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articles

Integration among curricula in Health professionals' education: the power of interprofessional education in undergraduate courses

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This paper presents the results of a qualitative research (case study) that aimed to understand the meanings of a multiprofessional experience in an integrative teaching activity of a public university in the South of Brazil, analyzing its potential for interprofessional education. The activity takes place in Primary Care services and data were produced by means of individual semi-structured interviews with graduates, students and a university manager, a focus group with teachers, and participant observation with records on a field diary. The data were interpreted by thematic content analysis. Integration and interaction among students, teachers and health professionals promoted learning related to collaborative competencies, characteristic of interprofessional education. Institutional, physical and pedagogical challenges for sharing experiences among professions were highlighted, as well as the need to expand interprofessional education initiatives in undergraduate health curricula.

Keywords: Interprofessional relations. Higher education. Teaching-Care Integration Services. Brazilian National Health System.

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Introduction

Comprehensive healthcare is one of the organizing principles of Brazilian National Health System (SUS)[1]. In a context in which individuals' and population's health needs are becoming increasingly complex, the fulfilment of this principle requires a professional prepared to work in the reality of teamwork, which is characterized by collaborative practice among professions[2-5].

Public policies for education[6,7] and health[8], allied with programs that induce changes in education[9-11], have boosted curricular transformations in undergraduate courses in the area of health, strengthening the need of teamwork both in the education process of future professionals and in work practices within the health system.

A strategy that has been increasingly recognized by the scientific community as a way of improving healthcare by educating professionals capable of working in teams collaboratively is interprofessional education[12-16]. Interprofessional education "occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes"[13] (p. 10).

In spite of this favorable context and of the prominent position of interprofessional education initiatives in curricula of undergraduate health courses in Brazil[17,18], almost three decades after the implementation of the SUS, many of these curricula continue to be structured by disciplines, in an essentially uniprofessional way. Thus, the formation of knowledge and actions specific to each professional category still prevails. This hardly promotes interactions among students from different professions. Consequently, health professionals have difficulty working in teams, reproducing a care model that is fragmented, does not solve problems efficiently, and strengthens corporatism and professional isolation[4].

This study focuses on health professionals' education. It aims to investigate meanings of the interaction among professions that occurs in an integrative teaching activity of a public university in the South of Brazil. The activity is carried out in primary care services and the researchers analyzed its potential for interprofessional education.

The meaning of an integrative teaching activity

The desire to implement an integrative teaching activity emerged from the collective construction of a group that attempted to create innovative spaces within the current education models of the health courses in the university under study. These courses participate in Health Coordination (CoorSaúde). Created in 2008, CoorSaúde is a collective body linked to the Office of the Vice Provost for Undergraduate Studies. It is formed by the representations of the health courses' Undergraduate Committees and focuses on the articulation of these courses, mainly the inclusion of students in the healthcare networks of the SUS[19].

In the implementation process, resistances to the offering of a subject shared by different Undergraduate Committees have been observed, motivated by many reasons. One of them is the very organizational structure of the university. As a proposal for integration 'among courses' and 'between the courses and the health service', the integrative teaching activity was offered in the format of a discipline, as a possibility of overcoming the current education model organized by education nuclei. It intends to confront, micropolitically, the traditional ways of fabricating modes of being in the world, even in institutions organized in a traditional way[20] (Chart 1).

Chart 1. Characterization of the integrative discipline 'Integrated Health Practices I'

Outset	Courses involved	Character	Duration	Number of hours	Moment of the curriculum in which it is offered	Seats*	Field of practice
2012	Biomedicine Biological Sciences Physical Education Nursing Pharmacology Physiotherapy Speech-Language Pathology and Audiology Medicine Veterinary Medicine Nutrition Dentistry (day course and evening course) Public Policies Psychology (day course and evening course) Collective Health Social Work	Elective or additional discipline	4 months (one semester)	4 hours per week	At the discretion of each Undergraduate Committee, which established their own prerequisites	4 per course	Family Health Units (USF)

* For the seats to be offered to each one of the courses that share the discipline, the presence of the teacher indicated by the course is necessary.

The discipline 'Integrated Health Practices I' (PIS I) has been offered since 2012, as an elective or additional curricular discipline, to students from 15 undergraduate courses: Collective Health, Biomedicine, Biological Sciences, Physical Education, Nursing, Pharmacology, Physiotherapy, Speech-Language Pathology and Audiology, Medicine, Veterinary Medicine, Nutrition, Dentistry, Psychology, Social Work, and Public Policies. It is organized in concentration moments, which involve the entire group of students, teachers and health professionals, and tutorship moments with two teachers and eight students in Family Health Units (USF)[21].

Based on the interaction among students, teachers and health professionals with different professional backgrounds, the discipline's learning objectives are: To investigate and analyze the territory in the catchment area of a USF in order to understand its organization and the work process of the team that works there[21]. Its learning method involves observation and problematization[22] by means of tutorial education[23]. The theoretical framework includes the study of the territory[24], interdisciplinarity[25] and interprofessionality[13,14,26]. The student undergoes an evaluation process established by the construction of an individual portfolio[27]. At the beginning of each semester, the teachers participate in a team meeting, in which they plan, together with the Family Health Strategy professionals, the activities to be developed. The Community Health Agents are the professionals who most frequently monitor the discipline's activities in the territory, which consist of recognizing micro-areas and social facilities, visiting health services that are part of the SUS network, and observing the health team's daily work. After each activity, the group meets and discusses what was experienced.

Methodological approach

This is a qualitative research characterized as a case study[28], whose investigation setting was the integrative teaching activity of the undergraduate health courses of *Universidade Federal do Rio Grande do Sul* (UFRGS). The activity is entitled 'Integrated Health Practices I' (PIS I). Data were produced by means of individual, semi-structured interviews[29], one focus group[30], participant observation[29], and the recording of notes on a field diary.

One university manager, graduates and undergraduate students were interviewed. The graduates and students were selected in an intentional way, considering the diversity of the courses and the year in which they attended the discipline. To determine sample size, the criterion of theoretical saturation[31] was used, associated with the density of the textual material. The individual interviews followed a script that had been previously tested. They lasted forty minutes on average and were conducted at the university or at the graduates' workplace, in a silent and private space, on a day and at a time that would not interfere in their work or study routines. Chart 2 and 3 characterize the profile of the interviewed graduates (n=9) and students (n=18).

Chart 2. Profile of the interviewed graduates

Course	Age	Sex	Year of attendance of the integrative discipline	Year of graduation
Psychology	24	Female	2012	2015
Public Policies	24	Female	2015	2015
Nutrition	32	Female	2014	2015
Biomedicine	25	Female	2013	2013
Social Work	25	Female	2012	2014
Collective Health	54	Female	2012	2014
Collective Health	42	Female	2012	2013
Nursing	32	Female	2015	2015
Dentistry	27	Male	2012	2013

Chart 3. Profile of the interviewed undergraduate students

Course	Age (years)	Sex	Year of attendance of the integrative discipline
Nutrition	21	Female	2014
Social Work	23	Female	2014
Biological Sciences	20	Female	2015
Speech-Language Pathology and Audiology	23	Female	2014
Pharmacology	25	Female	2015
Pharmacology	27	Male	2013
Public Policies	24	Female	2015
Collective Health	59	Female	2014
Physical Education	26	Male	2015
Psychology	20	Female	2015
Physiotherapy	19	Female	2016
Physiotherapy	20	Female	2016
Physiotherapy	19	Female	2016
Veterinary Medicine	33	Female	2015
Public Policies	23	Female	2012
Medicine	28	Male	2016
Medicine	25	Male	2015
Medicine	24	Male	2014

The focus group, in turn, lasted two hours and had the participation of 11 teachers from the professional nuclei of Physical Education, Nursing, Pharmacology, Physiotherapy, Speech-Language Pathology and Audiology, Veterinary Medicine, Nutrition, Dentistry, Psychology, and Social Work. Before the conduction of the interviews and of the focus group, the researcher was present in the concentration and tutorship activities of the discipline during a period of four months (four-hour weekly meetings).

To preserve the identification of the research participants, a sequential order ranging from EE1 to EE9 was coded for the interviews with graduates. For the interviews with the undergraduate students, the sequential order ranged from E1 to E18.

The recorded material was transcribed and returned to the participants, enabling a rereading of the presented ideas. The material written on the field diary was also analyzed. The technique of thematic content analysis[32] was used for the interpretation of information, with the aid of the software Visual Qualitative Data Analysis (ATLAS.ti). Phenomenology, as the study of signification and essences[33], was the theoretical approach we used, supported by the theoretical framework of pedagogical innovation[34], interdisciplinarity[25,35], interprofessional education[13,14,36], and collaborative competencies for teamwork[37-39].

The study was approved by the Research Ethics Committees of UFRGS (Opinion no. 1.403.420) and of the Municipal Government of Porto Alegre (Opinion no. 1.527.102).

Results and discussion

Two categories emerged from the analysis of the collected empirical material: “Integration in health curricula: a path between people, knowledge and professions”, and “Challenges and perspectives of interprofessional education in undergraduate health courses: institutional and physical, cultural and pedagogical dimensions”.

Integration in health curricula: a path between people, knowledge and professions

The paradigm of the curricular model that is hegemonically uniprofessional and divided into disciplines, as well as knowledge fragmentation, contributes to stereotyped conceptions and ignorance of the responsibilities and roles of the other health professionals, as it does not promote interaction among students from different professions[39].

Criticism against the education model restricted to one single knowledge nucleus emerged in the reports provided by the students who could attend the integrative discipline, and highlighted the importance of integration/interaction spaces during the educational process. An education that does not promote exchanges and interactions with other areas of health “educates professionals who do not know how to interact with anybody, do not know how to share work” (E1 - Nutrition). It is a ‘situational blindness’, “everybody talking to their own peers” (University Manager).-

‘PIS I’ comes in the opposite direction from that of the model described above, enabling movements between people, their knowledge and professions, who mingle, overlap, but also complement each another. This ‘sewing’ of professions reveals that experiencing the integrative discipline promotes an important characteristic of interprofessional education, which is knowing the other’s work. “Experiencing the discipline is like sewing a patchwork quilt, and each piece of fabric is a profession” (Researcher’s note on the field diary about a student’s testimony).

At UFRGS, the integrative discipline represents the only opportunity of interaction among students and teachers from different courses during undergraduate education.

> It was the first discipline in which I had contact with other courses. We work with many professionals, but during the undergraduate course, we remain isolated, so, it’s Nutrition with Nutrition, there’s no contact with Nursing, there’s no contact with Speech-Language Pathology and Audiology, there’s no contact with Dentistry [...]. (E4 - Nutrition)

The limitations of the education model that does not promote exchanges are recognized by graduates, students and teachers, who envisage, in the integrative discipline, the possibility of integrating students, teachers, and health professionals, and sharing spaces and learning, characteristics of interprofessional education.

One of the principles of interprofessional education is that professions that learn together will know better how to work together, which improves the quality of the provided services[40]. Thus, it is an important strategy to qualify students for teamwork, which requires a model to organize education with broad opportunities for integration among courses.

Although interprofessional education has been developed and investigated for more than three decades in European countries, the United States and Canada[12], debates about this theme are recent in Brazil. The Medicine course was the first to review its National Curricular Guidelines, including the term 'interprofessionality' in them, but without defining the concept[7].

The graduates and students interviewed in this research did not have a clear understanding of the terms interdisciplinarity and interprofessionality, and, in many situations, they used them as synonyms. "In the discipline, we were with a group, from the start, that was inter (disciplinary, professional), multi, I don't know the definition, and this made us interact" (EE1 - Psychology). Among the teachers, this conceptual doubt was also present: "[...] I haven't master the concept of interprofessionality. I make mistakes all the time, thinking about interdisciplinarity. I don't know if it's the same thing. It's not, is it?" (Teachers - Focus Group).

Interprofessional education is defined as an intervention in which members of more than one health profession learn together, in an interactive way, with the purpose of improving interprofessional collaboration or patients' health and wellbeing[14]. It enables the student to understand, more clearly, work as part of the collaborative practice team, increasing the efficiency of these teams by reducing duplicity of services[13]. In the interdisciplinary perspective, in turn, there is a stimulus to integration among different areas of knowledge, but collaboration among different professions does not necessarily exist[35]. Interdisciplinarity can be an instrument for interprofessional education, but they are not synonyms[36]. They complement each other.

The representation that the understanding about interprofessionality and interdisciplinarity brings to a teaching proposal shared among different courses is much beyond a theoretical definition of concepts. It involves intentionality in the choices of teaching and learning experiences in the practice scenario and in the very objective intended with the discipline. It is not about imprisoning pedagogical action inside concepts; rather, it is about understanding the concepts to potentialize the pedagogical action.

The students reinforce the importance of curricular experiences that enable greater interaction among courses, dialog among professions, respect for the other's opinion, and teamwork, which will reflect on the world of work and on the way in which care is provided for people.

> [...] the opportunity of having contact with colleagues, being able to understand the colleague's point of view early in the undergraduate course will enable that, when you graduate and are included in the job market, you work in a multidisciplinary team. So, if you're able to have this view early on, this understanding that the other professional's opinion is important, that the other professional's work is important, this will help you in the future, when you start working. And it'll surely reflect on the service you provide for the patient. (E6 - Pharmacology)

The neglect of teamwork by undergraduate education will bring difficulties both to communication among different health professionals and to their capacity for listening and solving the problems presented by people in the healthcare process.

> Many of us go to the health, education, assistance, safety services... without the slightest idea of how to work in teams. Then, every sort of communication noise happens, because each professional wants to work in a way, thinking each one knows better what to do. And

> the patient/user loses because hardly ever someone listens beyond the patient's symptom or difficulty, but when we work with people, we must have sensitivity to listen and build things together. (EE1 - Psychology)

Teamwork is a modality of collective work. It is a mutual relationship between technical interventions and the interactions of its agents[41]. Collaboration elements reverberate, like respect, trust, shared decision-making, and partnerships in the sharing of responsibilities[37].

Things learned specifically for the performance of teamwork that were found in this study are related to collaborative competencies, involving communication and comprehension of professions' roles and competencies, understanding of the interdependence relation among professions, and user-centered care[38].

The communication enabled by the interaction with students from different courses was, to graduates and students, an exercise of respecting and valuing the other person's opinion, as well as an exercise of asking for the views of different professionals to be able to provide comprehensive care.

> It is an exercise of being able to hear and value what the other thinks, no matter if you agree or not. (EE8 - Nursing)

> Perhaps the most important lesson is not to rely only on what we see and try to ask other opinions, accept different opinions, and have this multidisciplinary, interdisciplinary view - an integrated and attentive look. (E12 - Physiotherapy)

A systematic review of teamwork carried out by Nancarrow et al.[42] has shown that communication, as the skill of discussing and solving problems as a team, is one of the principles of teamwork. Communication involves hearing the others attentively and creating an atmosphere of trust among team members, as well as negotiation, interaction, debate, and transparency[12,37]. It is the common denominator of teamwork[43] because it allows actions permeated by the articulation of intra- and inter-team practice[18]. Thus, it is important to promote activities that foster the integration of interdisciplinary and interprofessional relations, as well as the interaction between them, so that this competency can be developed.

A teaching activity that stimulates hearing the other person's knowledge[44,45], being, therefore, marked by moments of dialog among professions, is the basis for the establishment of collaboration. It is also a bet: When these professionals start working in teams, they will be able to improve clinical practice in the health services, which is one of the objectives of interprofessional education[15].

Another example of collaborative competency in the area of health observed in this research was translated as the importance of understanding the professional roles clearly to be able to work in a team. Students interact and learn, together, the functions of other professions that, up to that moment, had been unknown to them.

> We exchanged many experiences in relation to the other professions. I didn't know anything about Biomedicine, I had no idea what they studied, what they did. [...] Pharmacology people, how the pharmacologist interacts, everything he does. [...] The area of Nutrition, all the contact the nutritionist had with the Unit [...]. This contact was very rich. Talking to them, I got to know the reality of health. (E7 - Collective Health)

In this interaction, there is the recognition that one profession complements the other for collaborative teamwork, that is, there is an interdependence among professions.

> The discipline surely gave me tools to work in a team today [...] especially the capacity for understanding the role of each one in the team. We have different roles that communicate with and complement each another. (EE8 - Nursing)

Likewise, the teachers perceive, in the discipline, the 'form of action' of different health professions, which enables the transformation/reconstruction of the specific knowledge of their professional nucleus.

> [...] we do not deconstruct this nucleus, but we transform and reconstruct it, or we see it in another way. (Teachers - Focus Group)

Understanding this interdependence is fundamental to interprofessional education and work. It facilitates breaking the barriers among professions and establishing collaborative practices and horizontal relationships in health teams[4].

The discipline's integrative characteristic allows students to learn important aspects of user/patient/person-centered care, another collaborative competency. Meeting users in the place where they and their family live and understanding this context of life enable students to shift from the identification of needs under the professionals' perspective to an understanding of users' health conditions based on their living conditions.

> You've got to understand the patient's reality to provide care [...], give instructions about treatment procedures or sample collections for examinations according to that person's reality. This is fundamental to obtain the patient's adherence to the treatment. (E6 - Pharmacology)

As professionals center their work process on the user and on their health needs, they shift the focus from a professional action restricted to the sphere of profession and specialty to a practice shared with professionals from other areas[46].

Thus, the integrative discipline has the potential for developing a collaborative work in health, marked by learning about and with other professions, and centered on the needs of people in their own territory - characteristics of interprofessional education.

Challenges and perspectives of interprofessional education in undergraduate health courses: institutional and physical, cultural and pedagogical dimensions

One of the challenges for the development of interprofessional education found in this study refers to the context of the educational institution. An integrative activity within a university structure grounded on departmental organization and uniprofessional curricula is permeated by fear of what is 'new', 'different', translated as resistance expressed by areas and professions.

> Since the beginning, PIS I emerged as an experimental project crossed by a set of contradictions. The contradiction of fragmentation in departments, but there is also another contradiction, which is the university. There is some fear of innovation translated as resistance against some issues related to the private interest of some areas of knowledge, of some professions in the daily routine. (University Manager)

A curriculum model organized exclusively by education nuclei is a barrier to integration among courses. Curricular weaknesses are observed when it is necessary to adapt competencies to the needs of people, of teamwork, and of interprofessional education[4]. Education structured in a uniprofessional way hinders integration and interaction among students. What prevails is the exclusive formation of knowledge and actions specific to each professional nucleus, contributing stereotyped conceptions and ignorance about the responsibilities and roles of the other health professionals[12,13,39,40].

Although the integrative discipline represents the only curricular opportunity, for the 15 courses involved, in which the principles of interprofessional education can be discussed and experienced in practice scenarios of the SUS, it is not an obligatory discipline and it offers four seats for each course every semester. Therefore, its scope is limited as an educational offer to the majority of undergraduate health students of this university. To have practices that effectively integrate different health courses, it

is fundamental that the curriculum offers teaching activities with this proposal. This was recognized in graduates' and students' narratives when they highlighted the importance of integration in education to consolidate these integrative practices, understanding that the discipline should be obligatory: "If the federal government has the idea of having an integrative practice, it is essential that there is integration in education; then, PIS I would have to be obligatory" (E9 - Physical Education).

Likewise, the literature reinforces that interprofessional education should be a proposal that complements uniprofessional education[12], being offered as an obligatory discipline. If interprofessional education is offered with a voluntary or elective character, this can imply that it has less importance, reducing students' commitment[13].

A segmented curricular structure comes together with an architecture divided in campuses and different buildings for each course, hindering exchange, interaction, and integration. The integrative discipline, in this context, seems to have been able to overcome the geographical limit of these physical barriers.

In addition, it is possible to notice the need to qualify the pedagogical strategy to integrate courses. During the discipline, students and graduates mentioned the absence of 'formal' spaces for exchanges about what they were experiencing in the territories, which occasionally happened in informal spaces, as the report below shows:

> When I came back [from the experience in the territory], I was with a colleague from Public Policies on the bus. We talked about territorialization and she asked me what had caught my attention. The first thing that came to my mind was the rehabilitation of the old man with CVA and the movement he could already do with the arms which he hadn't been able to do before, that is, the autonomy he was gaining. And she said 'Wow, I saw something totally different: How their situation in the house was precarious, without accessibility conditions for that man. He had to take legal action to be able to retire, because they didn't want to retire him!'. Her view was totally different from mine. (E13 - Physiotherapy)

Just gathering students from different courses in one experience does not guarantee integration or interaction. To promote integration, interaction, and interprofessionality, it is necessary to think of pedagogical strategies that stimulate discussion, reflection, and critical analyses on actions in the area of health, so that culturally rooted perceptions of professions can be deconstructed and new ways of producing comprehensive care are created.

The teachers also emphasized the need of spaces for reflecting on and planning the discipline, which is hindered by the challenge of each teacher's institutional responsibilities in their course of origin.

Critical reflection on what has been performed is fundamental to improve practice - critical reflection "between doing and thinking about what was done"[45] (p. 43). The importance of faculty development, announced by the teachers of the integrative teaching activity, is broadly discussed in works that deal with interprofessional education. It is considered necessary for the success of an interprofessional education initiative[4,12,15,47]. Continuing education that reflects on pedagogical practice in the collective dimension is one of the conditions to a successful implementation of curricular innovations[34,48-50].

It is necessary to have a strong and consistent institutional support - mainly an engaged team of teachers that bets on and believes in this pedagogical strategy -, institutional policies and resources to develop and implement interprofessional education, investment in knowledge about it, dissemination of the proposal, time for planning, and good communication among the actors involved[26].

Interaction among professions presents undeniable potentialities, but it also unveils a set of issues that challenge integration among courses, such as the educational institution's context, departmentalization, uniprofessional curricula, and the pedagogical aspects of the discipline. Although PIS I is recognized by the academic community and by the university's management, it is necessary to advance. The discipline cannot continue to be the only possibility, in the curriculum, of a teaching activity grounded on integration and interaction, and it cannot continue to be non-obligatory. It is

necessary to flexibilize the curriculum, including interprofessional education initiatives or establishing common curricula[16,47].

Beyond public policies and institutional support, the consolidation of interprofessional education initiatives involves the articulation of actors involved with the educational process in the area of health: Health professionals from the services, teachers and students, expanding integration spaces and fostering learning processes involving different professional nuclei.

As a limitation of this research, it is important to mention the absence of the USF professionals' perception in relation to the integrative discipline. Due to its integrative aspect, it is essential to invest in further research to evaluate and monitor this activity in the health services, with students who participate in it during their academic trajectory in different courses, and with graduates inserted in the world of work.

Final remarks

Experiencing an integrative teaching activity that is part of the undergraduate curriculum and is performed in practice scenarios of the SUS promotes sharing and feelings of strangeness from different perceptions. It enlarges the future health professional's perspective, creating new spaces for reflection and construction of knowledge, and adding new learning to education: Knowledge about different health professions and teamwork organization grounded on collaboration. Thus, it is a powerful strategy for the development of interprofessional education.

Concerning challenges related to curricular practices of interprofessional education, it is necessary to offer opportunities to qualify teachers' work, as well as continuous spaces for debate and reflection among different actors. Working with students from different courses and promoting learning articulations among them is a new and challenging experience to teachers. Faculty development can reduce feelings of isolation and support a more collaborative approach, in order to amplify opportunities to share knowledge and experiences.

The study showed the need to expand interprofessional education initiatives in undergraduate courses, in order to build knowledge beyond the professional nucleus of each student, improving teamwork education.

Authors' contributions

The authors participated actively in all the stages of the preparation of the manuscript.

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