Implementation barriers to interprofessional education: an analysis of the Educação pelo Trabalho para a Saúde Program (PET-Saúde)

Barreiras à implementação da educação interprofissional: uma análise do Programa de Educação pelo Trabalho para a Saúde (PET-Saúde)[1]

Rachel Brinco de Souza[a]
https://orcid.org/0000-0001-8563-3525
E-mail: kelbrinco@yahoo.com.br

Carinne Magnago[b]
https://orcid.org/0000-0001-8799-3225
E-mail: carinne@usp.br

Tania França[a] (*in memoriam*)
https://orcid.org/0000-0002-8209-9811
E-mail: taniafranca29@gmail.com

José Rodrigues Freire Filho[c]
https://orcid.org/0000-0003-1306-9368
E-mail: joserodrigues.saude@gmail.com

[a]Universidade do Estado do Rio de Janeiro. Instituto de Medicina Social Hesio Cordeiro. Rio de Janeiro, RJ, Brasil.

[b]Universidade de São Paulo. Faculdade de Saúde Pública. Departamento de Política, Gestão e Saúde. São Paulo, SP, Brasil.

[c]Universidade de São Paulo. Faculdade de Medicina de Ribeirão Preto. Departamento de Medicina Social. Ribeirão Preto, SP, Brasil.

Correspondence
Carinne Magnago
Av. Dr. Arnaldo, 715, Cerqueira César. São Paulo, SP, Brasil.
CEP 01246-904.

Abstract

This study analyzes the barriers undergraduate health courses participating in the Educação pelo Trabalho para a Saúde (PET-Saúde), in Rio de Janeiro, face to implement interprofessional education. An exploratory and qualitative case study was conducted with 32 participants from PET-Saúde, a program that promotes curricular changes in undergraduate health courses. Data were collected in 2020 by means of individual interviews. Thematic analysis of the data identified sociopolitical, institutional, and relational barriers. Degradation of the health system and the regional violence hindering healthcare activities were the main sociopolitical barriers. In turn, institutional barriers included curriculum rigidity, university administrator turnover, and lack of evaluation methods for innovative interprofessional education. As for relational barriers, professional silos hindering collaborative efforts, top-down power hierarchies resistant to feedback, and unsatisfactory communications among stakeholders were the main complaints. Overcoming these barriers requires intersectoral public policies, greater integration among professionals, healthcare, and education systems, and recognizing that interprofessional education can improve public health, reduce healthcare costs, and ensure professional satisfaction and work safety.
Keywords: Interprofessional Education; Interdisciplinary Practices; Interprofessional Relations; Teaching Care Integration Services.

Resumo

Este estudo analisa as barreiras para a implementação da educação interprofissional de cursos de graduação em saúde do estado do Rio de Janeiro participantes do Programa de Educação pelo Trabalho para a Saúde (PET-Saúde). Foi conduzido um estudo de caso exploratório e qualitativo, com 32 participantes do PET-Saúde, que busca promover mudanças curriculares nos cursos da saúde. Dados foram coletados em 2020 mediante entrevistas individuais e submetidos à análise temática. Foram identificadas barreiras sociopolíticas, institucionais e relacionais. As sociopolíticas incluem o sucateamento do sistema público de saúde e a violência nos territórios de atuação das equipes de atenção primária, enquanto as institucionais incluem a rigidez curricular, a rotatividade dos gestores universitários e a incipiência dos processos de avaliação das experiências inovadoras de ensino. Na dimensão relacional, o elemento central é a força dos silos profissionais e das relações de hierarquia e poder entre os diferentes profissionais de saúde. A superação dessas barreiras implica a mobilização de políticas públicas intersetoriais, maior integração entre os sistemas profissionais, de saúde e de educação, e o reconhecimento de que a educação interprofissional é uma rota potencial para melhorar a saúde da população, reduzir os custos da assistência e garantir satisfação e segurança aos profissionais.

Palavras-chave: Educação Interprofissional; Práticas Interdisciplinares; Relações Interprofissionais; Serviços de Integração Docente-Assistencial.

The training of health professionals and interprofessional education

Innovative reforms in education systems for health professionals have been tested since the beginning of the 20th century, with the release of the *Flexner Report* in 1910. Despite the progress made, reforms have not been able to equitably meet and respond to the numerous past and current challenges impacting the health field. This is largely due to outdated and fragmented curricula that result in graduates who are ill-prepared to address various populations' health needs (Frenk et al., 2010).

The 21st century has witnessed additional challenges, such as aging populations, persistent scourges like malaria and tuberculosis, antimicrobial resistance, and novel coronaviruses. These add to new infectious, environmental, social, and behavioral risks when accelerated demographic and epidemiological changes indicate a potential increase in chronic noncommunicable, degenerative, and mental health conditions (Frenk *et al.*, 2010; Barret *et al.*, 2015). Our global health challenges cannot be adequately addressed by episodic and uniprofessional health practices that primarily focus on acute problems (World Health Organization, 2010).

New and dynamic patterns in health-disease processes demand a new professional profile and a more integrated healthcare workforce, consequently requiring a redesign of health training methods aimed at improving interdependence and performance among workers, practices, and health systems (Frenk et al., 2010; World Health Organization, 2010). One globally endorsed proposal is the interprofessional education (IPE) approach, define as occasions when students from different health and social care professions learn together during their professional training to cultivate collaborative practices and technology service models to provide comprehensive care focused on patients and their needs (World Health Organization, 2010; Reeves, 2016). IPE fundamentally supports a training model that values and provides opportunities for joint and interactive learning among students in two or more health professions so they can learn from, among, and about each other and develop attitudes, knowledge, and skills

for collaborative work (World Health Organization, 2010; Reeves et al., 2013).

In the past three decades, IPE has been recognized by health policies and adopted by different countries whose experiences, although isolated, show improved patient outcomes and safety, increased productivity, worker confidence, and access to healthcare (World Health Organization, 2010; Reeves et al., 2013). In Brazil, the hegemonic models of training and healthcare do not support the application of the guidelines adopted by the Brazilian Unified Health System (SUS). In this sense, IPE could help reverse the logic of verticalized and traditionally established education and consolidate interprofessional teams' work processes focused (Peduzzi, 2016).

A product of a broad healthcare reform driven by the public pushing for the country's redemocratization in the 1980s, the SUS was founded on the principle that health is a universal right and a responsibility of the State. The SUS is guided by Primary Healthcare (PHC), which is largely responsible for expanding health services and access and reorienting professional healthcare training and practices (Machado; Silva, 2019).

In the over 30 years since SUS started, Brazil has adopted numerous inductive strategies with technical, political, and financial investments for certifying and managing the health workforce. Policies and programs focused on training, continuing education, job security, regulation, humanization, and negotiation have been established, but many challenges remain. For example, undergraduate and graduate course offerings in health remain disconnected from national needs, with curricula focused on fragmented disciplines rather than preparing students for interprofessional and community-focused activities (Magnago et al., 2020). Furthermore, Brazil has an insufficient number of family physicians and struggles to attract and retain professionals in rural areas. There is little state involvement in the regulation of health occupations, resulting in fragile laws governing professional practices and corporate clashes and disputes about fields of practice (Aith, 2019).

In light of others' positive experiences and calls from international organizations, advocates hoping to address some of these problems have formally introduced the IPE educational approach in Brazil. The conceptual elements of IPE correspond with the founding principles of SUS, which presupposes teamwork; integration between educational institutions, health services, and the community; and the transformation of health practices with continuing education processes focused on everyday healthcare (Peduzzi, 2016).

Although Brazil has already begun implementing some IPE-based initiatives, the initiatives have done little to change Brazil's fragmented health curricula model because they lack boldness, urgency, and theoretical, institutional, and political support (Peduzzi, 2016; Freire Filho; Forster, 2020). Nevertheless, national policies are already beginning to feature interprofessionality as a priority axis for health education changes, as with the Education through Work for Health Program (PET-Health), created through an interinstitutional partnership between the Ministry of Education (MEC) and the Ministry of Health.

Education through Work for Health Program (PET-Health)

Launched in 2008[2], PET-Health aims to foster tutorial learning groups in strategic areas for the SUS through teaching–service–community integration and the belief of education through work. This public policy challenges the consolidation of the SUS and encourages higher education institutions to develop activities involving teaching, research, university extension, and social participation. The tutorial groups comprise academic tutors (teachers), preceptors (service professionals), and undergraduate health students and help set up internships and experiences in public health services. The program awards scholarships from a public selection process that involves the presentation of a two-year intervention project, designed jointly by the educational institutions and

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2 Instituted by Interministerial Ordinance No. 1,802, of August 26, 2008.

the services where the groups will develop activities. Voluntary participation is allowed and encouraged (França et al., 2018).

The first PET-Health program edition focused on strengthening the Family Health Strategy and later extended to other areas of the Brazilian public health sector, such as epidemiological and environmental health surveillance, mental health, and healthcare networks. Although the program made advances, it experienced operational difficulties related mainly to the curricula and political pedagogical projects incompatible with health service needs (França et al., 2018; Magnago et al., 2019).

In 2015, under the thematic title PET-Health/GraduaSUS, the program redirected its focus toward changing the health education curricula to follow the guiding principles of interdisciplinarity, interprofessionality, and comprehensive healthcare. However, one of the program's criteria for intervention projects was the formation of professionally homogeneous tutorial groups, which limited the development of interprofessional activities. Despite this, a national evaluation found that the revised program improved professional development; expanded and diversified learning scenarios; strengthened primary care and IPE; and benefited the local community (Magnago et al., 2019).

Based on Magnago et al.'s (2019) evaluations, a new program iteration, named PET-Health/Interprofessionality, was launched in 2018, aiming to promote curriculum changes in health courses based on collaborative practices and IPE's theoretical and methodological elements. The tutorial groups would need to include at least three undergraduate courses from different professions in this version. Furthermore, the projects should develop PHC activities to strengthen professional development, promote effective healthcare responses and practices, and stimulate collaborative skills. This iteration involved 120 projects across 25 Brazilian states from public (72.5%) and private nonprofit (27.5%) educational institutions. The program formed 548 interprofessional learning tutoring groups involving 7,302 members: 4,013 students; 2,092 teachers; and 1,197 preceptors.

Aim

Considering the expiry date of the PET-Health/Interprofessionality iteration and its distinctive character and potential contributions to transforming Brazilian healthcare education, this study aimed to comprehend and analyze the barriers to implementing IPE in undergraduate healthcare courses in the state of Rio de Janeiro, Brazil.

Methods

We conducted this exploratory, qualitative case study in the state of Rio de Janeiro in the Southeast region of Brazil. Although it is Brazil's third-smallest state, Rio de Janeiro is also Brazil's third-most populous (17.4 million) and has the second-highest national gross domestic product (US$134 billion, nominal), the fourth-highest human development index (0.796), and one the highest concentrations of vacancies in undergraduate and graduate health courses.

The study examined ten intervention projects (approved by the Ministry of Health) from the state of Rio de Janeiro involving ten teaching institutions and 510 members (253 students, 161 preceptors, 86 tutors, and ten project coordinators), the study's population of interest. To determine the sample size, we considered 304 tutoring group members from five university campuses that had participated in the previous iteration of the program (PET-Health/GraduaSUS) since we assumed that those institutions had the most opportunity to make curricular changes to incorporate IPE and recognize persistent challenges.

We began recruiting research participants by inviting the five project coordinators and asking them to invite other program members, including at least two students from different courses, one preceptor, and one tutor. Five coordinators, 11 students, nine preceptors, and seven tutors ($n = 32$) agreed to participate. Most of the coordinators, tutors, and preceptors had nursing ($n = 8$) or medicine ($n = 4$) degrees, had been working professionally for more than ten years ($n = 16$), had doctoral-level degrees ($n = 10$), and had participated in other

PET-Health iterations (*n* = 13). The 11 participating students were undergraduates in years 3-5 studying nursing, medicine, nutrition, psychology, or social work.

We collected data between May and September of 2020 using virtual individual interviews conducted by Google Meet and guided by an unstructured script containing questions related to teaching approaches that introduced IPE's theoretical and methodological elements. We developed this tool and had previously tested it with a small similar group for internal validation. The data collection was done by the first author, who has a master's degree in public health and is a nurse, teacher, and researcher experienced in conducting qualitative research who also served as project coordinator under PET-Health. Prior to the interviews, participants were informed about the research aims, the researchers' credentials and their motivations for developing the study.

We recorded the interviews, which lasted an average of 54 minutes, with the participants' consent. All of them declined the offer to receive the transcripts of their interviews for review prior to analyses. After each interview, we immediately transcribed the recordings in full and subjected them to thematic analysis via the following steps: familiarization with the data to ascertain the overall meaning through repeated readings of the transcripts; coding and grouping of similar quotes; and definition of themes for the groupings of quotes (Braun; Clarke, 2006). Data codification and analyses were performed jointly by all authors.

We reached theoretical saturation, confirmed through the absence of new elements in each code grouping for the coordinators, preceptors, tutors, and students, which verified the sufficiency of the sample size (*n* = 32). Given the magnitude of the research and the high data density, this article presents only the results relating to the specific topic of barriers to implementing IPE, analyzed and discussed based on the theoretical and methodological framework encompassing the interprofessional approach.

This research project was submitted and approved by the Research Ethics Committee (Opinion No. 3.899.608) and followed all ethical aspects established by both the Brazilian legislation and the Declaration of Helsinki. This article was produced from a doctoral thesis[3], which has already resulted in other publications[4].

Results

The study identified multiple sociopolitical, institutional, and relational barriers to implementing IPE in Brazil, summarized below.

Sociopolitical barriers

This dimension involves the systemic factors over which educational institutions had little or no possibility for intervening; they constitute the institutional externalities of a macropolitical order. Specifically, we identified the following sociopolitical barriers: (1) the decimation of the health system, resulting in a precarious infrastructure, health unit closures, and high professional turnover rates; (2) regional violence that hinders healthcare professionals' activities; and (3) the limitations of PET-Health, which cannot support large numbers of students, teachers, and professionals (Chart 1).

3 SOUZA, R. B. *PET-Saúde/Interprofissionalidade: uma análise sobre o estado do Rio de Janeiro.* 2021. 183 f. Tese (Doutorado em Saúde Coletiva) - Instituto de Medicina Social, Universidade do Estado do Rio de Janeiro, Rio de Janeiro, 2021.

4 BRINCO, R.; MAGNAGO, C.; FRANÇA, T. Movimentos de adaptação das atividades do Programa de Educação pelo Trabalho para a Saúde no contexto da pandemia de covid-19. *Research, Society and Development*, v. 10, n. 6, e46210616029, 2021. BRINCO, R.; FRANÇA, T.; MAGNAGO, C. PET-Saúde/Interprofissionalidade e o desenvolvimento de mudanças curriculares e práticas colaborativas. *Saúde em Debate*, v. 46, n. spe6, p. 55-69, 2022.

Chart 1 – Interview excerpts relating to sociopolitical barriers to implementing IPE

Sociopolitical barriers	Interview excerpts
Limited education support policies	"Although PET-Health is a promoting policy, not even 10% of students are covered. In the institution, we have eight courses participating, and each course has a very large number of students, but only 30 students are receiving scholarships; we have seven volunteers. So, only a few students benefit from the interprofessional training and the opportunity to be in the field and with patients in a different setting." (Tutor 2)
Violence where professionals practice	"Sometimes *on-site* activity in health services cannot happen because of violence in the region. When it's like this, not even the health professionals come to work." (Tutor 6) "The issue of violence is a barrier. Sometimes there are shootings, the invasion of territories. We have to think about the risks this poses for students." (Preceptor 8)
Instability in the health system	"A huge sociopolitical barrier is that the health system is being broken up. And, because of that, health units are closed, health professionals (preceptors) are replaced by others, and primary care teams are dissolved." (Tutor 3) "The internship fields are very small; they do not always accommodate all students." (Student 11) "The turnover among health professionals in health services is a barrier. One day a student goes to meet a professional, only to find another after coming back the next day." (Preceptor 5) "One barrier is the physical space in health units…. Several times we go to a health unit and have keep moving from space to space, from room to room; it's exhausting. There is no structure to welcome the students." (Coordinator 1)

Institutional barriers

This dimension involves the educational institutions' defining structural, philosophical, administrative, and logistical attributes and processes that influence IPE adoption. Specifically, we identified the following institutional barriers: (1) curricula rigidity that did not provide opportunities for students to meet with other students or professionals in different health specialties, which is a fundamental part of the IPE approach; (2) high turnover among university administrators, since management changes could cause discontinuity in the training processes; and (3) incipience of evaluation mechanisms which do not provide opportunities to prove the benefits of IPE induction and implementation strategies leading to new experiences (Chart 2).

Chart 2 – Interview excerpts relating to institutional barriers to implementing IPE

Institutional barriers	Interview excerpts
Turnover among university administrators	"Curriculum change for us is the most complex. Changing university managers is a barrier. I already had an agreement with the senior leadership, but then the administration changed, and everything went downhill from there. And the new manager doesn't have time; he doesn't have an agenda." (Coordinator 3)
Schedule incompatibility for different courses	"It's an arduous task because the curriculum matrix offers little space for us all to be all together. The curriculum is fully organized by disciplines, which often prevents students from being together in health services. If they are in the field at different times, little will change because they will continue to rely only on team meetings as spaces for discussion, and this does not transform the training." (Tutor 2). "One of the biggest barriers to interprofessional training is the curriculum, which is very rigid. We can't establish a joint agenda so that everyone could be together on the same day." (Student 8)

Chart 2 – Continuation

Institutional barriers	Interview excerpts
Evaluation methods that devalue IPE	"We see health teams making changes in their work process based on the effects of PET-Health, and we see students responding more consciously, but we had no way to measure this, and it is something we needed to measure, the impact…. We don't have an indicator for that. We have a process indicator, but we don't have a results indicator. We cannot measure the impact of our actions." (Coordinator 4) "The evaluation processes are limiting and still evolving. There is no evaluation process…. We really need to assess whether there is any change in these students from the perspective of interprofessional work…. I think that the evaluation processes are still very premature. We do not know if, in fact, we are achieving the goal." (Tutor 4)

Relational barriers

This dimension involves the individual and interpersonal micropolitical factors in everyday training spaces and health work—personal interactions and the formation of relationships. Specifically, we identified the following relational barriers: (1) the professional silos hindering collaborative efforts; (2) the top-down power hierarchies resistant to feedback; (3) the unsatisfactory communications among different professional categories and among teaching and service participants (Chart 3).

Chart 3 – Interview excerpts relating to relational barriers to implementing IPE

Relational barriers	Interview excerpts
Professional silos	"The first thing we notice is that even when we discuss IPE, there are still professional silos. People are still very attached to their niches, their areas of expertise. Learning about others, understanding their qualities and what knowledge they can add to their yours, is still a challenge." (Coordinator 1) "From our training, we create a way of seeing things. Each health course is very specific. One professional sees one part of a patient, and another professional sees another part. We cannot see the whole [integrated patient]." (Student 7) "We have to constantly explain to the health professionals why they should listen to academics from other areas of expertise." (Preceptor 3)
Power relations	"The power relations within health services still make it difficult. There is competition between the areas [of expertise] and disputes related to the scope of serve practices." (Tutor 2) "When you approach administrators and health service professionals to explain the program's proposal [and] talk about work processes in health units, there is an initial defensive reaction of saying, 'No! I'm the boss here. I'm the one decides how the team will work.' This is a major barrier: the professionals' inability to deal with healthy differences of opinion and to relate to educational institutions." (Coordinator 5)
Unsatisfactory communications	"An important barrier is communication. Each profession has its internal jargon. And during collaborative work, how is translation done? How do I transform this language, which is common sense for professional categories, into something that can encourage individual, user-centered practices?" (Coordinator 4) "It seems that we—students and professionals from different categories—speak different languages. When we talk or do some work together, it seems like we talk about completely different things." (Student 9)

Discussion

Analyzing the barriers to implementing IPE involves discussing a set of macro-, meso-, and micro-level aspects that help or hinder the success of this approach. Previous studies have indicated that the macro-level aspects include political and institutional support from governments, senior management, and other high-level stakeholders in health, education, and professional systems (Oandasan; Reeves, 2005; Lawlis et al., 2014; San Martín-Rodriguez et al., 2005). Therefore,

it reflects a sociopolitical dimension that presumes the creation of integrated policies aligned with the interprofessional approach.

Brazil's education system is strongly rooted in Flexner's model, although it has changed gradually since the creation of SUS through national policies emphasizing education and health. Many of these policies align with the principles of interprofessionality but are still limited in scope, like PET-Health. This finding supports other national studies establishing the need to implement PET-Health as a more robust, permanent policy expanded to include more participants with extended iterations (Magnago et al., 2019; Freitas et al., 2013). There is a desire for the curricula to be increasingly refined to extend beyond PET-Health so that its achievements could survive and continue should the program end or change. Recently, the National Health Council[5] – a collegiate, deliberative, and permanent body of the SUS comprising workers, patients, administrators, and health service providers – issued a regulation establishing IPE as one of the principles to be incorporated in all undergraduate health courses. The expectation is that this policy could encourage the incorporation of IPE experiences in health curricula.

From another perspective, Brazil has an expansive interconnected network providing healthcare services, including in areas afflicted by armed conflict and violence where healthcare is provided mainly by PHC teams. While such areas could benefit from the presence of healthcare students, the areas' volatility would threaten the students' professional training. Thus, there are practical limits to student placements within SUS, as we cannot place students, healthcare professionals, teachers, and patients at risk. Although the official records from 2009-2019 have proved alarmingly unreliable, more than 620,000 homicides were reported in Brazil during that period. The state of Rio de Janeiro (our study setting), which accounted for 8.7% of this total, with an average annual rate of 32.5 homicides per 100,000 inhabitants (Cerqueira et al., 2021).

Experts claim that the number of interpersonal crimes and crimes of passion will continue to increase because of the federal government's increasingly permissive firearms and ammunition policies since 2019 (Cerqueira et al., 2021). For the healthy field, increased violence leads to an increased need for healthcare services; however, it also threatens the delivery of those services. As it is a diffused and complex phenomenon, violence has social, economic, political, and health ramifications, requiring interdisciplinary discussions to develop mutually agreed-upon workable solutions (Santos et al., 2020).

The study participants cited the precarious healthcare infrastructure and high professional turnover as significant barriers to implementing IPE and introducing students to the reality of SUS, which aligns with Argentino et al. (2020). These precedent factors directly correlate to the underfunding of SUS and the lack of cohesive public health work management policies. This scenario has been exacerbated by the progressive weakening of Brazil's social policies, which the current conservative administration wants to discontinue. Brazil's political shift towards extreme right-wing populism, accompanied by its fiscal austerity policies, threatens its democracy and its citizens' constitutional right to health (Castro et al., 2019).

Also from the macropolitical viewpoint, the Brazilian professional regulation system promotes a perspective that denigrates cooperation and collaboration and venerates autonomy and self-regulation. Professional councils (federal autarchies recognized and authorized by the State to supervise and discipline professional practices) have normative-regulatory powers that allow them to define the professionals' activities. These regulations often lead to jurisdictional disputes over particular or exclusive acts and reaffirm professional tribalism (Magnago; Pierantoni, 2021).

This study found that institutional challenges imposed by administrative and logistical processes of educational institutions represented barriers to implementing IPE—specifically, curriculum rigidity,

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5 Conselho Nacional de Saúde. Resolução nº 569, de 8 de dezembro de 2017. Brasília, DF: Ministério da Saúde, 2018.

high administrative turnover, and pedagogic evaluation methods that did not measure IPE achievements. Pirrie et al. (1998) would have called these meso-level barriers internal inhibitors that impede players' participation by funneling their energy and time toward logistical obstacles. For example, administration turnover could discontinue agreed-upon policies and practices, so those proposing to expand IPE practices have to repeat the process of gaining administration approval. Thus, securing a high-level commitment for initiatives that promote IPE is essential.

Studies from different countries have reported other problems related to the academic environment, such as training processes based on obsolete methodologies; lack of encouragement for teachers; and variations in learning needs and knowledge levels among students from different professions (Ahmady et al., 2020; Katoue et al., 2021). Although these also apply to Brazilian reality, they might not have affected PET-Health participants since they were the target of recent interventions.

Since 2017, Brazil has been developing a plan for IPE implementation, training preceptors, teachers, and administrators of undergraduate health courses and developing events and an innovation laboratory to disseminate ongoing course experiences in Brazil and elsewhere (Freire Filho; Forster, 2020). PET-Health/Interprofessionality tutors and preceptors also went through a training process sponsored by the Ministry of Health to receive similar technical support for developing interprofessional intervention projects.

Finally, the micro dimension involves interpersonal relationships in daily life in training and health work, and the attitudes and positions of openness or resistance toward interprofessional collaboration (Lawlis et al., 2014; Oandasan; Reeves, 2005; San Martín-Rodriguez et al., 2005). In this sense, they reflect the relational barriers identified by this study. Our study participants reported that professional silos were barriers to collaboration. They emphasized the need to revise the homogenous training model that persists despite numerous policies encouraging education reforms, such as PET-Health.

These different policies have strengthened teaching–service–community integration, encouraged more active methodological strategies, and catalyzed curriculum changes that incorporate relevant transformations in educational dynamics among health professionals. However, there is still resistance toward jettisoning the dominant training model, which legitimizes and is legitimized by technology service models based on work fragmentation. Thus, professionals continue to train separately even though they will have to work together in the future, an inconsistency that has important implications in the quality of care offered within SUS (Barr, 1998).

Reeves (2016) argued that bringing students or professionals from different fields together in the same space does not necessarily lead to interprofessionality. Teaching processes must promote new professional stances and relationships and be oriented toward skills development, knowledge integration, and attitudes that enable students, as future professionals, to act collaboratively (Barr, 1998). This is because the traditional training process encourages the creation of rigid professional identities that perpetuate hierarchical power relations, obscuring the potential of collaborative partnerships between different areas. Even when some changes are made to encourage the development of interprofessional collaboration, professional silos continue to prevail unless we specifically address professional identity and power differentials (Meleis, 2016).

Another key issue is that students in uniprofessional programs spend significant amounts of time learning that specialty's jargon and nurturing their own practices in their professional communities. Efforts to protect and safeguard their "tribe" can lead to elitism and isolation (Pecukonis, 2014). Our study participants noted that this increases communication difficulties and interpersonal conflicts within educational institutions and services. These various forms of power struggle, which are not always obvious, interfere with communications among different professionals, blurring the lines between legitimate forms of dispute and conflicts triggered by vanities

or personal interests. In this sense, IPE promotes the development of communicative and conflict-resolution skills that strengthen dialogue, co-responsibility, and co-management of care (Hepp et al., 2015).

Our findings suggested that to effectively implement IPE in Brazil, we need to address some important macro-, meso-, and micro-level challenges and lower several sociopolitical, structural, institutional, and relational barriers. This will include investments in improving health units into interprofessional teaching and learning spaces; financial and technical support allocation to educational institutions; and binding agreements and commitments between the different parties involved in training (Peduzzi, 2016; Reeves, 2016). We will also need to offer and implement teaching and learning methodologies and evaluation mechanisms consistent with the interprofessional approach (Reeves, 2016).

This also implies using IPE and collaborative practices as potential strategies to achieve the Quadruple Aim, which consists of a multidimensional approach aiming to simultaneously enhance the patient experience, improve population health, reduce healthcare costs, and improve the work life, satisfaction, and safety of health professionals (Bodenheimer; Sinsky, 2014). IPE operates at the boundary between educational and health systems, and the principles and guidelines of the SUS encourage the development of collaborative practices. Both of these factors highlight the benefits of implementing IPE in Brazil (Hepp et al., 2015). Thus, we should intensify our efforts to increase its application, learn more about its strategies, and prioritize our investments in interprofessional experiences.

Our findings were similar to the results of studies conducted in other countries (e.g., Katoue et al., 2021; Yamamoto et al., 2021). These studies found that barriers to implementing IPE included insufficient funding and policy support, separated and rigid curricula, and the culture of individualism and specialization. However, our research also identified several barriers specific to Brazil, such as an unstable healthcare infrastructure aggravated by the administration's right-wing political leanings and the violence threatening the daily lives of professionals, patients, teachers, and healthcare students.

Because of its exploratory and qualitative nature, this study had several limitations that could be seen as opportunities for future studies. One limitation of exploratory research, exemplified herein by the interviews, is that it relies on the researchers' interpretations of the statements provided. Inferences derived from participants' statements could be influenced by the researchers' perceptions and biases. This study tried to minimize this effect by gauging the findings against those of similar studies.

Other study limitations were that we restricted the setting to a single Brazilian state and our study population comprised just 32 participants linked to only five educational institutions. Thus, the results might not be generalizable to other populations, regions, or countries. However, they identified barriers to implementing IPE that could apply to other contexts.

Final considerations

The results of this study showed that IPE implementation in Brazil would involve relational, institutional, and sociopolitical challenges. The barriers include interpersonal conflicts between students and health professionals resulting from traditionally established hierarchies and power relations and the weaknesses of educational institutions reflected in rigid curricula and training processes. Overcoming these barriers will require greater integration between teaching and services, the central axes of SUS education policies.

We also identified systemic problems over which educational institutions have little control, such as the rising violence that prevents professionals from practicing safely. Our study was the first to identify violence as a relevant barrier in the Brazilian context. Removing this barrier will require investments across different sectors, with the essential mobilization of public safety policies in tandem with those of education and health.

We hope that our findings and reflections increase the visibility of PET-Health and the

interprofessional approach and their relevance and benefits for Brazil. We also hope that comprehensive and ongoing evaluation processes will be developed that support the necessary directions and ensure that the program and the IPE will have a space of recognition.

Our findings identified specific barriers that must be lowered or removed to implement IPE, a political–pedagogical strategy that prepares health professionals for collaborative work and patient-centered care. Implementing IPE in Brazil could help the country's healthcare professionals deliver safer, more effective care; increase productivity and job satisfaction; expand access to health; and reduce healthcare costs.

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Authors' contribution