

**THE CONSTRUCTION OF KNOWLEDGE ABOUT SYSTEMIC ARTERIAL HYPERTENSION IN A MEDICINE COURSE IN BAHIA**

***A CONSTRUÇÃO DO CONHECIMENTO SOBRE A HIPERTENSÃO ARTERIAL SISTÊMICA EM UM CURSO DE MEDICINA DA BAHIA***

***LA CONSTRUCCIÓN DEL CONOCIMIENTO SOBRE LA HIPERTENSIÓN ARTERIAL SISTÊMICA EN UN CURSO DE MEDICINA EN BAHIA***

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**ABSTRACT:** The creation of Brazilian National Health System (SUS, Portuguese initials) contributed to the reorientation of medical education in Brazil. The National Curricular Guidelines for undergraduate medicine strengthen professional training in Primary Health Care (PHC). The objective of this article was to correlate the curricular components of the Medicine course at the Feira de Santana State University (UEFS), based on the knowledge and practices built on Systemic Arterial Hypertension (SAH). This documentary study used the IRaMuTeQ software for information processing, enabling the construction of the word cloud and the similarity tree. The results indicate that the SAH teaching-learning process is fragmented, with the Skills and Tutorial modules seeking to enable students to perform clinical procedures based on medical specialties, while the Teaching, Service and Community Integration Practices (PIESC) enable the experience of the reality of SUS in PHC environments.

**KEYWORDS:** Medical education. Primary health care. Systemic arterial hypertension.

**RESUMO:** *A criação do Sistema Único de Saúde (SUS) contribuiu para a reorientação da educação médica no Brasil. As Diretrizes Curriculares Nacionais para a graduação em medicina fortalecem a formação profissional na Atenção Primária à Saúde (APS). O objetivo deste artigo foi correlacionar os componentes curriculares do curso de Medicina da Universidade Estadual de Feira de Santana (UEFS), a partir dos conhecimentos e práticas construídas sobre a Hipertensão Arterial Sistêmica (HAS). Este estudo documental utilizou o software IRaMuTeQ para o processamento das informações, possibilitando a construção da nuvem de palavras e da árvore de similitude. Os resultados indicam que o processo ensino-aprendizagem da HAS é fragmentado, com os módulos de Habilidades e Tutorial buscando capacitar os estudantes para realizar procedimentos clínicos com base nas especialidades médicas, enquanto as Práticas de Integração Ensino, Serviço e Comunidade (PIESC) possibilitam a vivência da realidade do SUS nos ambientes da APS.*

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**PALAVRAS-CHAVE:** Educação médica. Atenção primária à saúde. Hipertensão arterial sistêmica.

**RESUMEN:** El Sistema Único de Salud (SUS) contribuyó a la reorientación de la educación médica en Brasil. Las Pautas Curriculares Nacionales para medicina de pregrado fortalecen la capacitación profesional en Atención Primaria de Salud (APS). El objetivo de este artículo fue correlacionar los componentes curriculares del curso de Medicina en la Universidad Estatal de Feira de Santana (UEFS), basado en el conocimiento y las prácticas construidas en la Hipertensión Arterial Sistémica (HAS). Este estudio documental utilizó el software IRaMuTeQ para el procesamiento de la información, lo que permitió la construcción de la nube de palabras y el árbol de similitud. Los resultados indican que el proceso de enseñanza-aprendizaje HAS está fragmentado, donde los módulos de Habilidades y Tutoriales buscan permitir a los estudiantes realizar procedimientos basados en especialidades médicas, mientras que las Prácticas de Enseñanza, Servicio e Integración Comunitaria (PIESC) permiten experiencia de la realidad del SUS en entornos de APS.

**PALABRAS CLAVE:** Educación médica. Atención primaria de salud. Hipertensión arterial sistémica.

## Introduction

The Brazilian Constitution of 1988 sought the formation of a welfare state, this new law recognized health as a citizen's right and created the Unified Health System (SUS). A universal and public system, operated through various policies, programs and guidelines.

With the implementation of SUS, the health sector has undergone several changes in the public sphere. Numerous advances are highlighted, such as: universalization of care, municipalized management, control and social participation, changing funding mechanisms, expanding the service network and reorienting the care model with an emphasis on Primary Health Care.

Primary Health Care is internationally considered the basis for the care model of public and universal health systems. According to Mendes (2015), PHC has the attributes of being the user's first contact with the health system, it must be continuous with responsibility for care over time, guided by the integrality of health actions and must act as coordinator of the care network, to guarantee continuity of care at the different levels of the system.

In Brazil, the PHC organization reflects the political and ideological achievements of the Brazilian Sanitary Reform Movement, leading the Ministry of Health (MS), from the SUS implementation process, to adopt the designation of Primary Health Care (ABS) to emphasize the reorientation of the care model. The National Policy of Primary Care (PNAB) has the Family Health Strategy (FHS) as a priority for the expansion and consolidation of PHC,

implemented progressively considering the specificities of the region, the dynamics of the territory and the existence of unique populations (BRASIL, 2017).

Ceccin and Feuerwerker (2004), Hora and others (2013) discuss the need for change in the formation of health professionals, and in particular medical formation, as an essential element for the consolidation of SUS and Family Health. These authors converge when they point out that traditional formation is based on the Flexnerian model, which emphasizes the biomedical model, pathological anatomy, centered on the disease, with the hospital as the main place of practice, encouraging early specialization and characterized by methodologies knowledge transfer that do not follow SUS principles and guidelines.

Therefore, the strategy to encourage primary care in SUS requires the formation of professionals with a comprehensive social vision, who respect the singularities of people/families, and technically able to provide continuous and resolute comprehensive care in the territories of the Family Health Units (FHU).

The Edinburgh Declaration established the principles of contemporary medical education by discussing the need to expand the environments in which educational programs are carried out, to include all community health care resources and not just hospitals; ensure that curriculum content reflects the country's health priorities; and, create curricula and evaluation systems that allow to achieve professional competence with the formation of social values and not just retention of information (WFME, 1988).

In Brazil, curricular changes in medical education were based on political and pedagogical strategies, used to deal with the assumption of comprehensive care and to meet the needs of the Brazilian health system, as advocated by the Edinburgh Declaration. Initially, the National Curriculum Guidelines (DCN) of 2001 stand out, which will direct changes in Brazilian medical education, by establishing that graduates must have general formation geared to meet the needs of SUS, and that the axis of curriculum development should be guided by the health needs of individuals/unique populations, promote the teaching-service integration within the SUS, with an emphasis on PHC, privileging the use of active methodologies in the teaching-learning process (BRASIL, 2001).

In 2014, there was an update of the DCN, this new document emphasizes that the future doctor must seek the integrality of health actions based on a model of interprofessional care management centered on the person/family/community. It establishes the need to articulate knowledge in three areas: health care, management, and education. The future doctor must, in health care, develop therapeutic projects respecting biological, subjective, ethnic-racial, gender, sexual, socioeconomic, political, environmental, cultural, and ethical

diversity. In health management, he/she must be able to understand the principles, guidelines, and policies of the health system, and participate in planning, management, and administration actions. In health education, he/she must be responsible for their own initial, continuing, and in-service formation (BRASIL, 2014).

This article aims to evaluate how the contents, competences and skills related to the construction of knowledge about Systemic Arterial Hypertension (SAH) are worked on, in the process of medical education at PHC in the undergraduate medical course at the Feira de Santana State University (UEFS).

This documentary analysis is an excerpt from the case study “*Formação Médica na Atenção Primária à Saúde: avaliação de quarta geração em um curso de medicina do semiárido baiano*” (Medical Education in Primary Health Care: fourth generation evaluation in a medical course in the semiarid region of Bahia), which is part of the project “*Formação Médica na Atenção Primária à Saúde nos cursos de graduação em Medicina da Bahia, Brasil*” (Medical Education in Primary Health Care in undergraduate Medicine courses in Bahia, Brazil) approved by the UEFS Research Ethics Committee by CAAE no. 70651117.1.0000.0053.

The UEFS medical course was implemented in 2003 with an innovative pedagogical proposal, centered on the student and based on Problem Based Learning - PBL and on the Problem Methodology. The course aims to the formation of a humanist doctor, with knowledge of public health and capable of working at all levels of health care. During the first four years of the course, there is a basic cycle that has three axes: 1- Clinical Skills and Attitude, with formation in technical and socio-affective skills in relation to clinical care; 2 - Activity in Tutorial groups, based on problem solving; 3 - Teaching, Service and Community Integration Practices (PIESC, Portuguese initials), which promote the student's approach to the community, using the Family Health Unit as a reference. In the final two years, during the professional cycle, medical internship takes place in the form of a supervised internship.

During data collection, the documents referring to the curricular components that address, in their teaching-learning process, knowledge and practices related to the health care of people with Systemic Arterial Hypertension were used. The choice of this health problem occurred due to the high prevalence of SAH, being recognized as a public health problem in Brazil and worldwide; and, due to the SUS adopting PHC as a privileged locus for coping with this disease (BRASIL, 2013).

The collection took place between March and May 2019, using information from the modules that had some focus for the teaching of SAH in the years 2006 (beginning of the

course), 2010 (recognition of the course) and 2017 (renewal of the recognition of the course). Thus, the PIESC and Clinical Skills of Attitudes modules from the first to the fourth series and the tutorial module of “Dyspnea, chest pain, edema and cough” were analyzed. In this article, we chose to analyze the curricular components of the basic cycle, therefore, medical internship was excluded, which will be studied at another time.

To guide the process of explaining the empirical data from the documents, the software IRaMuTeQ (*Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires*) in version 0.7 alpha 2 (CAMARGO; JUSTO, 2018) was used. It is open access software that enables different types of textual data analysis, such as basic lexicography, even multivariate analysis such as descending hierarchical classification of text segments, correspondence analysis and similarity analysis.

Firstly, the corpus was elaborated with the textual information from each document, then the word clouds and similarity trees were elaborated. The word cloud create groups of words and organizes them graphically according to their frequency, while the similarity tree allows to identify the co-occurrences between the words and their result brings indications of the connection between the terms (CAMARGO; JUSTO, 2018).

The correlations made between the curriculum components sought to discuss the strengths and weaknesses found in the development of teaching-learning activities on SAH were carried out based on the theoretical and practical scope of PHC, as recommended by the DCN/2014 and the reference documents of the Ministry of Health (BRASIL, 2013; BRASIL, 2017). In this way, it was possible to identify the future challenges of the UEFS medical course in the formation a doctor in accordance with current legislation.

To explain the empirical data, a qualitative approach was used based on the Bardin Content Analysis (2016), which consists of a set of communication analysis techniques that aim to obtain, through systematic and objective procedures of message descriptions, inferences on knowledge about the conditions for producing/receiving these messages.

## **Results and discussion**

### **Lexical analysis**

The word cloud reflects the frequency with which the terms appear in the documents, although the occurrences of some words have changed from one year to the next, their proportions have not changed significantly between the three periods studied.

When comparing the word clouds (Figure 1), the most frequent words are not repeated in the three curricular components, as well as there is a fragmentation between the curriculum components in relation to the construction of knowledge about SAH.

In the PIESC manuals, the most frequent words were: *saúde* (health) (n = 58), *família* (family) (n = 22) and *comunidade* (community) (n = 21), reflecting that these curricular components are close to the policies/programs/guidelines of the Health Ministry (BRASIL, 2013; BRASIL, 2017) and DCN (BRASIL, 2014), when seeking comprehensive care in the territory of Family Health Units, with a generalist focus and looking at the health needs of communities and people.

On the other hand, in the Skills manuals prevailed the terms: *técnica* (technique) (n = 28), *conhecer* (knowing) (n = 26), *paciente* (patient) (n = 22) and *exame* (exam) (n = 21), while in the Tutorial module the words that were repeated the most were: *hipertensão* (hypertension) (n = 8), *conhecer* (knowing) (n = 5), *coração* (heart) (n = 4), we have to refer to the pathophysiology, diagnosis and clinical treatment centered on the disease and the relationship between doctor and patient, that is, a view specialized, historically compatible with the Flexnerian model (FRENK *et al.*, 2010; LIMA *et al.*, 2018).

It was observed that only the word “*conhecer*” (knowing) was present in both Skills and Tutorial, and none of the words from PIESC were present in the analysis of the other curricular axes/components analyzed.

**Figure 1** – Word Cloud of the PIESC, Clinical Skills and Attitudes and Tutorial Course of the UEFS Medicine course that address SAH, 2006/2010/2017



Source: Author's database

### PIESC Skills Tutorial

It is important to highlight that the lexical analysis does not present any indicators of relationship between words, it only shows their frequencies. Therefore, although there is no

lexical similarity between the curricular components analyzed, the context and the relationships between the active forms can only be analyzed from the similarity tree.

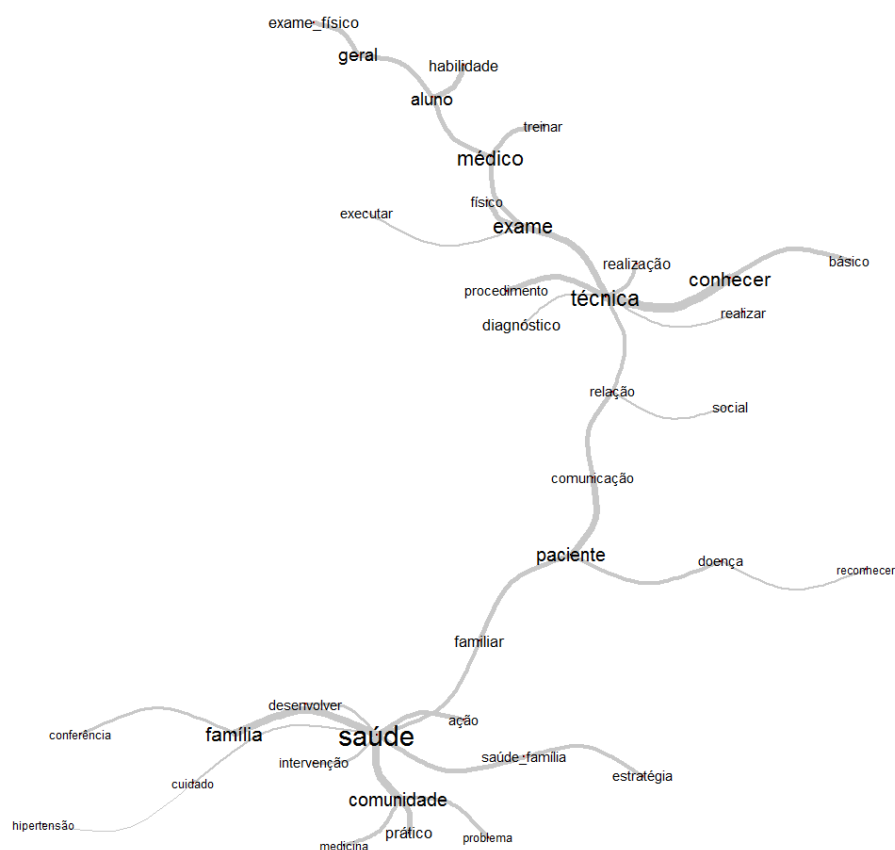
### Similarity analysis

The similarity analysis of the entire textual corpus (Figure 2) presents the word “*paciente*” (patient) connecting the two main poles in the tree. These poles are distributed in opposition, presenting at one end the active forms present in the lexical analysis of the PIESC and, at the other end, the elements from the Skills and Tutorial. This indicates that, although in all the textual corpus the words of different curricular components are distributed almost proportionally, they are not associated in context.

According to Bardin (2016), the co-occurrence and/or the non-occurrence of two or more elements would reveal association and/or dissociation in the essence of the text. If there are no co-occurrences, it can be inferred that the terms are exclusive or dissociated in the semantics of the analyzed text.

It should be noted that, for the similarity analysis of the entire textual corpus, the active elements of the tutorial tree were infrequent, as they represented only the information from the module “Dyspnea, chest pain, edema and cough”, while for PIESC and Skills manuals from the first four years of the course were analyzed.

**Figure 2** – Similitude tree of the PIESC, Clinical Skills and Attitudes modules and Tutorial of the UEFS Medicine course that address SAH, 2006/2010/2017



Source: Author’s database

The analysis of the PIESC and Skills manuals that build necessary knowledge for the health care of patients with SAH, evidenced in the similarity tree in the care of the “*paciente*” (patient), identifies that the didactic-pedagogical elements of these curricular components are not associated in the organization the course manuals, on the contrary, are in opposition. Therefore, the student is trained in different ways to provide care to the same patient, this duality would not be a problem if the curricular components dialogued with each other, promoting the complementarity of each other, as provided for in the DCN/2014 (BRASIL, 2014) and contemporary medical education. However, this articulation happens little, weakening the construction of knowledge, which is dichotomized and cannot reach interdisciplinarity, interprofessional formation and collaborative work (FRENK, *et al.*, 2010; LIMA, *et al.*, 2018).

The groups of words present in the similarity analysis of the PIESC (Figure 3) hardly changed in their contextual relations in the analysis of the entire corpus, remaining linked to the central element “*saúde*” (health) and relating to the other elements of the corpus through



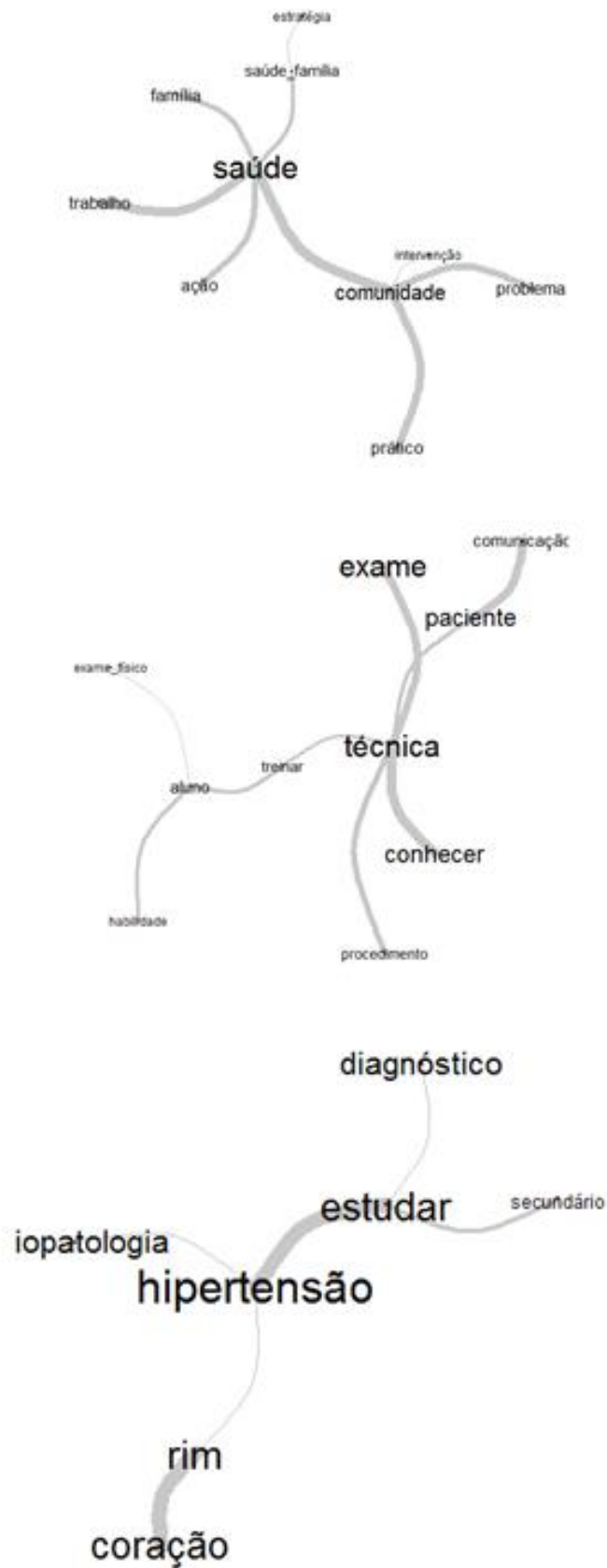
thematic element “*paciente*” (patient). Likewise, the words that were present in the similarity analysis of Skills (Figure 3) remained grouped with similar organization in the analysis of the corpus, reaffirming that the organization of the PIESC and Skills manuals has a polarization in the didactic-pedagogical organization, not associating themselves except in the central element “*paciente*” (patient).

As observed in the word cloud, the similarity analysis reaffirms that the didactic-pedagogical activities of PIESC are geared towards medical training in the context of PHC, respecting the singularities of people and communities. In another sense, Skills seeks technical formation to perform clinical procedures in outpatient and hospital environments, based on medical specialties.

The Tutorial similarity tree (Figure 3) has as main focus the study of the disease / pathology Hypertension, approaching more the Skills in discussing the diagnosis and specialized treatment.

Undergraduate medical courses advanced in the search for the formation of doctors with a comprehensive social vision and technically able to provide continuous and resolute care to the community's health, as advocated by the Edinburgh Conference. However, the implementation of public educational policies with the valuation of active methodologies and approximation between health services and academia, need to be continuously evaluated and strengthened, to become increasingly effective.

**Figure 3** – Similarity trees of the PIESC modules, Clinical Skills and Attitudes and Tutorial of the UEFS Medicine course that address SAH, 2006/2010/2017



Source: Author's database

In a literature review that incorporates studies between 1998 and 2008 on curricula based on PBL, Gomes *et al.* (2009, p. 439, our translation) comment:

[...] the effectiveness of courses anchored in PBL does not depend only on efficient actions related to curriculum planning and management. It also depends on the articulation between curriculum and professional reality, so that there is a reorientation of knowledge and practices both in the academic space and outside, including the scope of the health system.

In the case of teaching-learning in SAH in the UEFS medical course, it is visible that the Skills modules seek to enable students to perform clinical procedures based on medical specialties, while PIESC enable undergraduate students to experience the reality of SUS in PHC/FHS environments. These curricular components need to dialogue with each other, so that there is a process of interaction and continuity in the construction of knowledge.

Gomes *et al.* (2009) point out the importance of the inseparability between theory and practice and the integrated curriculum for meaningful learning for students. Without this integration, the teaching of the technique by the technique can happen, without correlating it with possible singularities and subjectivities of the patients that are essential for an effective therapeutic project. As the results of the similitude tree show, there is an opposition between the pedagogical activities of Ability and PIESC, suggesting that the curricular integration between the techniques learned and the performance of students in the FHS does not happen.

If the territories of the PHC/FHS represented a direct theoretical-practical application of the knowledge/procedures learned in the other thematic modules, there should certainly be significant connections between the words representing Skills “*conhecer*” (knowing), “*técnica*” (technique), “*exame*” (exam) and “*habilidade*” (skill) and the words representative of the PIESC manual “*intervenção*” (intervention), “*comunidade*” (community) and “*saúde da família*” (family health), for example.

However, there is a dichotomy in the course, on the one hand Skills and Tutorials centered on the disease, on individual procedures performed in outpatient clinics and hospitals, based on medical specialties, and on the other the PIESC seeking the integrality of health actions with a generalist view as advocated by SUS and DCN.

This conjuncture demands a greater articulation between coordinators and teachers of the different axes of the course and, therefore, greater work to maintain a pedagogical organization that incorporates the different curricular components and promotes the articulation of knowledge necessary for interdisciplinary and interprofessional teaching in the search for comprehensiveness, involving technical improvement with a more holistic

approach, with the person as the center of care (BRASIL, 2014; BRASIL, 2017; LIMA *et al.*, 2018).

### **Final considerations**

According to the DCN/2014, the student must be inserted in the health service networks, considered as a learning space, since the initial grades and throughout the Medical Undergraduate course, based on the expanded concept of health, considering that all scenarios that produce health are relevant learning environments.

However, in the 21st century, it is clear that medical knowledge and practice are still centered on the clinic and specialties. For this reason, there is great importance in medical training in PHC territories, where the health-disease-care process is dynamic and has historical, cultural, social, economic, psychological, biological and environmental elements, mediated by several subjects who have values, beliefs, different expectations and intentions. The integrality of care centered on the person/family is sought, and not only the medical procedures.

This study suggests that the operationalization of curricula may evolve and that the application of methodological innovations must be carried out in order to collaborate with a more effective and more complete teaching-learning process, favoring integrated teaching between the various curricular components, intertwining theory and practice, bringing the academy closer to the service, granting the formation of doctors according to the needs of people and communities.

As this article was limited to a documentary analysis, it is still necessary to develop a new study that investigates the praxis of the evaluated curriculum components. Finally, there is a need to deepen research on the teaching-learning process of undergraduate health courses in Brazil, based on the DCN, the curricular organizations of educational institutions and SUS policies/programs/guidelines.

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