do estudo mostram que o Curso de Medicina de Sobral é um modelo exitoso do processo de interiorização do ensino superior no Brasil, realizado por uma IFES. Como conclusão, percebe-se a contribuição da Universidade Federal do Ceará para a melhoria da assistência à saúde da cidade de Sobral no estado do Ceará por meio da atuação dos seus egressos nos equipamentos públicos de saúde do município.

#### PALAVRAS-CHAVE

Ensino superior. Curso de medicina. Formação médica.

## El Impacto de La Interiorización de La Enseñanza de Medicina: El Caso Del Municipio de Sobral - CE

#### RESUMEN:

La Carrera de Medicina de Sobral de la Universidad Federal de Ceará (UFC) forma médicos en el interior del estado de Ceará desde hace 20 años, como resultado del proceso de interiorización de esta Institución Federal de Educación Superior (IFES) que comenzó en 2001. Actualmente, la carrera cuenta con 720 médicos graduados hasta diciembre de 2020. En razón de lo expuesto, considerando el papel transformador de la universidad en la sociedad en la que se inserta, este artículo tiene como objetivo evaluar la interiorización de la educación superior a través de los aportes de una Carrera de Medicina de la UFC en los niveles de atención primaria, secundaria y terciaria de salud en la ciudad de Sobral, dado el período de 2007 a 2020. La metodología del estudio se caracteriza por una investigación descriptiva, cualitativa y cuantitativa, anclada en un análisis documental en las Directrices Curriculares Nacionales de la Licenciatura en Medicina (DCN), resoluciones de la UFC y en el Registro Nacional de Establecimientos de Salud (CNES) y en una investigación de campo con aplicación de cuestionarios a egresados de medicina. Los resultados del estudio comprobaron que la Carrera de Medicina de Sobral es un modelo exitoso del proceso de interiorización de la educación superior en Brasil, realizado por una IFES. Como conclusión es observado la contribución La Carrera de Medicina de Sobral de la Universidad Federal de Ceará para la mejora de la atención a la salud en la ciudad de Sobral, en el estado de Ceará, a través de sus egresados en establecimientos de salud pública.

#### PALABRAS CLAVE:

Educación superior. Carrera de medicina. Formación médica.

#### CRediT

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## 1 Introduction

The process of implantation of the Medical School of Sobral of the UFC takes place in two stages. After the first stage of institutional adjustments and its legal journey through resolutions, normative ordinances, and agreements in government offices, it moved on to the structural and administrative phase, when a physical space was needed for the beginning of activities, equipment and teaching and technical-administrative personnel. The pacting of partnerships fostered by the UFC in the state and municipal spheres made it possible for a minimal structure to be prepared for the beginning of the activities of the first group of the course, formed by forty students approved in the UFC's vestibular 2000.2.

It is in this scenario of pioneering and precariousness that, on April 2, 2001, the academic activities of the UFC's Medicine Course in Sobral began. Thus began the process of interiorization of the UFC in the Northern Region that also aimed, in a pioneering way, to contribute to the effective decentralization of health care in the state, concentrated in the capital, as well as the consolidation of municipal health systems of regional reference. Besides its strategic geographical location, Sobral already had health care units in the three levels of health care: primary, secondary, and tertiary, that were able to widely meet the requirements of multiple training scenarios for medical students, as recommended by the new Curricular Guidelines of 2001 for medical courses in the country.

After 20 years of its implementation, dated April 2nd, 2001, Sobral's Medical School already has 720 graduated doctors, until December 2020. A considerable part of the graduates of this course have already concluded or are concluding the formation of medical specialists in the Medical Residency Programs of the Federal Government. This being said, the importance of this research lies in analyzing the consolidation of the Medical School at the Sobral Campus, considering the pioneering process of the UFC in the interiorization of higher education in the State of Ceará, as well as the contribution of this medical school to the public health of the municipality. Despite the relevance of this study for society, it is important to show the importance of a medical course at a public university in promoting innovations, improvement in quality of life and structural changes in the area of health in the region where it is located.

Thus, a successful model in the process of interiorization of Brazilian higher education is perceived, highlighting the action of a IFES in the region where it is located, not only as a promoter of knowledge, but also as a tool for socioeconomic development (BARBOSA; PETTERINI; FERREIRA, 2020). Therefore, it is possible to conceive the social relevance of the study, especially about the contributions of the UFC Medical School in local public health care in primary, secondary and tertiary care, the result of social transformations that should be promoted by universities (MORISINI, 2006).

Historically, regarding the process of expansion of the IFES in Brazil, it is worth highlighting the period from 2003 to 2007, characterized as the consolidation of the interiorization of higher education in the Northeastern Sertão.

Consolidation of the Universidade Federal do Vale do São Francisco (UNIVASF), in Pernambuco, Bahia and Piauí in 2004; the creation of the Universidade Federal Rural do Semiárido (UFERSA), in Rio Grande do Norte, in 2005; and the Universidade Federal do Recôncavo da Bahia (UFRB), also in 2005; besides the expansion of UFAL, in Alagoas; UFBA, in Bahia; UFC, in Ceará; UFCG, in Paraíba; UFRPE and UFPE in Pernambuco; UFPI, in Piauí and UFRN, in Rio Grande do Norte. (ARAÚJO; CUSATI, 2021, p. 3624)

The movement of the interiorization of higher education modifies the reality of the region that receives courses from an IFES, promoting impacts not only in the area of training and scientific knowledge, but also in the economic sphere. The immediate impact is reflected in the demand for vacancies of undergraduate courses and in the short-term benefits from the economic point of view, given the investments of federal public resources, as well as the presence of students from other regions who settle down and move the local economy because of their consumption needs.

The process has positive impacts on the economy by "increasing trade and local services, which are now demanded by a new audience, consisting of students of various types of courses offered and by servers of the institutions" (MAXIMO, 2020, p. 12). In the medium and long term, the presence of graduates contributes to the creation of graduate courses, with the advancement of research and projects generating impacts on local productive environments and those around them, or, as Paula and Faria (2020, p. 4), who conducted a case study from the interiorization of higher education in the city of Viçosa in Minas Gerais, "cities outside the metropolitan regions and cities over 100 thousand inhabitants. [...] are experiencing significant socio-spatial transformations resulting from the creation or expansion of the IFES".

Given the above, and through the other justifications already presented above, this article seeks to evaluate the impact of the interiorization of higher education through the contribution of a Medicine Course of the UFC for the health of a population, benefited by the professionals trained by the institution in the community where it was inserted. Considering, also, the transforming role that falls to the UFC, settled in the Northern zone of the State of Ceará, since 2001.

## 2 The UFC Medical School in Sobral and the new medical education curriculum matrix

The medical courses of the UFC in the cities of Sobral and Barbalha began their activities in 2001, supported by Resolution 05/CONSUNI, of June 2, 2000 (UNIVERSIDADE FEDERAL DO CEARÁ, 2000). Besides the pioneerism promoted by the process of interiorization of the UFC, these two courses instituted a reformulated curricular matrix aimed at a medical formation in consonance with the new reality of Brazilian health that emerged with the creation of the SUS. A model that breaks with the learning and training paradigm of the Brazilian medical schools in vogue until then. According to Meireles, Fernandes, and Silva (2019, p. 69) a training "that conditioned the student to an exclusively anatomo-clinical look at

their patients [...]", the result of a hospital-centric medical care that characterized the health care model for many years in the country.

With the creation of the Unified Health System, the current model of generalist medical training no longer responded to the demands of the population served by SUS. It was contradictory to the new reality of collective health care, defined as the Strategy of Integral Attention to Family Health, thus increasing the criticism to the traditional medical education model centered in hospital care. Medical organizations, as well as the managers of governmental organs responsible for medical education in the country understood, in light of the criticism received, that it was no longer possible to continue training physicians that did not meet society's needs and demands.

The discussion about the health system and its restructuring, which has been occurring more intensely in our country over the last thirty years, has also stimulated the debate about medical education in Brazil. It has become evident, based on this analysis, the inadequacy of the professional trained in our schools to meet the needs and demands of our society. (UNIVERSIDADE FEDERAL DO CEARÁ, 2001, p. 5).

From the new model of public health care, in which the improvement of teaching quality is sought, a different attitude is required from Brazilian medical schools. In this way, the institutions are called to adhere to the rules of Decree 3.860, July 9th, 2001, which guides the organization and evaluation of higher education courses and institutions, as well as to adopt the National Curricular Guidelines for Undergraduate Medical Education. These norms are presented in Resolution n. 4 of November 7th, 2001, from the National Education Council and approved by the Ministry of Education (BRASIL, 2001), which bases the curricular guidelines for the Brazilian medical courses from the 21st century on.

The new curriculum was characterized by being student-centered, prioritizing the development of the student in humanized professional practice in a doctor-patient relationship that values patient satisfaction. Thus, under the new curricular guideline, in practice since 2001, the Brazilian general practitioner physician no longer followed the hospital-centric model in his/her formation, the new humanistic profile was foreseen under the form of the Law, according to the third article of Resolution CNE/CES No. 4, of 11/07/2001.

Art. 3 The profile of the graduate/professional medical doctor, with generalist, humanistic, critical and reflective training, able to act, based on ethical principles, in the health-disease process in its different levels of care, with actions to promote, prevent, recover and rehabilitate health, from the perspective of comprehensive care, with a sense of social responsibility and commitment to citizenship, as a promoter of integral health of the human being. (BRASIL, 2001, p. 1).

Despite the Resolution CNE/CES N° 4, which regulates the new model of medical training in the country, whose publication in the Official Federal Gazette (OFG) takes place on November 9, 2001, the UFC Sobral Medicine Course was already in full operation since April 8, 2001, and ahead of the publication of the law for about seven months. The curricular model, however, following the pedagogical project proposed by the Medical School of the UFC in Fortaleza, addressed the health reality of the region, and was designed with the participation of

the IFES faculty with a total workload of 9,080 h/y distributed over 6 (six) years. This curricular grid prevailed until the year 2017.

The current curriculum of the Medical School of Sobral, approved in 2017, has a total workload of 8,512 hours to be completed in the minimum period of 6 (six) years (12 semesters) and maximum of 9 (nine) years (18 semesters). The new Curriculum of the Medical School in Sobral of the UFC is made up of 7 (seven) curricular units, as follows: 1) Personal Development; 2) Basic Health Care; 3) Basic Cycle (Organic Systems: Normal Aspect); 4) Mechanisms of Aggression and Defense; 5) Medical Propaedeutics; 6) Clinical Cycle (Organic Systems: Altered Aspect); and 7) Compulsory Curricular Internship, incorporated into the 2017 Pedagogical Project of the UFC Sobral Medicine Course, in accordance with the normative aspects of the MEC/CNE/CES.

Furthermore, under any curricular matrix, whether the one from 2001 or the 2017 one that has recently come to regulate the training of new doctors at the Sobral unit, the ultimate goal is to make the doctor a citizen committed to the transformations of society and its well-being. In Sobral, for 19 years, the Medical Course of the UFC, as stated in its mission "To train the medical professional, using appropriate teaching methodologies and scenarios, aiming at the individual and collective development of knowledge, skills and attitudes, based on ethical, humanistic and scientific principles" (LIMA et al, 2015, p. 11), has been delivering to the population of Sobral and the entire northern part of Ceará hundreds of professionals committed to the paradigm of defending life and the constant search for a healthier and fairer society and that, after graduating, spread throughout the country for the legal exercise of the profession.

### 3 Methodology

The methodology of the work presented here is characterized as a descriptive, qualitative, and quantitative research, anchored in a documental analysis in the National Curricular Guidelines of the Undergraduate Course in Medicine (DCN), Resolution # 05/CONSUNI of June 2, 2000, of the UFC, activity reports and planning of health institutions, as well as in the site of the National Register of Health Establishments (CNES) of the Ministry of Health. Field research was also used, when survey instruments are used with questionnaires that include open and closed questions. Its execution is guided by the principles and methods referenced by researchers and scholars who have studied the methodologies of the study, using the criteria of scientific investigation, with the purpose of producing knowledge.

In the research that guided this article, the spatial, territorial, and geographic cutout, called locus of the investigation, is the city of Sobral, because the main object of this study is inserted in it, which is the Medical Course of the UFC, as a pioneering experience of the internalization of the IFES in the state of Ceará. Other places were also included in the locus for data collection, namely: the public health equipment coordinated by the Health Secretariat of Sobral, the hospitals: Santa Casa de Misericórdia de Sobral, Hospital do Coração Padre José Linhares Ponte, Hospital Regional Norte and Hospital Dr. Estevam Ponte. Thus, these places

become, as a whole, the place where the performance of the graduates will be mapped, since 2007, observed in the research work with specific identification and characteristics (KAUARK; MANHÃES; MEDEIROS, 2010).

Regarding the investigation of the object, an instrument was designed to collect data from the graduates of the Medical School of the UFC in Sobral, thus seeking to meet the specific objectives of the research focused on the analysis of the contribution of this course to local health at the primary, secondary and tertiary care levels, covering the period from 2007 to 2020. We chose to apply a semi-structured questionnaire containing closed and open questions, with a total of ten questions. The form seeks information about the respondents' gender, location, titles, questions about the activities developed as a physician, and questions that seek to meet the research objectives.

Before the incursion on the characterization of the research sample, it is important to understand that sampling is a part of a whole population investigated in the research, according to a rule or plan, i.e.: "It refers to the subset of the universe or population, through which we establish or estimate the characteristics of this universe or population" (PRODANOV; FREITAS, 2013, p. 98). For Laville and Dionne (1999) for a safe sample it is essential the vigilance of the researcher's critical sense:

Various techniques have been devised to ensure as much as possible such representativeness; but in spite of their refinement, which makes it possible to reduce sampling errors, that is, the differences between the characteristics of the sample and those of the population from which it was drawn, such errors always remain possible, prompting researchers to exercise vigilance and their critical sense. (p. 169).

Considering the selection criteria for the study already referenced, we have the population of the research which is the group of egresses. It is about 646 physicians graduated from the Medical Course of the UFC in Sobral in the period from 2007 to 2019. This universe of research has in common the medical practice regulated by the regional councils of medicine in the federative units in which they work, characterized as liberal medical professionals. From the sample selected from this participant group, the inclusion criteria in the research were physicians duly registered with the Federal Council of Medicine (CFM) and who graduated from the Sobral Medical School until December 30, 2019.

The sample size was determined by means of the parameters established for sampling a homogeneous and finite population, since this is a survey of 646 physicians who have graduated from the Medical School of Sobral by December 2019, (SIGAA, 2019), under the same pedagogical project. Considering a confidence level of 95%, and tolerable sampling error of up to 5%, the validation of the survey that supports this article considered a minimum sample of 247 respondents. Thus, conferring greater reliability to the quantitative prospecting of the study, as well as to its qualitative aspect, according to Barbetta (2002, p. 60) who establishes "A formula for calculating the minimum sample size:

Let be:

N - size (number of elements) of the population

$n$  - sample size (number of elements)  
 $n_0$  - a first approximation for the sample size and  
 $E_0$  - tolerable sampling error

The research also includes a mapping of the activities of the graduates of the UFC Medical School in Sobral in the municipality's health care facilities that make up the primary, secondary and tertiary health care networks in the period from 2007 to 2020. In the SUS classification, Primary Care is understood as that of lower technological density, personified by the Basic Health Units (BHU), corresponding to general, educational measures that aim to improve the assistance and general well-being of individuals, i.e., health promotion and specific protection (DEMARZO, 2011).

Secondary health care is characterized by the care of medium technological density and occurs through specialized clinical practices, curative or preventive, thus avoiding complications and premature deaths, having the medical specialty centers, Emergency Care Units (UPAs) and Mobile Emergency Care Service (SAMU) as its main points of assistance (MENDES, 2011).

Tertiary health care, according to Demarzo (2011, p. 3), is the care and assistance to subjects "with sequelae of diseases or accidents, aiming at the recovery or maintenance in functional balance" that requires a higher degree of technological density and high complexity. This phase of the study was conducted through research to public information available in the National Register of Health Establishments of the Ministry of Health (CNES/MS), characterized as secondary data.

#### 4 Data analysis

The phase of the research aimed at interpreting the information collected is characterized as data analysis. According to Lakatos and Marconi (2003), it constitutes the central core of the research and its importance for the study is to provide answers to the investigation conducted by the methodological procedures. "Once the data have been manipulated and the results obtained, the next step is their analysis and interpretation, both of which constitute the central core of the research. [The importance of the data is not in themselves, but in providing answers to the investigations]" (LAKATOS; MARCONI, 2003, p. 67).

To conduct the study, data collection was conducted in primary sources with investigations from direct contacts of the author and in secondary sources through the availability of existing documents and typical reports. Through research in these sources primary data were produced, compiled by the author, and secondary data produced by others, transcribed from contemporary primary sources (*op. cit.*).



#### 4.1 Primary and Secondary Data Analysis

Data analysis seeks to describe, analyze, and interpret the information collected in the research, conducted through the application of a semi-structured questionnaire collected from 281 graduates of the Medical School of the UFC in Sobral who responded to the survey, exceeding the minimum sample stipulated in the research, which was 247 respondents. The instrument is characterized as an egress questionnaire, containing open and closed questions, with a total of ten questions. The data obtained derive from primary sources, which for Richardson (2012, p. 253) "is that which had a direct physical relationship with the facts analyzed, existing a report or record of the experience lived."

Thus, it is sought to categorize the data collected in order to transform them into information, which allows finding answers to the questions formulated through the objective of the applied research. This process of compiling and interpreting information is described as results analysis, when the data are categorized, ordered, manipulated, and summarized in a survey, the objective of which is to concisely describe the relationships between the variables studied and that interpreted, as Kerlinger (1980, p. 353) points out:

Its purpose is to reduce large amounts of raw data into an interpretable and manageable form so that characteristics of situations, events, and people can be succinctly described and relationships between variables studied and interpreted. Statistics, of course, is part of the analysis.

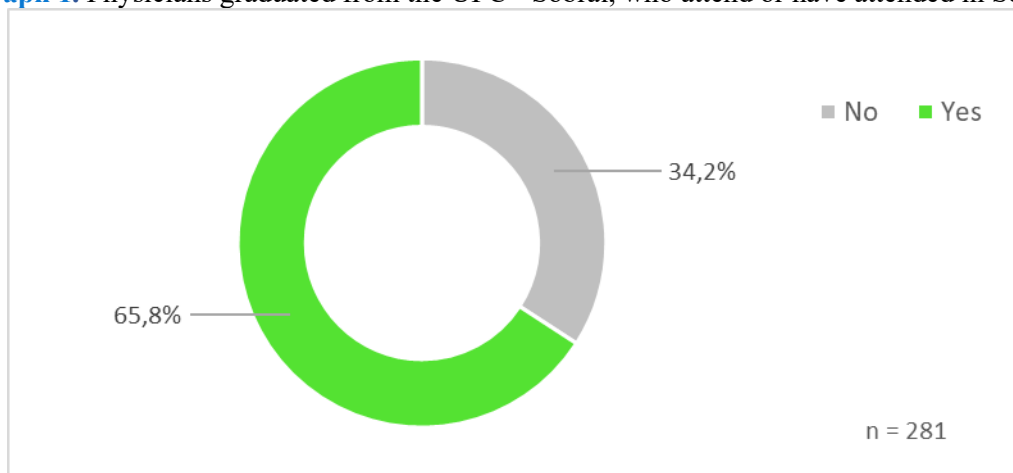
Thus, taking the analysis of results highlighted in Kerlinger (1980), the objective of this phase of the research was to meet the central questioning of this study that seeks to analyze the contribution of the Medical School of the Federal University to the levels of primary, secondary, and tertiary health care in Sobral in the period from 2007 to 2019. The observation was performed in 281 questionnaires answered by graduates, already characterized in the data collection item in the section focused on the research methodology of this article. It is noteworthy, that of the 646 egresses of the Medical Course of the UFC in Sobral, identified as a graduate in the SIGAA/PROGRAD-UFC system until December 2019, it was not possible to send the egress questionnaire to 68 of them, either by the outdated e-mail record, or by the lack of contact via phone call, by app or social networks.

The instruments applied were received by e-mail made available by the researcher, as well as through the Google Forms program, a survey management application from the Google platform. After checking each answer, of a quantitative and qualitative nature, it was possible to identify extracts that corroborate the objective of this study, determining the analysis of the contribution of the Medical School of Sobral of the UFC, especially regarding the aspects of public health in the municipality where it is located. That said, the 281 questionnaires collected represent a percentage of 48.6% of the total 578 forms sent.

The data under analysis begins a series of questions aimed at the nuclear investigation of the research, when, through questions 7, 8, 9 and 10, we seek to know the professional performance of doctors trained in the Medical School of the UFC in Sobral, as well as the

perception of the interviewees about the improvement of the municipality's health through the medical assistance provided by them to the local population. The seventh question asks: After graduating, do you attend, or have you attended in Sobral? We also tried to find out in which levels of health care the care was provided. Of the 281 survey participants, 185 are providing care or have provided care in Sobral and 96 graduates have not worked in the city, as shown in Graph 1, which shows the percentage of this extract.

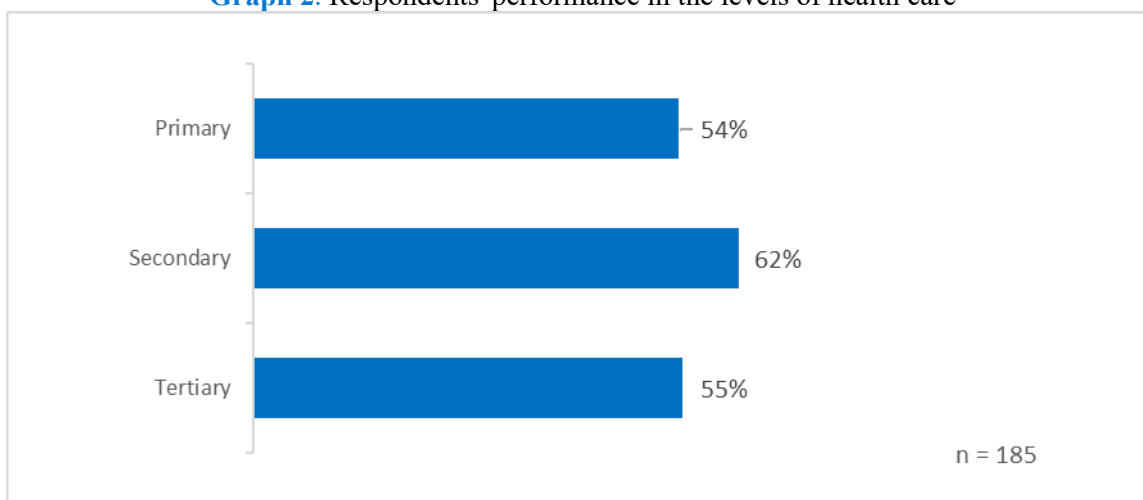
**Graph 1.** Physicians graduated from the UFC - Sobral, who attend or have attended in Sobral



Source: Prepared by the authors, field research.

Regarding the performance of those surveyed in the three levels of health care in the municipality, there are 100 graduates who perform or have performed their medical activities in primary care, 114 in secondary care, and 101 in tertiary care. According to Graph 2, referring to the percentages that bring the results of the answers of questionnaire 7, item 7.2 of multiple choice. The area of highest concentration of the respondents' work is in secondary care, corresponding to 62% of the graduates' work.

**Graph 2.** Respondents' performance in the levels of health care



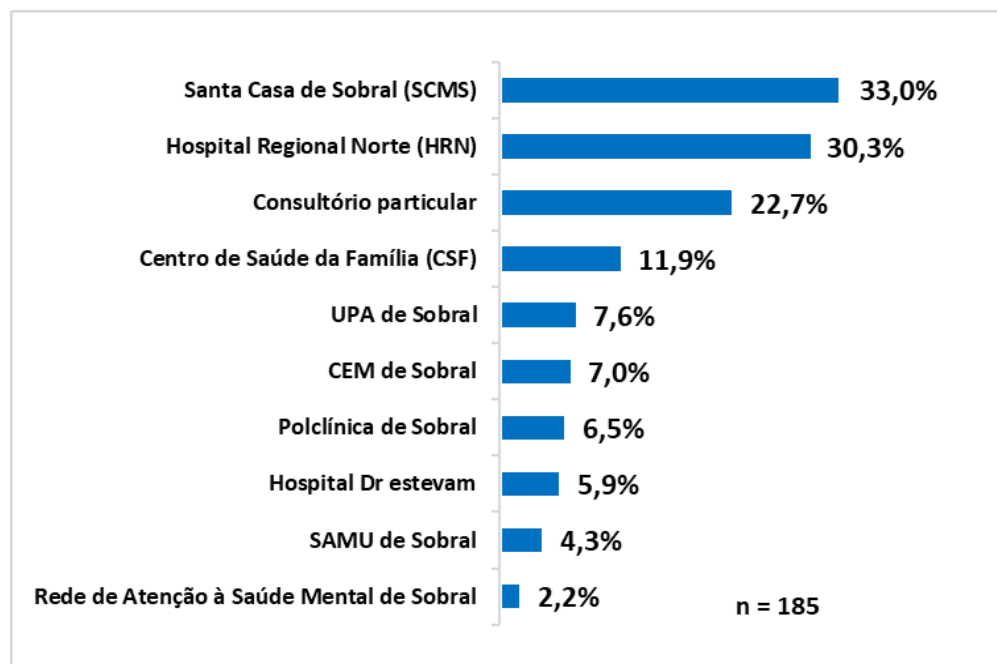
Source: Prepared by the authors, field research.

Graph 3 presents the data extracted from the questionnaires answered to the eighth multiple-choice question of the questionnaire applied, which seeks to identify the activities of

the graduates of the Medical School of the UFC in Sobral, using the question: In Sobral, in which health equipment do you provide, or have you provided medical care after graduating? Sub-item 8.1 collects only the answers from graduates who provide medical assistance in Sobral, whether in the public or private network. The questionnaires received show a distribution of graduates in the municipality's healthcare facilities at the primary, secondary and tertiary care levels.

The Santa Casa de Misericórdia de Sobral, classified at the tertiary care level, presents itself as the healthcare facility that most receives or has received medical professionals trained at the Medical School of the UFC in Sobral, totaling 124 respondents. Next comes the Northern Regional Hospital (HRN) in tertiary care, with 56 respondents. Soon after, the other health equipment available in the municipality for secondary and primary care and the respective percentages pertaining to each health equipment are listed.

**Graph 3.** Percentages of egresses in the health equipment of Sobral



Source: Prepared by the authors, field research.

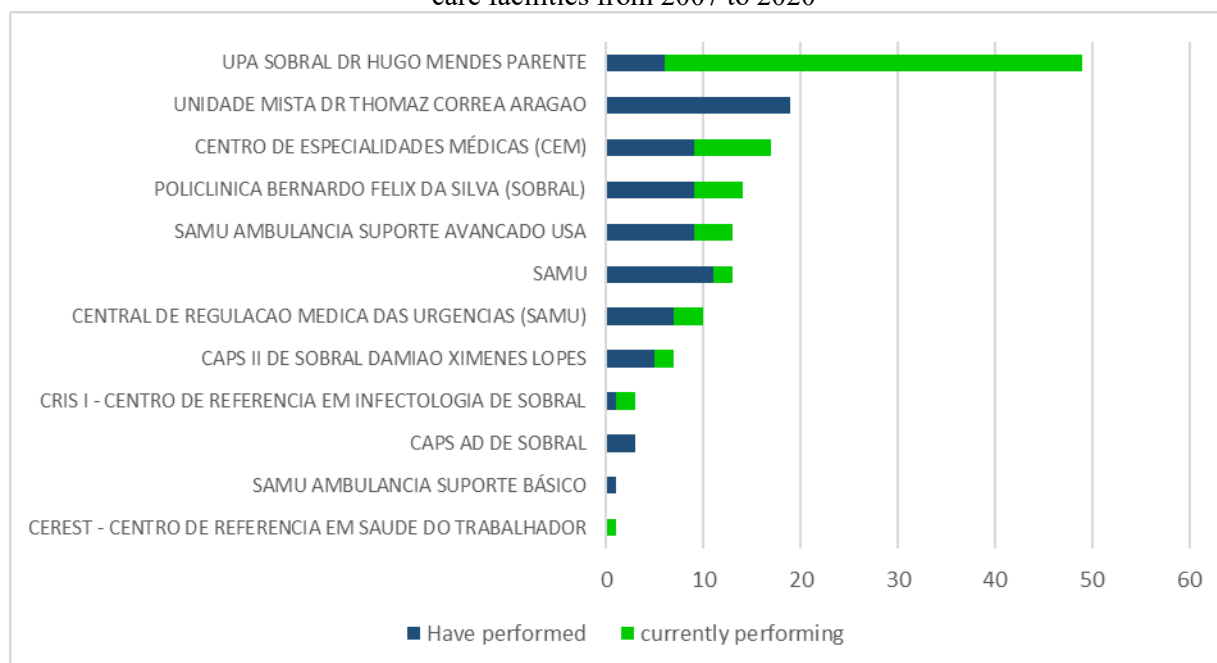
The analysis also shows a significant number of physicians in private practice, totaling 42 physicians who attend the various medical specialties in private practice in Sobral. This quantity is equivalent to 22.7% of the 185 graduates who are providing medical care in the city in 2020. Comparing these percentages, we conclude that most of the physicians who are working in Sobral provide services to the public health network, even though they work professionally in both segments: public and private.

The comparative data between the places of work of the doctors surveyed in the public and private sectors, with a predominance of assistance in public health facilities, supports what is established in the 2014 National Curricular Guidelines for the Undergraduate Course in Medicine for medical schools in the country, which should deliver to society professionals

committed to citizenship, promoting equity of full, comprehensive and quality health care as a right for all, meeting the social needs of health with emphasis on the SUS (BRASIL, 2014).

The work of the graduates of the Medical School of Sobral of the UFC in the public health facilities of the municipality has been going on since 2007, when the first doctors trained by IFES entered as general practitioners in primary care in the local municipal health system. The data regarding the distribution of graduates in the secondary care health facilities from 2007 to 2020, who have worked and work in public facilities are shown in Graph 4, according to the CNES/MS (BRASIL, 2020).

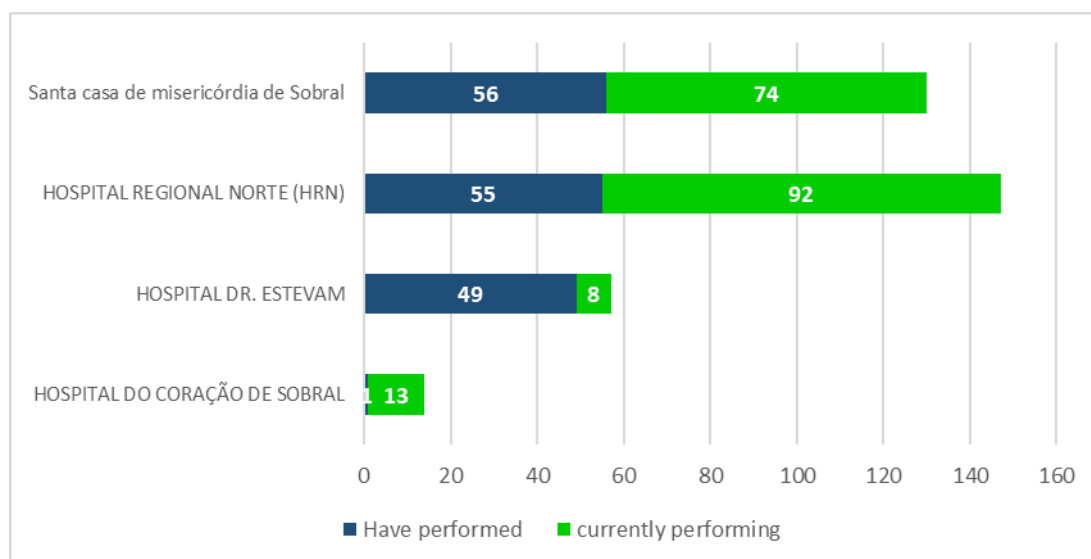
**Graph 4.** Graduates of the UFC Sobral medical school who worked and who work in secondary health care facilities from 2007 to 2020



Source: Prepared by the authors, based on data from CNES/MS BRASIL. SUS Computer Department. National Register of Health Establishments: reports: health establishments and medical professionals. Brasília, DF: CNES, 2020. Available at: <http://cnes.datasus.gov.br/pages/consultas.jsp>. Accessed on: 10 Jul. 2020.

Tertiary health care was the level of care that concentrated most of the graduates who provide or have provided medical care in hospitals in the municipality of Sobral, distributed according to Graph 5, which shows the number of physicians who worked and still work in hospital equipment. It is noteworthy that the offer of shifts with significant remuneration in overly complex hospitals, as well as more favorable assistance conditions, end up attracting specialist and generalist physicians who begin to work almost exclusively in tertiary care, either in emergency services or in specialized units. According to data collected in the CNES/MS BRAZIL 2020, the Santa Casa de Misericórdia and the Hospital Regional Norte absorb a good part of the generalists and specialists trained in the Medical School of the UFC in Sobral who establish residence in the city.

**Graph 5.** Graduates of the medical course of Sobral of the UFC who have worked and who work in Health establishments of tertiary care (2007 to 2020)



Source: Prepared by the authors, based on data from CNES/MS BRASIL. SUS Computer Department. National Registry of Health Establishments: reports: health establishments and medical professionals. Brasília, DF: CNES, 2020. Available at: <http://cnes.datasus.gov.br/pages/consultas.jsp>. Accessed on: 10 Jul. 2020.

## 5 Results

This article addressed one of the main objectives of the pedagogical project of the Medical Course of the UFC in Sobral, according to the DCN of 2001 for medical courses implemented under this normative order, which is the training of doctors to meet the current challenges of the Unified Health System (SUS), as well as the fixing of these professionals in the interior or in regions that present a lack of medical care. With this, promoting the continuity of medical care and contributing significantly to the improvement of public health care in the regions where these courses were implemented (ARAÚJO, 2001).

This is the case of the municipality of Sobral, the locus of this study. According to the indicators verified in the 2016 Basic Health Care Human Resources Dimensioning Report of the Health Secretariat, it is understood that the scenario of basic health care in Sobral prior to 1997 was precarious. The outpatient care of medical specialties, on the other hand, was limited to the care of general medicine, general surgery and orthopedics in the services provided by the Santa Casa de Misericórdia of Sobral or in the few private practices in the city, highlighting a scenario of illness and hospitalizations, as shown in the table below.

**Table 1.** Hospital admissions in Sobral from January/94 to February/97

International Code of Diseases sessions	%
Infectious and Parasitic Diseases	10.7
Neoplasms	6.7
Endocrine, Nutritional, Metabolic and Immune Glands	3.3
Blood and Hematopoietic Organs	1

Mental Disorders	3.7
Nervous System and Sense Organs	3
Circulatory System	6.7
Respiratory System	13
Digestive System	7.8
Genitourinary System	8.5
Pregnancy, Childbirth and Puerperium Complications	22
Skin and Subcutaneous Cellular Tissue	1
Osteomuscular System and Connective Tissue	2.8
Congenital Anomalies	0.4
Perinatal Conditions	1
Symptoms, Signs, and More Definite Conditions	0.5
External Causes	7.2

Source: DATASUS/Ministry of Health

The brief evaluation of the data made available by the Health Secretariat of Sobral, considering the 2016 Human Resources Dimensioning Report of the Basic Care of the Health Secretariat for the indicators of infant mortality, maternal mortality and the mortality rate of the population, from 1996 to 2016, does not ensure that the health scenario of primary care in the municipality has been favored only by the presence of the doctor graduated from the Medical School of Sobral in the health equipment of the municipality, which enabled continued medical care in family health centers from 2007. On the other hand, the evolution of the improvement in health care for Sobral residents is evidenced in the aforementioned report.

[...] it can be observed that the population of Sobral in the year 1996, was characterized by children with high rates of Infant Mortality, resulting from the deficiencies in assistance and the low quality of life of the population, which in small number reached old age. [...] demonstrates the transformation that occurred with the population of Sobral until the year 2015, in which there is evidence of an improvement in health care and quality of life of the population, and there is a population with a predominance of young adults, meaning the excellence achieved in maternal and child care and the need to improve the assistance to chronic conditions that aggravate this population contingent, such as Systemic Arterial Hypertension, Diabetes Mellitus, and mental health problems, also resulting from violence and living conditions of the less favored populations. (SOBRAL, 2016, p. 16)

Result of a public policy of expanded health care, in 1997 Sobral already had 264 medical professionals working in the public and private sectors. In the early 2000s, a period that coincided with the arrival of the UFC's Medical School in Sobral, the municipality's primary care was contemplated with initiative-taking, effective, and efficient health promotion practices to improve the quality of life of the population, with actions aimed at the well-being and health care of the residents. In the following years, the actions to improve assistance in the municipality extended to the other levels of health care (SOBRAL, 2016). In this context, the physicians trained by IFES who provide care in the local health network begin to contribute to the improvement of medical care for the population.

With this purpose, the study is conducted through a thorough research that includes four stages and seeks to investigate whether the Medical School of Sobral has contributed and/or contributes to the improvement of medical care in the municipality in primary, secondary and tertiary care. It is observed that the analysis performed on the quantitative secondary data of the research meets the results obtained by checking the primary quantitative data, which, according to Souza and Kerbauy (2017, p. 40), is "an approach that enables more elements to uncover the multiple facets of the investigated phenomenon, meeting the research aspirations.

### 5.1 Discussion of Results

The first stage of the research, while presenting the process of expansion of higher education in the UFC, contextualizes the pioneering actions in the sociopolitical scenario of the implementation of the Medical School of Sobral of the UFC and the actors involved in them. At this stage, it can be seen that the internalization of the IFES was taken by challenges, which were overcome in a symbolic way when the graduation ceremony of the first class of the Sobral Medicine Course took place on January 18, 2007, at the Sobral Convention Center.

The results obtained in the second stage of data analysis, which presented the pedagogic structure of the Medical School of Sobral, show that the medical education offered by the Medical School of Sobral of the UFC is in conformity with the Resolution CNE/CES nº 4, of November 7th 2001, that "establishes the National Curricular Guidelines of the Degree Course in Medicine, to be observed in the curricular organization of the Institutions of the Higher Education System of the country" (BRASIL, 2001, p. 1). It was also observed that the Medical Course of Sobral has two pedagogical projects for the training of its physicians, the first from 2001 and the second approved in 2017, according to the CNE/CES Resolution No. 3, of June 20, 2014.

The two pedagogical projects present in the Medical School of Sobral of the UFC take Miller's pyramid as a model for teaching and learning, denoting a pedagogical orientation based on knowledge, skills and attitudes, having professional authenticity as a priority, both keeping the medical training guideline of the DCN of 2001 in which the objective is to train a generalist doctor with solid knowledge and a humanistic vision in the exercise of the profession (UNIVERSIDADE FEDERAL DO CEARÁ, 2001). It can also be seen that the good training provided by the Medical School of Sobral of the UFC, in a timely manner, is notable through the results of the last National Performance Exam (ENADE) of medical students conducted by the MEC in 2019, when the performance of the graduates of the medical school Sobral exceeded the national average INEP (2019).

In this exam that is coordinated by INEP, the students of the Medical Course of Sobral obtained an average of 64.2 in the test of specific knowledge, while the average of the students of the country was 61.3. In the test that deals with the general education component, the average score of the graduates of Sobral was 61.3, while the average for Brazil was 52.8, raising the course to a prominent position on the national scene (INEP, 2019). Another important indicator in the question of the highly regarded training of medical students of the

UFC of Sobral, even if of a subjective nature, a *passant*, is the approvals of its recent graduates in selection processes, especially those that give access to medical residency programs. This is an important highlight already seen in its first class, graduated in 2007, as revealed by Cristino Filho (2007, p. 3): "In Medical Residency Competitions in the Northeast, Southeast, Midwest of Brazil and abroad, 20 students from the first class, that is, 52% of the class, obtained approval".

Finally, the second stage of data analysis reveals that the successful model of medical training, which has been carried out in Sobral by the UFC for 20 years, results from a set of efforts of its academic community, partnerships signed in the first years of the implementation of the Course and, above all, by the commitment of students, teachers and technical-administrative servers of high academic qualification in making the UFC's Medical Course of Sobral one of the best in the country, as Cristino Filho (2008, p. 1) highlights, "In Medicine we do assistance, teaching, research and management. The congruence of all these doings has made our medical school a reference among the schools of our state and perhaps one day of our country."

The presentation of the results of the third stage of the secondary data analysis is about mapping the performance of the graduates of the Medical School of Sobral in the health equipment of the municipality that make up the primary, secondary and tertiary health care networks.

After detailed analysis of public data extracted from the National Register of Health Establishments of the Ministry of Health (CNES/MS), it was observed that the graduates of the Sobral Medical School have been working in health care in Sobral since July 2007. The first medical appointments in primary care happen in the family health centers: Alto da Brasília, Dom Expedito, and Jordão, and in secondary care are performed in the Mixed Unit Dr. Tomaz Correia Aragão. At the Santa Casa de Misericórdia de Sobral, a tertiary health care facility, the course graduates' care began in February 2007 in the Urgency and Emergency Service. The arrival of the first specialist doctors in the specialized services of the municipality's health system starts in 2009, with graduates of the first class.

These events characterize an uninterrupted cycle of 13 years marked by the presence of graduates of the medical course of IFES Sobral, attending in all fronts of assistance, evidenced by the presence of graduates of the 19th class, graduating in December 2019, providing care in family health centers, in the emergency service of the Santa Casa de Misericórdia of Sobral and in the Emergency Care Unit (UPA).

In summary, the performance of doctors trained by the Medical Course of the UFC, in Sobral, resulting from the analysis of secondary data, presents 355 graduates who have already attended in the municipality, equivalent to 55% of the total of 646 doctors graduated by IFES by December 2019. On the other hand, those who currently provide care in the municipality correspond to 192 graduates, corresponding to 30% of the 646 graduates. It is observed, in both cases, the predominance of the graduates' performance in secondary and tertiary health care,



being the majority, the presence of specialist doctors providing care in a higher degree of complexity and quality, without, however, as recommended by Mendes (2011, p. 324), noting the importance of the generalist doctor's care for the improvement of the municipality's health.

Specialists, by dealing more frequently with certain problems, can produce higher quality services in their specialty, due to scale. On the other hand, the general practitioner is the most important link in the health care of the individual in his or her territory, because from the point of view of another objective of health care systems, equity, it was found that general practitioners contribute to the reduction of health inequities, which is not the case with specialists.

Thus, it is understood that the results found, resulting from the mapping of the work of graduates in the health facilities of Sobral in the period from 2007 to 2020, as well as the inferences obtained from the analysis of the questionnaires applied to 281 research participants, which comprise the fourth stage of the study, allowed to verify that the Medical School of Sobral of the UFC has contributed and has been contributing to health care in the municipality in primary, secondary and tertiary care. This contribution is due to the continuous presence and work of the doctors trained by the UFC Sobral, since July 2007, in all the health equipment of the city, besides the amplitude of the offer of specialized medical assistance in the city in the last 10 (ten) years, either in the public or private network.

## 6 Final Considerations

The insipid academic community of the UFC that was graduating in Sobral in April 2001, counting on the support of local institutions and the articulating political forces involved in the implementation process, united in the purpose of making the Medical Course of Sobral a medical school of reference in the Northeast (INEP, 2019). Considering what is established in the pedagogical project of the course, there are hundreds of medical professionals graduated in an innovative curriculum, committed to the paradigm of defense of life and the constant search for a healthier and fairer society.

These are not only rhetorical values of the programmatic content, but mandatory prerequisites for the graduates of the Medical School of Sobral of the UFC to provide humanized and quality medical care to the population of Sobral and the entire northern region of Ceará that seeks assistance in the public health facilities in the municipality. This, then, is the manifest and most important contribution of the UFC for the city of Sobral, a pole city for 55 cities of Ceará, distributed in a macro-region of health that includes a population of 1.7 million inhabitants, benefited by a successful model of the process of interiorization of the Brazilian higher education, represented by a course of medicine of the UFC implanted in Sobral on April 2, 2001.

Finally, the changes conferred from medical care in Sobral, when graduates from the first class of the course began to work in health care for the population in the public facilities of the municipality and access to various medical specialties, are significant aspects for the improvement of public health care in a city that is a hub and where the neediest population goes

in search of medical treatment of medium or high complexity. Thus, the significant absence of doctors in the North Zone of Ceará was mitigated, especially the specialists, a lack that is characterized as a serious problem in public health care in the state. This being said, the model of the interiorization process of Brazilian public higher education, applied and sanctioned by the UFC, will be considered successful.

The contribution of the Medicine Course of the UFC in the public health assistance of Sobral, verified by the results of this study does not end, therefore, the observation of future analyses of the medical school of the IFES implanted in the city in 2001, above all in face of the new challenges that are imposed to the institutions of public and private higher education, resulting from the criticism made to the bad medical formation in the country in the last years. This study also aims to support new research in the area of medical education and training, as well as those focused on the internalization of higher education in the country.

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