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RESEARCH

INTERPROFESSIONAL PRACTICES AND COMMUNICATION IN A MULTIPROFESSIONAL HEALTHCARE RESIDENCY PROGRAM: A MIXED-METHODS STUDY

PRÁTICAS E COMUNICAÇÃO INTERPROFISSIONAIS EM UMA RESIDÊNCIA MULTIPROFISSIONAL EM SAÚDE: ESTUDO DE MÉTODOS MISTOS

PRÁCTICAS Y COMUNICACIÓN INTERPROFESIONALES EN UNA RESIDENCIA MULTIPROFESIONAL EN SALUD: ESTUDIO DE MÉTODOS MIXTOS

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ABSTRACT

Objective: to analyze the implications of communication on the availability and development of interprofessional practices in a multiprofessional healthcare residency program within a hospital setting. **Methods:** a mixed-methods study, designed using concurrent triangulation, involving residents and preceptors. Data were collected using standardized instruments, interviews, and nonparticipant observation. The analysis was conducted by integrating the data, combining quantitative and qualitative information to identify convergences, divergences, and complementarities. **Results:** the integration of the findings revealed high scores regarding availability for interprofessional education and attitudes favorable to collaboration, alongside challenges related to communication and the delineation of professional roles. The articulation between the different sets of information shows that, although there is a willingness to collaborate, communication barriers impact the implementation of interprofessional practices in the context studied. **Conclusions:** communication constitutes a central pillar for strengthening interprofessional collaboration, requiring strategies for coordination and shared planning of actions. The mixed-methods analysis highlights the importance of improving communication processes, especially during shift transitions.

Keywords: Cooperative Behavior; Interprofessional Education; Patient Care Team; Internship and Residency; Interprofessional Relations.

RESUMO

Objetivo*: analisar as implicações da comunicação na disponibilidade e no desenvolvimento de práticas interprofissionais em uma residência multiprofissional em saúde no âmbito hospitalar.* ***Métodos****: estudo de métodos mistos, delineado pela triangulação concomitante, envolvendo residentes e preceptores. A coleta de dados foi realizada por meio de instrumentos padronizados, entrevistas e observação não participante. A análise foi conduzida por meio da mixagem dos dados, articulando informações quantitativas e qualitativas para identificar convergências, divergências e complementaridades.* ***Resultados****: a integração dos achados revelou escores elevados de disponibilidade para a educação interprofissional e atitudes favoráveis à colaboração, acompanhados de desafios relacionados à comunicação e à delimitação das funções profissionais. A articulação entre os diferentes conjuntos de informações evidencia que, embora exista disposição para a colaboração, as barreiras comunicacionais impactam a efetivação das práticas interprofissionais no contexto estudado.* ***Conclusões****: a comunicação constitui um eixo central para o fortalecimento da interprofissionalidade, exigindo estratégias de coordenação e planejamento compartilhado das ações. A análise mista reforça a importância de aprimorar os processos comunicativos, especialmente durante as passagens de plantão.*

Palavras-chave: *Comportamento Cooperativo; Educação Interprofissional; Equipe de Assistência ao Paciente; Internato e Residência; Relações Interprofissionais.*

RESUMEN

Objetivo*: analizar las implicaciones de la comunicación en la disponibilidad y el desarrollo de prácticas interprofesionales en una residencia multiprofesional en salud en el ámbito hospitalario.* ***Métodos:*** *estudio de métodos mixtos, diseñado mediante triangulación concomitante, en el que participaron residentes y preceptores. La recopilación de datos se llevó a cabo mediante instrumentos estandarizados, entrevistas y observación no participante. El análisis se realizó mediante la integración de los datos, articulando información cuantitativa y cualitativa para identificar convergencias, divergencias y complementariedades.* ***Resultados:*** *la integración de los hallazgos reveló puntuaciones elevadas de disponibilidad para la educación interprofesional y actitudes favorables hacia la colaboración, acompañadas de desafíos relacionados con la comunicación y la delimitación de las funciones profesionales. La articulación entre los diferentes conjuntos de información evidencia que, aunque existe disposición para la colaboración, las barreras comunicacionales afectan la implementación efectiva de las prácticas interprofesionales en el contexto estudiado.* ***Conclusiones:*** *la comunicación constituye un eje central para el fortalecimiento de la interprofesionalidad y requiere estrategias de coordinación y planificación compartida de las acciones. El análisis mixto refuerza la importancia de mejorar los procesos comunicativos, especialmente durante los pases de guardia.*

Palabras clave: *Conducta Cooperativa; Educación Interprofesional; Grupo de Atención al Paciente; Internado y Residencia; Relaciones Interprofesionales.*

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INTRODUCTION

Communication performs a crucial role in the development of interprofessional practices in healthcare, especially in the hospital setting, where the complexity of care, the need for prompt assistance, and the often critical nature of medical situations require precise coordination and effective information exchange among professionals[1]. In this and other settings, communication strengthens trust and cooperation among team members, fostering collaborative practices[2].

Despite this, several factors can negatively impact interprofessional communication. Among these are the use of technical terminology restricted to certain professional groups, the hierarchy among professions, difficulties with time management, inadequate infrastructure, a shortage of digital skills, and a lack of specific training to develop communication skills[2–4].

A lack of effective communication can have significant consequences for the availability and effectiveness of interprofessional practices, leading to a fragmented and uncoordinated approach to patient care[5,6]. In light of this, it is essential to explore the implications of communication in Multiprofessional Healthcare Residencies (MHRs) within the hospital setting.

The integration of MHRs into hospital settings represented a significant advance in education and care by fostering interprofessional practices within this healthcare setting. These practices promote the sharing of knowledge among professionals from various fields, fostering a more integrated educational approach and improving the quality of care[6,7]. However, maximizing the benefits of MHRs depends on the effectiveness of various components, particularly those related to communication.

In this sense, understanding communication-related issues is essential, given that there is still a lack of studies addressing how communication challenges affect interprofessional education in the Brazilian hospital setting, particularly in MHRs. International research indicates that communication barriers, rigid hierarchies, and insufficient institutional support undermine collaboration and the quality of care[1–3]. In the national scenario, evidence remains limited and points to challenges related to integration among professional groups and to strengthening communication[5,6].

In light of the above, the following questions emerge: What are the main challenges faced in interprofessional communication, and how do these challenges impact the availability and development of interprofessional practices in MHRs in the hospital setting? The objective of this study is to identify these challenges and analyze their implications for the availability and development of interprofessional practices in MHRs in the hospital setting.

METHOD

This is a mixed-methods study with simultaneous triangulation, in which quantitative and qualitative data were collected simultaneously and compared. The integration was achieved through the process of data mixing[8], with the aim of providing a comprehensive understanding of the object of study. Methodological rigor was ensured in compliance with the Mixed Methods Appraisal Tool[9].

The study was conducted as part of an Integrated Multidisciplinary Health Residency program at a federal university in the southern region of Brazil. The program covers eight healthcare professional categories.

The participants were residents and preceptors in the residency program. The study population was defined in the quantitative stage using different strategies for residents and preceptors. For residents, the number enrolled in 2022 was 36 first-year residents (R1) and 27 second-year residents (R2), for a total of 63 residents. For the preceptors, the mean number of professionals on duty over a three-month period (February, March, and April 2022) was calculated, resulting in a population of 165 professionals. The sample was defined with a 95% confidence interval and a 5% margin of error.

In the qualitative stage, which included interviews, 26 individuals participated. To recruit participants, preceptors and residents were contacted by email and/or telephone, based on information collected during the quantitative stage. Invitations were extended in a way that ensured the representation of both preceptors and residents, as well as different professional categories. All those invited agreed to participate in the interviews; no refusals were recorded.

For the qualitative stage of non-participant observation, classes were initially observed for a MHRs curriculum component entitled Integrated Reflection on Multidisciplinary Care, which focused on the discussion of case studies. Based on these observations and the interviews, nursing shift changes and clinical rounds in the Intensive Care Unit (ICU) were included, as they were identified as critical moments of communication and examples of interprofessional practices.

The criteria for participation in the study were as follows: 1) for residents, to be regularly enrolled in the program; and 2) for preceptors, to have any affiliation (e.g.,

civil servant or public employee) with the hospital and to be directly supervising residents. Those on long-term leave, whether residents or preceptors, were excluded.

Both quantitative and qualitative data were collected between May 2022 and February 2023. To collect the quantitative data, the validated Readiness for Interprofessional Learning Scale (RIPLS) was used[10] and the Jefferson Scale of Attitudes Toward Interprofessional Collaboration (JeffSATIC)[11]. Participants were free to choose whether to complete the questionnaire at the time of its receipt, during work, or to take it home and return it completed at a later time.

For the collection of qualitative data, the interviews were guided by a script developed by the researchers, with questions regarding the object of study. They were audio-recorded on a device without a chip and without access to social media or messaging apps, transcribed in full, and organized using the ATLAS.ti software. The interview script underwent a pilot test with former preceptors and former residents, who were not part of the sample and whose data were not included in the study.

For the observation, an observational protocol was developed that included descriptive and reflective notes, covering participants, the setting, and social behavior. The descriptive notes recorded details such as identification, number, sex/gender, age, involvement with the setting, gestures, reactions to interprofessional activities, and communication characteristics (e.g., channels used, predominant styles, interactions with the group, quality of information transmission, among others). Regarding the setting, the observers noted the location of individuals and the characteristics of the three environments analyzed (e.g., physical space, type of care provided, and profile of patients treated, among other aspects). With regard to social behavior, the focus was on interpersonal relationships and how they influence the exchange of information, identifying factors that could facilitate or limit this interaction. In the reflective notes, the observer's perceptions of the observed events were recorded.

The data were collected by a single observer, who recorded three clinical rounds in the ICU, 16 shifts at four different clinics, and eight classes in the Integrated Reflection component. In total, 47 hours of observation and 21 pages of field notes were accumulated. Various times and days were selected for the observations at the clinics and in the ICU, with the aim of capturing the performance of different team members.

Quantitative data were analyzed using the Statistical Package for the Social Sciences (v. 25.0), employing descriptive statistics and nonparametric tests for comparisons between groups. Items 10, 11, 12, 17, 19, and 21 of the RIPLS and items 3, 5, 8, 9, 12, 15, 16, and 19 of the JeffSATIC, which were formulated in the negative sense, had their scores reversed before calculating the total scores. The internal consistency of the instruments in the sample was assessed using Cronbach's alpha. The RIPLS had an overall alpha of 0.83 and coefficients of 0.89, 0.33, and 0.73 for the factors "Teamwork and Collaboration", "Professional Identity", and "Patient-Centered Healthcare", respectively. JeffSATIC had a total alpha of 0.72. To compare residents and preceptors on each item, the Mann-Whitney U test was applied. Considering the 27 items of the RIPLS and the 20 items of the JeffSATIC as distinct families of comparisons, the p-values were adjusted separately for each instrument using Holm's sequential procedure, with a significance level of 5%.

For the analysis of the qualitative data, the interviews were initially transcribed verbatim and then edited for spelling. The analysis followed a thematic content analysis approach[12]. It is worth noting that the documents containing the interview transcripts were sent individually to each participant for validation of the written content, and changes were made when requested by the interviewee.

In the case of the observation, the information from the field notes was organized in Microsoft Excel and grouped by proximity. It was subsequently used as a supplementary resource to the results of the content analysis.

Data mixing was performed through integration, following a concurrent triangulation design, in which quantitative and qualitative data were collected and analyzed in parallel and independently. Subsequently, the results of both approaches were compared and integrated, with the aim of identifying convergences, divergences, and complementarities among the findings. This integration occurred during the interpretive stage, in which the qualitative and quantitative results were merged, generating mutually supportive information for understanding the object of study.

The data presented in this study stem from the thesis entitled Challenges and Opportunities for the Development of Interprofessional Practices in a Multiprofessional Health Residency Program at a Hospital in Southern Brazil[13], which was approved by the Ethics Committee and complied with Resolution No. 466/2012. All participants signed the Informed Consent Form. Anonymity was ensured by using the letter "R" for residents and "P" for preceptors, followed by the initials of their profession and sequential numbers, according to the order in which the interviews were conducted.

RESULTS

A total of 58 residents and 146 preceptors were included in the quantitative stage, in addition to 15 residents and 11 preceptors in the qualitative interviews, along with 27 episodes of non-participant observation. Among the 146 preceptors, the median age was 39 years (27–62 years), while among the 58 residents, the median was 25 years (22–35 years). Regarding gender, 19 preceptors (13.0%) and 12 residents (20.7%) were male, while 127 preceptors (87.0%) and 46 residents (79.3%) were female.

Regarding professions, 79 preceptors (54.1%) were from the field of nursing, followed by 13 from social work (8.9%), 12 from nutrition (8.2%), 11 from pharmacy (7.5%), 10 from psychology (6.8%), 9 from speech-language pathology (6.2%), 8 from physical therapy (5.5%), and 4 from dentistry (2.7%). Among the residents, 16 (27.6%) were from nursing, 11 from social work (19.0%), 11 from psychology (19.0%), 7 from pharmacy (12.1%), 5 from nutrition (8.6%), 3 from speech-language pathology (5.2%), and 3 from dentistry (5.2%), while only 2 were from physical therapy (3.4%).

In addition, with regard to the area of concentration, 93 preceptors (63.7%) and 37 residents (63.8%) were in the high-complexity area. The urgent and emergency care area had 13 preceptors (8.9%) and 11 residents (19.0%), while the women's and children's health area concentrated 40 preceptors (27.4%) and 10 residents (17.2%).

The quantitative analysis revealed high scores for residents' and preceptors' availability for IPE and CP, with some differences between the groups. Among preceptors, the mean scores for Factors 1, 2, and 3 of the RIPLS were 59.4, 31.0, and 22.2, respectively, while the overall RIPLS score was 112.7 and the JeffSATIC scale score was 126.6. Among residents, the mean scores on Factors 1, 2, and 3 of the RIPLS were 61.0, 31.1, and 22.7, respectively, while the overall score on the RIPLS was 114.9 and on the JeffSATIC scale was 128.7.

With the aim of investigating possible differences between residents and preceptors, the responses to each item on the two scales were compared. After applying the Holm correction for multiple comparisons, two differences remained statistically significant, both in the RIPLS. Residents showed greater agreement with the statement that patients would benefit if health science students worked together to solve their problems (P2; adjusted $p = 0.004$) and with the statement that communication skills should be learned together with students from other professions from the health field (P5; adjusted $p = 0.014$). In the item-by-item comparison from JeffSATIC, the results remained significant after adjustment (Table 1).

With the aim of identifying the aspects that received the lowest relative scores among participants, the means for each item on the scales were examined. Although the data did not follow a normal distribution, the means were used to facilitate descriptive comparisons between items, while comparisons between residents and preceptors were performed using nonparametric tests. It should be noted that the selection of the items presented in Table 2 was based on their relative position within each instrument and does not necessarily indicate unfavorable attitudes or low absolute scores. The RIPLS uses a 1-to-5 response scale, while JeffSATIC uses a 1-to-7 response scale.

The items presented in Table 2 corresponded to the lowest relative scores on each scale. On the RIPLS, the lowest means for items P23 and P24 indicated less agreement with a narrow conception of the professional role, focused exclusively on diagnosis and individual treatment. On JeffSATIC, items P15 and P16, which were formulated in the negative, showed high means after recoding, indicating attitudes favorable toward overlapping responsibilities and consulting with professionals from other fields. Item P20 also remained above the midpoint of the scale, although it showed less intense agreement, compared to the other items, regarding the importance of interprofessional experiences during training. The qualitative data complemented these results by demonstrating that a willingness to collaborate was expressed more consistently when there was access to the team and effective channels for communication: "That's why it's important to have good access to and communication with the team… we sat down for approximately 20 minutes and resolved the issue; we reached a conclusion" (P.SSO); "Here at the unit, we're able to communicate with the team and set goals together" (P.FIS1); "In the Neonatal ICU, each case is thoroughly discussed with all professions… this encourages us to want to work as a team" (R.ENF2). These statements are consistent with the high scores regarding openness to interprofessional education and attitudes favorable toward collaborative practice, while also introducing an analysis of the communication conditions necessary for their implementation in daily practice.

During observation, improved communication facilitated rapid, shared decision-making. In integrated reflection sessions, multiprofessional interaction has improved the collaborative approach, resulting in more consistent clinical studies. During ICU rounds, the physician's openness to dialogue facilitated discussions with physical therapists and nurses, expediting the determination of

Table 1 – Comparison of responses between preceptors (n = 146) and residents (n = 58) on items with a raw p-value lower than 0.05, before and after Holm's adjustment. Florianópolis, SC, Brazil, 2025.

Variable	Response with the greatest difference between the groups (preceptors + residents)*	U	p	
			Raw*	Adjusted#
RIPLS				
P1 Will learning alongside other students help me become a more effective member of a healthcare team?	5 (65,1–84,5%)	3.397,0	0,006	0,137
P2 In the final analysis, would patients benefit if healthcare students worked together to solve their problems?	5 (67,1–91,5%)	3.077,0	<0,001	0,004
P5 Should communication skills be learned alongside other healthcare students?	5 (50,0–75,9%)	3.070,0	0,001	0,014
P8 Are teamwork skills essential for the learning of all students in the health sciences?	5 (71,2–86,2%)	3.572,0	0,020	0,444
P13 Will learning alongside students from other health professions help me communicate better with patients and other professionals?	5 (46,6–69,0%)	3.253,0	0,003	0,085
P14 I would like the opportunity to work on projects in small groups with students from other health professions.	5 (35,6–53,4%)	3.340,5	0,009	0,206
P16 Will the collaborative learning I experience during my undergraduate studies help me become a professional who works better as part of a team?	5 (58,2–74,1%)	3.545,0	0,039	0,791
P25 Do I like to look at the problem from the patient's perspective?	5 (35,9–46,6%)	3.492,0	0,034	0,724
P26 Is building a relationship of trust with my patients important to me?	4 (39,7–24,1%)	3.604,0	0,048	0,920
JeffSATIC				
P11 All healthcare professionals should contribute to decisions regarding the improvement of care for their patients/clients.	7 (79,5–91,4%)	3.726,5	0,042	0,755
P13 Healthcare professionals should be aware that their colleagues in other health-related fields can contribute to the quality of care.	7 (74,7–91,4%)	3.521,0	0,008	0,143
P19 Healthcare professionals who work together cannot be held equally responsible for the care they provide.	7 (26,7–48,3%)	3.197,5	0,006	0,124

Note: RIPLS: Readiness for Interprofessional Learning Scale; JeffSATIC: Jefferson Scale of Attitudes Toward Interprofessional Collaboration; *Mann-Whitney U test. #Holm's correction. Source: Research data, 2023.

Table 2 – Items that presented the lowest mean scores compared to the other items on each scale. Florianópolis, SC, Brazil, 2025.

Scale – Question	Mean
RIPLS – P23 Reaching a diagnosis will be the primary focus of my professional role (clinical objective).	2,32
RIPLS – P24 My primary responsibility as a professional will be to treat my patient (clinical objective).	3,23
JeffSATIC – P15 Due to the differences in each role, there are not many areas where the responsibilities of healthcare professionals who provide care to patients/clients overlap.	5,36
JeffSATIC – P16 To promote the best interests of the patient/client, healthcare professionals should use their own judgment rather than consult their colleagues in other healthcare-related fields.	6,09
JeffSATIC – P20 During their training, all healthcare students should have the opportunity to work in teams with students from other healthcare fields so that they can better understand their respective roles.	5,18

Note: RIPLS: Readiness for Interprofessional Learning Scale; JeffSATIC: Jefferson Scale of Attitudes Toward Interprofessional Collaboration; Source: Research data, 2023.

management strategies and exemplifying the resolution of issues mentioned by the social work preceptor (P.SSO). In line with this are the high scores on the RIPLS and JeffSATIC scales, particularly regarding readiness and positive attitudes toward IPE, which may suggest that a willingness to collaborate translates into genuine engagement when communication is facilitated.

However, communication failures persist. Clinical instructors reported having to repeat information and expressed frustration: "Sometimes the medical doctor notes in the progress report that the patient has an allergy, but the next clinic doesn't read that, and the patient has to repeat everything… they're already overwhelmed" (P.PSI). In complex decisions, such as amputation, inadequate communication led to mistrust: "The surgery ends up being canceled, and no one explains why, so the patient thinks there was negligence" (P.SSO). A physical therapist highlighted the lack of alignment regarding goals: "The patient is scheduled for a tracheostomy, but the physical therapist wasn't aware of it" (P.FIS2). These accounts align with the items with the lowest mean scores in the quantitative tables, highlighting that, even with high scores for readiness for IPE, barriers to communication and coordination compromise patient care.

In the observations of shift transitions, reports highlighting communication difficulties were common. For example, in some cases, healthcare professionals disagreed on how to perform procedures and were unable to reach an agreement: "I said it wasn't possible, but the medical doctor went ahead and allowed it; now the patient is doing it" (nurse, observation); "I thought it would be better if the patient didn't get out of bed, but the physical therapist said it was okay" (nurse, observation).

Professional interactions remain focused on individual tasks, with discussions occurring only in response to specific situations. Communication is often informal, occurring in the hallways, and there is little prior organization, as the following reports indicate: "There's no structure for multidisciplinary collaboration… if you need social services, you call them, but never to discuss the case, only when the bomb goes off" (R.SSO1); "We don't have much room for collaboration among professionals… if it doesn't pertain to your work, there's no communication" (R.NUT2).

Among residents and preceptors, there is a fear of retaliation and a perception of being underappreciated: "Out of fear of retaliation, we often refrain from discussing improvements we could contribute to" (R.FON1); "As students, we are not always appreciated as much as preceptors" (R.FON2). In integrated reflection classes, professors encouraged residents to communicate their roles and knowledge to preceptors. During rounds, residents' participation was selective, generally limited to their professional group. Despite high scores on the scales, the observations showed that effective participation was influenced by hierarchies, work contexts, and relationships between professional groups.

Still on the topic of rounds, the participation of the multidisciplinary team was influenced by the profile of the medical doctor, who assumed the leadership role at all observed times. Medical doctors and nurses interacted most frequently; physical therapists were involved in cases requiring ventilatory support, and nutritionists in cases of severe burns. It was observed that, despite the favorable attitudes identified on the scales, interprofessional engagement varied depending on the care context, the professionals' profiles, and the teams' openness to dialogue.

The set of observations, interviews, and quantitative data indicates that communication remains a critical issue for the development of interprofessional practices, with structural and behavioral challenges present in both clinical and educational activities. Figure 1 presents the joint display developed to integrate the quantitative, qualitative, and observational findings.

DISCUSSION

With regard to the attitudes and perceptions of preceptors and residents regarding interprofessional practices, the quantitative analysis identified differences in two items of the RIPLS after adjusting for multiple comparisons. The qualitative analysis deepened the understanding of the perceptions and challenges faced by residents and professionals, reinforcing the contribution of the mixed-methods approach to interpreting the phenomenon beyond differences between groups.

Both preceptors and residents demonstrated high levels of openness to interprofessional practices. This finding may facilitate the implementation of collaborative practices in educational and work settings. Assessing participants' readiness to learn, teach, and collaborate in multiprofessional settings is essential for the successful planning and execution of interprofessional activities [14,15]. For this reason, it is essential to recognize the dimensions of interprofessional practices, the interactions among professional groups, the dynamics of teamwork, and the clarity of each member's roles and responsibilities[2,7].

Figure 1 – Joint display for integrating QUAN+QUAL data. Florianópolis, SC, Brazil, 2025

Result		Integration
Quantitative	Qualitative	
	Availability for IPE and CP	
Me overall scores for preceptors RIPLS: 112.7 JeffSATIC: 126.6 Me overall score residents RIPLS: 114.9 JeffSATIC: 128.7	Interviews (key points) *Communication problems can also be related to our roles. In the inpatient clinic, I've always felt that the ward belongs to the nurses and that we're just an afterthought. We come in, do our rounds, and leave. (P.SSO)* *So even with good communication, there were still difficulties in exchanging information and working with others, depending on each person's individual characteristics. (P.ENF1)* *We're able to work as a team, but I've noticed little openness toward the multidisciplinary team. There's a lack of interaction and even a clear schedule for when professionals should meet to discuss cases, because sometimes there's a meeting and other times there isn't. (P.FIS1)* *When we're able to talk, communication is effective and easier. Actually, it depends on the healthcare professional and the unit. I find that in the ICU, everything is easier because everything is right there. Outside the ICU, though, it's more complicated. (R.FON1)* *Note* There were frequent interruptions in case reporting, especially during shift transitions.	Participants expressed interest in interprofessional practices; however, their practical application still faces significant challenges. Specifically, each individual's professional profile appears to influence their ability to effectively adopt these practices, with communication emerging as a critical area that requires improvement to promote the successful development of these collaborative approaches.
Differences between residents and preceptors after Holm's adjustment		
After Holm's adjustment: RIPLS P2: adjusted p=0.004 RIPLS P5: adjusted p=0.014 JeffSATIC: No item-by-item differences remained significant.	Interviews *I think one of the problems is that the professionals themselves create barriers and have communication issues. (P.ENF2)* *It depends on the person's profile; some professionals like to share, while others don't. (P.NUT2)* *There is greater interaction and collaboration between nutrition and speech-language therapy; for example, they evaluate patients and refer them to us to share their assessment results. (R.ENF1)* *We work closely with the speech-language therapists, based on their evaluations, so we clarify a lot of questions with each other, especially with the nursing team, who are directly involved in patient care, so we have good communication. (R.FIS)* *Depending on where you work here at the institution, you'll have a completely different multiprofessional or interprofessional experience. (P.SSO)* Note Some professionals, professions, and care facilities seem to be more open than others to sharing ideas and collaborative work.	After adjusting for multiple comparisons, the quantitative differences were concentrated in two items of the RIPLS related to the benefits of collaborative learning and the shared development of communication skills. The qualitative and observational findings showed that communication practices vary according to hierarchies, contexts, and professional relationships, thereby broadening the interpretation of the quantitative results.
Items with the lowest relative means on each scale		
RIPLS P23 – Me 2,32 RIPLS P24 – Me 3,23	Interviews *Some of the more senior medical doctors are sometimes resistant to new ideas or even suggestions from the multidisciplinary team; although there are only a few such professionals, they do still exist. (P.FIS2)* *Our own profession wasn't originally intended for hospital work; it's a new reality. So, since our work is largely hands-on, we often don't need input from other professionals, and we work comfortably on our own in the office. (R.ODO1)* *In the theory classes, I notice that, especially in my profession, we're constantly trying to explain why we're here. Of course, this is true of all professions to some extent, but I see it more in psychology and social work, where there's a strong need to justify why we're there; people have a hard time understanding why they should turn to social work or psychology. (R.PSI1)* Note During the integrated reflection sessions and clinical rounds in the ICU, variations in communication among different professions were observed, with some demonstrating greater openness than others.	The lower mean scores on items P23 and P24 indicated less agreement with a narrow conception of the professional role, focused exclusively on diagnosis and individual treatment. The qualitative and observational findings complemented this result by highlighting challenges related to the recognition, delineation, and communication of professional roles in different care settings.

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Result		Integration
Quantitative	Qualitative	
	Availability for IPE and CP	
Items with the lowest relative means on each scale		
JeffSATIC: P15 – Me 5,36 JeffSATIC: P16 – Me 6,09 JeffSATIC: P20 – Me 5,18	Interviews *There is a challenge with social work, precisely because social workers are trained in a field of study other than health. (R.FON2)* *[...] This difficulty in understanding others' work is also largely due to undergraduate training, which is more isolated from other professions. (R.PSI1)* *It is necessary to put an end to this competitiveness among professionals, who try to outdo one another in this or that aspect of patient care. These are people who are unwilling to teach and have difficulty engaging in mutual learning. (R.PSI2)* *There are medical doctors who, when they see the speech-language therapist, don't understand why they are there, because they say the patient is speaking just fine. So they don't even know that we work with swallowing; there are some professionals to whom you'd have to explain, right at the bedside, what your role is there. (P.FON)* Note It was observed that a lack of communication may be related to a lack of awareness of the contributions that a particular profession can make to the care process.	Although items P15, P16, and P20 had the lowest relative means on the JeffSATIC scale, their values remained above the midpoint of the scale. For items P15 and P16, which were phrased negatively and recoded prior to analysis, the means indicated favorable attitudes toward overlapping responsibilities and consulting with professionals from other fields. Item P20 also indicated favorable agreement with the importance of interprofessional experiences during training, although to a lesser extent compared to the other items on the scale. Qualitative and observational findings showed, however, that these favorable attitudes did not always translate into practice in daily routine, especially in the face of a lack of understanding of professional roles, hierarchies, and communication barriers.

Note: Me: Mean; IPE: Interprofessional Education; CP: Collaborative Practice; RIPLS: Readiness for Interprofessional Learning Scale; JeffSATIC: Jefferson Scale of Attitudes Toward Interprofessional Collaboration
Source: Research data, 2023.

Despite a willingness to collaborate, the results highlight challenges in practice. The quantitative differences that remained statistically significant after Holm's adjustment were concentrated in the recognition of the benefits of collaborative learning for patients and in the shared learning of communication skills. Interviews and observations, in turn, revealed broader variations in communication and collaboration depending on professional relationships and work contexts, pointing to the need for interprofessional training strategies. Studies also highlight gaps in training and in the development of collaborative skills, which are essential for understanding the roles of team members and establishing shared goals[16–19].

In addition, the participants emphasized that communication is essential for the development of successful interprofessional practices. Studies indicate that open and effective communication can enable team members to support one another, thereby increasing the possibility of building support networks and fostering interprofessional practices[7,14,20]. However, they also reveal substantial challenges, such as a lack of communication among teams, frequent interruptions during shift transitions, and the difficulty some professionals have in understanding and recognizing the value of the roles performed by other members of the healthcare team. This reality is not limited to the site under investigation, as observed in other studies[15,21–23].

There are differences in the perception of professional roles. Some participants noted that the emphasis on training in their respective fields may limit their understanding of the roles performed by other healthcare professionals. This can result in a lack of recognition of the contributions made by other team members. Given this scenario, it is important to create opportunities for students from diverse fields to interact and learn from one another beginning in undergraduate studies, since shared experiences across different undergraduate programs are associated with positive attitudes and a greater

willingness among students and graduates to engage in interprofessional learning and collaboration[24].

Implementing this approach starting in undergraduate education can mitigate another issue frequently highlighted by participants, related to difficulties in the relationship with the medical profession, which, although not included in the MHRs, constitutes a professional category that interacts daily with other healthcare professionals. The medical doctor-centered model, which still predominates in medical education, represents a considerable obstacle to the promotion of interprofessional practices, as it prioritizes the central role of the medical doctor at the expense of collaboration and recognition of the contributions of all members of the healthcare team[25]. However, this dynamic can be transformed by adopting educational approaches that encourage collaborative learning among professionals from different fields.

Specifically in the context of MHRs, the findings point to the need for educational and organizational approaches that promote effective communication and a deeper understanding of the roles of each member of the healthcare team. This may include training in communication skills, opportunities for interprofessional learning, and a work environment that values collaboration[26]. By addressing these issues, healthcare institutions can improve the quality of care, patient satisfaction, and the work experience of healthcare professionals[2,7].

This study highlighted the importance of the multidisciplinary team by identifying factors that impact interprofessional collaboration and communication challenges. It underscores the need to improve communication skills and interprofessional training beginning in undergraduate education. Interprofessional practices improve the quality of care, develop clinical competences, reduce errors, promote continuous education, and strengthen teamwork, equipping professionals to assume leadership roles and address the challenges of healthcare.

Several characteristics of this study should be considered when interpreting the results, such as the sample being limited to a single MHR program, the use of self-reported scales, which may introduce social desirability bias, and the length of the data collection period, which is subject to temporal trends. The lack of comparison with similar programs at other institutions also limits the understanding of the specific characteristics of the program under study. Although the RIPLS and JeffSATIC scales showed acceptable overall internal consistency in the sample, the Professional Identity factor of the RIPLS had a Cronbach's alpha of 0.33, warranting caution in interpreting this dimension in isolation. Furthermore, Holm's adjustment reduced the number of significant differences in the item-by-item analyses, reinforcing the exploratory nature of these comparisons and the need to emphasize integration with qualitative and observational findings.

CONCLUSION

After adjusting for multiple comparisons, differences were identified between residents and preceptors on two items of the RIPLS, related to the recognition of the benefits of collaborative learning for patients and the shared learning of communication skills. No significant differences were observed on the JeffSATIC items after adjustment. Regarding interprofessional collaboration, participants scored high on the scales measuring openness to interprofessional learning and attitudes toward collaboration. However, challenges in communication and understanding professional roles were also highlighted, pointing to the need to improve the coordination and planning of interprofessional activities.

The mixed-methods approach allowed to identify differences between residents and preceptors on specific items related to interprofessional learning, as well as to understand how communication and collaboration dynamics manifested themselves in the reported experiences and in the practices observed in the clinical and educational contexts.

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