

Barriers to preceptorship in Interprofessional Education: an integrative review

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Abstract Preceptorship in interprofessional education (IPE) occurs when the preceptor facilitates the learning of students from different programs about care from an interprofessional and collaborative perspective. The aim was to identify the barriers related to preceptorship in IPE. This integrative review searched for empirical articles in a comprehensive systematic search in eight databases. The data was extracted using a validated instrument and the analysis identified barriers at the micro, meso, and macro levels of the educational and professional systems. In the 17 studies, 10 barriers were identified at the micro level, such as lack of training, resistance to interprofessional work, and personal and professional availability for IPE and PIC; 13 barriers at the meso level, which include reconciling the demands of the service with preceptorship, few opportunities for interprofessional work and work overload; and five barriers at the macro level, involving lack of remuneration, the disease-centered care model and the predominance of uniprofessional education. The barriers reflect the complexity of interprofessional preceptorship, which is fundamental for training students for interprofessional education and integrating IPE into the workplace.

Keywords Preceptorship, Interprofessional education, Interprofessional Relations, Unified Health System

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Introduction

The worldwide recognition of interprofessional, collaborative work to cater for the health needs of populations became more evident after the COVID-19 pandemic in health and educational systems¹. The strengthening of IPCP is encouraged for integral health care, and centred on the users². Collaboration depends on factors such as shared team identity, clarification of professional roles, interdependent action, integration, responsibility and team-defined activities³. For the development of IPCP, it is crucial to provide favorable institutional support, work environment and culture².

Interprofessional Education (IPE) is the teaching approach that makes it possible to train professionals for CIP², so there is an interdependence between IPCP and IPE⁴. IPE occurs when “students from two or more professions learn together, with each other, from and about the other’s profession, aiming to improve collaboration and the quality of care and other services”⁵ (p.1). It differs from multiprofessional education, in which students from different professions learn side by side, without articulation of knowledge and practices⁶.

Practice in services is essential to develop collaborative competencies¹. In Brazil, Curriculum Guidelines (CG) reinforce the need for health-focused training from a collaborative, interprofessional perspective, and the strengthening of teaching-service-community integration through student engagement in the Sistema Único de Saúde - SUS [Unified Health System]⁷.

Preceptorship is a teaching-learning approach that occurs in services, mediated by a healthcare professional linked to the service. The preceptor accompanies the students while performing their daily functions, and is responsible for bringing them closer to the reality of users and their needs⁸.

Preceptorship is viewed as complex, as it involves multiple functions such as orientation, support, experience sharing, facilitation and evaluation of the teaching-learning process⁸.

It has positive impacts on student learning, and can provide important contributions to the health system from the experiences developed with the community^{9,10}. In line, IPE in practice scenarios develops competencies to work as a team, improves the understanding of professional roles and promotes exchange spaces with users¹¹.

Since health education is predominantly uniprofessional, the most recognized preceptorship is one in which the preceptor follows students from the same professional area. In a distinct manner, interprofessional preceptorship occurs when the preceptor acts intentionally with students from different professions, integrating practices and knowledge of different professional areas for integral care¹². The preceptor becomes a facilitator who enables students to learn from their own experience and other service experiences. It is noteworthy that IPE does not replace uniprofessional education. Rather, it complements it².

The interprofessional preceptor articulates elements of IPCP and IPE¹³, by arranging for students to learn together, from each other and about each other, while taking care of the needs of the users, which may be in conjunction with other service professionals and Health Care Networks (HCN). “It is recognized in IPE’s proposal that there is a reciprocal relationship of mutual influence between education and health care, the educational system and the health system” (p.200)¹⁴.

The literature on preceptorship in IPE places emphasis on students in a lecture hall or a simulation^{15,16}. There are studies that address best practices for preceptors¹⁶, while others analyze training proposals for preceptors in IPE that demonstrate positive results¹⁷. However, preceptors feel more prepared to guide students in their own profession than in other health areas¹⁸, making interprofessional preceptorship challenging. In addition, there are few health professionals who were exposed to IPE during their training²⁰.

In Brazil, preceptorship experiences in IPE were encouraged by policies inducing changes in health education, promoted by the Ministry of Health (MH) in the early 2000s. Among them, the Programa de Educação pelo Trabalho para a Saúde - PET-Saúde [Educational Program For Health Work] that fostered 900 projects based on the theoretical-methodological assumptions of IPE and IPCP. The participants in each project included undergraduates and university professors with a tutor function, who guide the experiences in the service and guide the production of knowledge; and the preceptors²¹. In addition, multiprofessional residencies are recognized in the literature by promoting IPE and IPCP, although many of their political-pedagogical projects do not explain them²².

This study aimed to identify the barriers related to preceptorship in IPE, evidenced by the scientific literature, with a view to contributing to the theoretical and scientific field by examining preceptorship in IPE as a phenomenon in constant interaction with educational and professional systems susceptible to various barriers of daily service and teaching, which hinders the continuity of preceptorship. The study aims to identify preceptorship barriers in IPE to contribute to a better understanding of the complexity of preceptorship in IPE, which involves the organization of the work and the health care and teaching models.

Methods

This is an integrative review developed in steps²³: (1) problem identification; (2) search in the literature; (3) data evaluation; (4) data analysis; and (5) presentation. The protocol was registered on the Open Science Framework (OSF) platform, with doi number 10.17605/OSF.IO/7WG6U. The Checklist Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 and expansion PRISMA-literature search extension (PRISMA-S) contributed to the writing of this study.

The guiding question was defined through PICO strategy, where P (population) - preceptors; I (phenomenon of interest) - barriers; and, Co (context) - interprofessional education; originating the question: What are the barriers to preceptors in interprofessional education?

Studies revised pairs by quantitative, qualitative and mixed methods were included, published in Portuguese, English and Spanish, which addressed barriers to preceptorship in IPE. Exclusions from the databases included repeatedly indexed studies, grey literature and studies that addressed coach, mentors and clinical instructors, roles different from that of a preceptor. The period of publication of the studies was not delimited.

A comprehensive search in eight databases was conducted on 07/12/22 and updated on 23/01/23. Its detailing, including strategies and databases, can be verified in the protocol.

Duplicate studies were removed, and screening was independently operationalized by two reviewers (CMSS and ACOMO) using blind pairs in Rayyan, discrepancies being dealt with by a third reviewer (VML). There was full, meticulous reading of titles and abstracts, those selected followed by reading entire texts.

The data were collected independently by CMSS and ACOMO reviewers, and stored in an instrument validated by two judges with expertise in the field of IPE and preceptorship in Brazil. Alterations and suggestions for improvement identified by the judges were incorporated into the instrument. The information listed in the instrument referred to authors, year, country, language, title, objective, type of study, the preceptors' professional categories, students' professional categories, educational level, barriers to interprofessional preceptorship, and those responsible for them. The data were extracted in pairs by CMSS and ACM with continuous discussion throughout the process. During the full reading, barriers that intervened in the preceptorship during IPE or presented a difficulty in continuity were extracted for analysis.

Assessment of the methodological quality of the studies was carried out by an instrument²⁴ formed of nine criteria evaluated on a scale of 1 to 4 as follows: 4 - "excellent"; 3 - "good"; 2 - "poor"; and 1 - "very poor." The total minimum score for each study was 9 (very poor) and the maximum, 36 (excellent). A score of 18 points (50% of the total) or less indicated poor or very poor quality.

Data analysis was conducted through data reduction, data display, data comparison, design of conclusions and verification for the analysis²³. Atlas.ti web software was used to the organize the data and barrier codification.

Each barrier was categorized at micro, meso and macro levels of the Interprofessional Education for Collaborative Patient-Centred Practice Framework (IECPCP)⁴, proposed to visualize the factors and their existing relationships between the world of work and teaching within the scope of IPE and IPCP. The factors can act as barriers or catalysts⁴, and, in this review, the option was taken to identify only barriers categorized at the three levels (Figure 1).

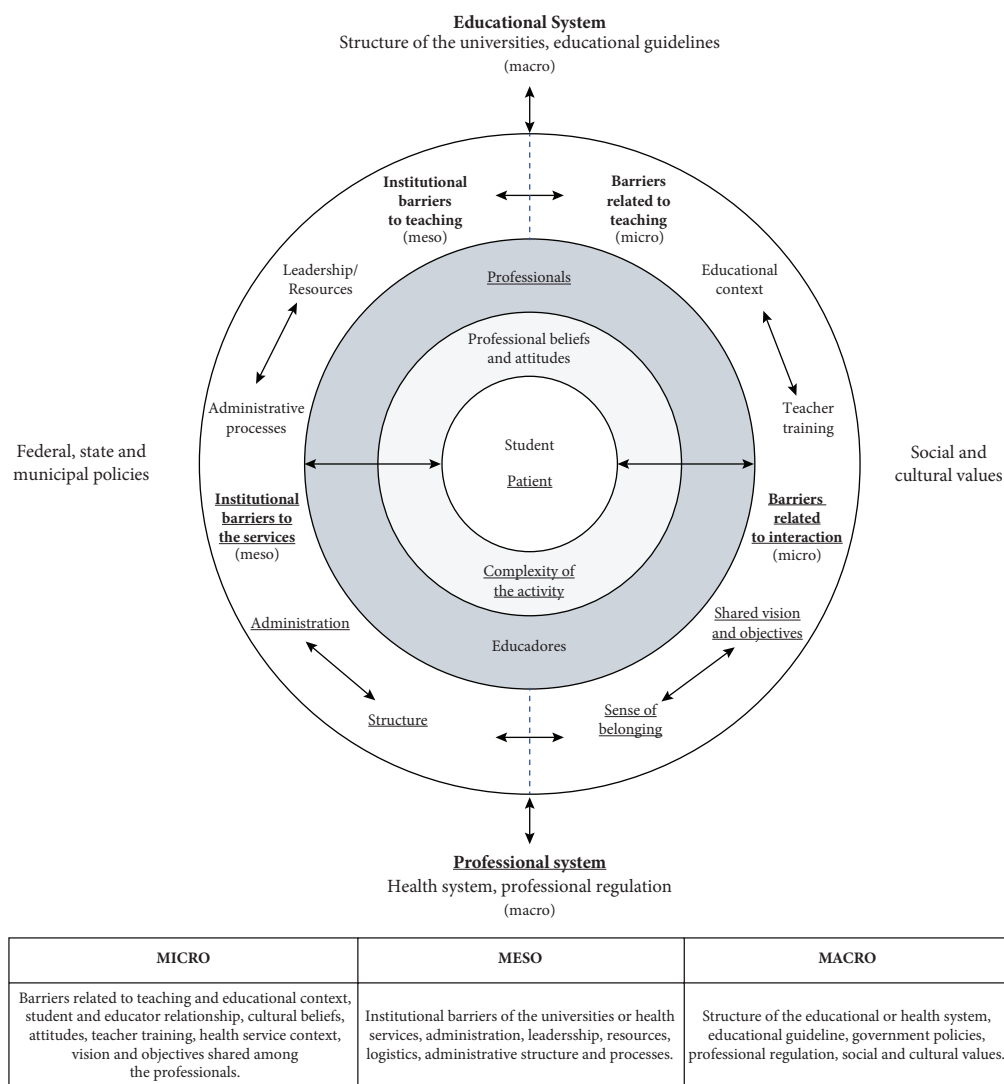


Figure 1. Adaptation of the Interprofessional Education for Collaborative Patient-Centred Practice, proposed by D'Amour & Oandasan⁴.

Source: Adaptation by the authors, 2023.

Results and Discussion

Of the total of 508 studies identified in the databases, 17 were selected for this review, as shown in Figure 2.

In Table 1 it can be observed that the majority of the studies were classified as being of excellent and good methodological quality. In order to have a greater understanding of barriers, no study had been excluded at this stage.

In Chart 1 it is possible to observe the 17 studies of this review published between 2001 and 2022, conducted in Brazil, the USA, Canada and Australia, and published in Portuguese and English.

Characteristics of preceptorship in IPE

In studies identified, preceptorship occurs with undergraduates and residents involving

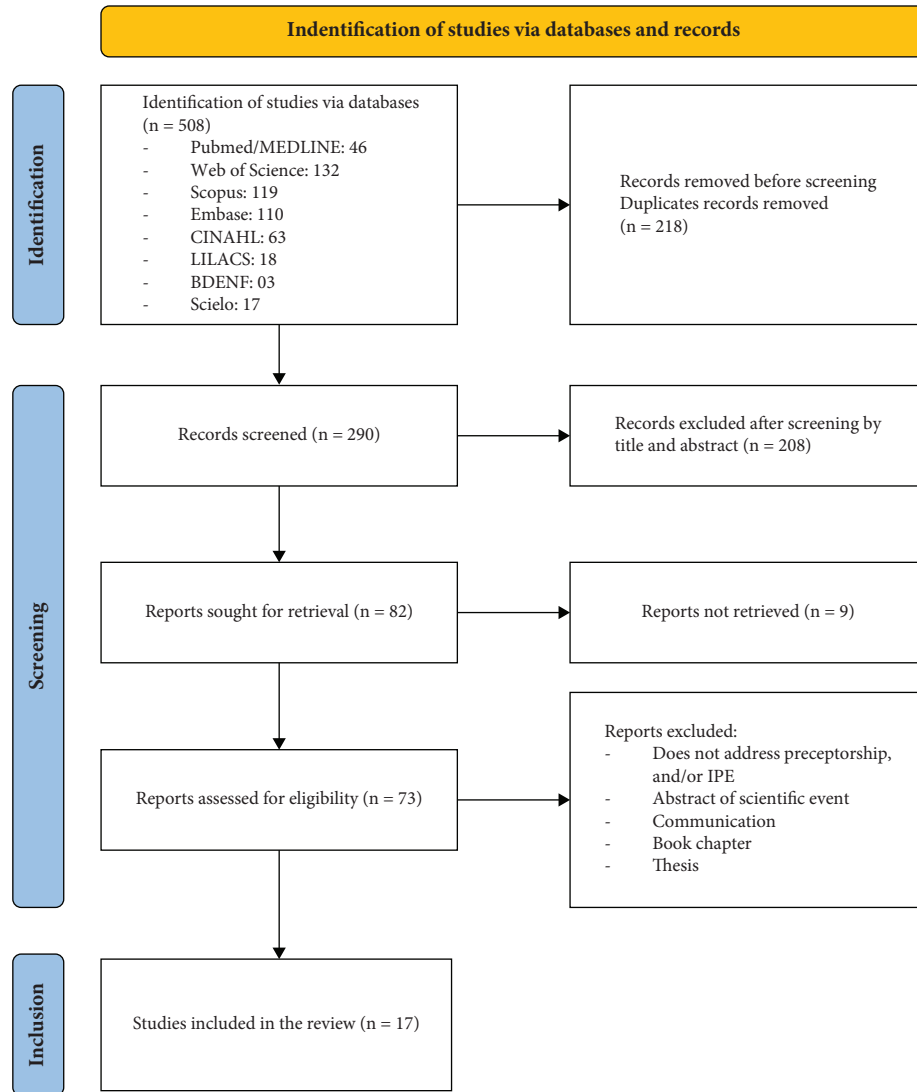


Figure 2. PRISMA flowchart representing the search process and selection of studies.

Source: Devized by the authors, 2023.

14 courses and preceptors of 10 professional areas. The most prevalent courses were nursing, medicine, physiotherapy and social work; while the prevailing areas of preceptors were nursing, medicine, nutrition and social work. Nursing and medicine are the most engaged professions in IPE, followed by physiotherapy, occupational therapy, pharmacy, nutrition, social service, dentistry, midwifery and speech therapy⁴⁰. The composition of the student teams and preceptors prioritized the guarantee of the professions' representativeness.

The preceptorship occurred in diverse health scenarios, the prevalence lying in the Primary Health Care (APS) field. APS is recognized for favoring the development of IPE in several countries, including Brazil, improving integration among professional areas⁴¹ and promoting an interprofessional work configuration⁴². The literature supports the solid integration of IPE with APS and SUS^{14,42-43}, since the fundamentals of IPE support the expanded concept of health and integrality in care, through holistic care. Similarly, SUS principles and guidelines are solid bases for IPE and IPCP⁴³. This syn-

Table 1. Methodological evaluation of the selected studies.

Autores	C1	C2	C3	C4	C5	C6	C7	C8	C9	Total
Alves <i>et al.</i> ²⁵	3	2	3	4	1	2	4	4	3	26
Araújo <i>et al.</i> ²⁶	3	3	4	3	2	2	4	3	3	27
Arruda <i>et al.</i> ²⁷	3	4	3	4	2	2	4	3	4	29
Arruda <i>et al.</i> ²⁸	3	3	3	4	3	2	4	4	3	29
Branco Junior <i>et al.</i> ²⁹	3	2	2	3	2	2	3	1	3	21
Chriguer <i>et al.</i> ³⁰	3	3	1	2	1	1	4	2	3	20
Davidson <i>et al.</i> ¹⁰	4	2	1	1	1	1	4	2	3	19
Dean <i>et al.</i> ³¹	3	3	1	1	1	1	4	2	3	19
Figueredo <i>et al.</i> ³²	3	3	2	1	2	2	3	2	3	21
Gatewood <i>et al.</i> ³³	4	3	4	2	2	2	4	2	4	27
Jurdi <i>et al.</i> ³⁴	3	3	2	2	3	1	3	2	3	22
Lam <i>et al.</i> ³⁵	2	3	1	1	1	1	4	2	3	18
Lima <i>et al.</i> ³⁶	3	3	2	1	3	2	4	2	4	24
McNair <i>et al.</i> ³⁷	4	3	2	2	1	1	4	2	3	22
Woltenberg <i>et al.</i> ³⁸	3	3	4	3	3	2	4	3	4	29
Woolforde <i>et al.</i> ¹³	3	3	3	2	2	2	4	2	4	25
Lima <i>et al.</i> ³⁹	3	3	3	2	3	2	4	2	3	25

Source: Devised by the authors, 2023. Hawker et al. instrument criteria¹⁴: C1 - Title and Abstract; C2 - Introduction and objectives; C3 - Methodology and data collection; C4 - Sampling; C5 - Data Analysis; C6 - Ethics and biases; C7 - Results / findings; C8 - Transferability / generalization; C9 - Implications and utility.

ergy between the fundamentals of IPE and the guiding principles of SUS creates a conducive environment for the successful implementation of user-centred interprofessional practices, thus strengthening the quality of the health services provided.

28 barriers to preceptorship identified in IPE can be observed in Table 2.

Barriers to preceptorship in IPE: micro level

Lack of training was the most prominent barrier to scientific studies. Preceptors feel pedagogical unpreparedness to receive students, conduct activities in the service²⁵, teach interprofessional concepts³⁸, elucidate the role and contributions of professionals from other areas³⁵, facilitate IPE with professionals and students, use active methodologies, and plan and evaluate educational activities³⁹.

Preceptors are 1.5x more likely to indicate that they feel less prepared for IPE teaching than professors³⁸. This need is the result of the lack of academic training, postgraduate or permanent education that integrates IPE and preceptorship³⁹. The preceptors state that their curriculum training focused on specialties and fragmented teaching, and that they have little proximity to the teaching environment³⁹. In other words, the

uniprofessional training model (macro level) affects the training of preceptors for IPE. With few training opportunities, there are preceptors with different levels of knowledge and engagement in the same initiative as IPE, generating discrepancies in teaching among the practice scenarios²⁷.

In the evaluation field, it is observed that it occurs vertically, with little interaction and dialogue with the students. This evaluation lacks stimulation for critical, reflective analysis of what has been experienced, as well as recognition of the aspects that the student needs for better development^{26,31}.

By correlating work overload at the institutional level (meso), due to the high demand for individual outpatient care in the Basic Health Unit (UBS)³⁹, with the training fragility centred on the technical-curativist approach (macro), other barriers emerge at the micro level: resistance to interprofessional work; the fragile personal and professional availability for IPE and IPCP that influences compliance with the workload of curriculum matrixes and continuity of IPE²⁷; ignorance of the roles of other professionals^{29,32,35} and, consequently, the non-recognition of students as members of the care service³², since there is a lack of understanding of the role of the resident²⁶; the difficulty of preceptors in mediating interpersonal relationships,

Chart 1. Characterization of selected studies for this integrative review.

Authors	Year	Country	Language	Type of study addressed	Professional categories	Educational level	Scenario
Alves <i>et al.</i> ²⁵	2019	Brazil	Portuguese	Qualitative. Descriptive study of the experience report type.	Students: Nursing, medicine and veterinary medicine Preceptors: Nursing, medicine and veterinary medicine	Graduation	Family Health Unit
Araújo <i>et al.</i> ²⁶	2017	Brazil	Portuguese	Qualitative. Exploratory study.	Students: nursing, pharmacy, physiotherapy, speech therapy and social work Preceptors: nursing, nutrition and social service	Residents	University Hospital
Arruda <i>et al.</i> ²⁷	2016	Brazil	Portuguese	Qualitative. Study of multiple cases	Students: nursing, nutrition, social work, physiotherapy, psychology, dentistry Preceptors: nursing, social sciences, physiotherapy, nutrition	Residents	University Hospital and State Health Department
Arruda <i>et al.</i> ²⁸	2018	Brazil	Portuguese	Qualitative. Study of multiple cases	Students: nursing, nutrition, social work, physiotherapy, psychology, dentistry Preceptors: nursing, social sciences, physiotherapy, nutrition	Residents	State Health Department
Branco Junior <i>et al.</i> ²⁹	2021	Brazil	Portuguese	Quantitative. Cross-sectional study	Students: [unspecified] Preceptors: nursing, medicine	[unspecified]	Basic Health Unit
Chriguer <i>et al.</i> ³⁰	2021	Brazil	Portuguese/ English	Qualitative. Report about experience	Students: physical education, physiotherapy, social work, occupational therapy and medicine Preceptors: [unspecified]	[unspecified]	[unspecified]
Davidson <i>et al.</i> ¹⁰	2020	USA	English	Qualitative. Report about experience	Students: medicine, pharmacy, nursing and social service Preceptors: nursing, medicine, pharmacy and social service	Graduation	Clinic, Community Setting and Hospital
Dean <i>et al.</i> ³¹	2014	Canadá	English	Qualitative. Report about experience	Students: medicine, nursing, nutrition, social service, pharmacy and dentistry Preceptors: medicine, nursing, nutrition, social service	All	Hospital

continued

Chart 1. Characterization of selected studies for this integrative review.

Authors	Year	Country	Language	Type of study addressed	Professional categories	Educational level	Scenario
Figueredo <i>et al.</i> ³²	2018	Brazil	English/ Portuguese	Qualitative. Research in the field of ethnography, from the perspectiva of Institucional Ethnography	Students: Interdisciplinary bachelor degree in Health, nursing, pharmacy, speech therapy, physiotherapy, medicine, nutrition, dentistry, psychology, social service and collective health Preceptors: [unspecified]	Graduation	Hospital
Gatewood <i>et al.</i> ³³	2020	USA	English	Quantitative. Experimental study.	Students: [unspecified] Preceptors: nursing, medicine	[unspecified]	[unspecified]
Jurdi <i>et al.</i> ³⁴	2022	Brazil	Portuguese	Qualitative. Report about experience.	Students: physical education, occupational therapy, physiotherapy, social service, medicine Preceptors: [unspecified]	Graduation	Specialized Rehabilitation Centre
Lam <i>et al.</i> ³⁵	2013	USA	English	Qualitative. Report about experience.	Students: pharmacy, nutrition, dentistry, medicine, nursing, physiotherapy, occupational therapy, speech therapy and social service Preceptors: pharmacy	Graduation	Geriatric Rest Home
Lima <i>et al.</i> ³⁶	2019	Brazil	Portuguese	Qualitative. Documental and field study.	Students: medicine, occupational therapy, psychology, nursing and social service Preceptors: [unspecified]	Multiprofessional Residency and Medical Residency in psychiatry	Hospital
McNair <i>et al.</i> ³⁷	2001	Austrália	English	Qualitative. Report about experience.	Students: medicine and nursing Preceptors: nursing and medicine	Graduation	First Aid Clinics
Woltenberg <i>et al.</i> ³⁸	2017	USA	English	Qualitative. Combined study of peers.	Students: [unspecified] Preceptors: medicine and pharmacy	[unspecified]	Health Centre and Rural Outpatients Clinic
Woolforde <i>et al.</i> ¹³	2022	USA	English	Experimental study (pre- / post-survey design), mixed methods	Students: medicine Preceptors: nursing	Graduation	Hospital and Outpatient Clinic
Lima <i>et al.</i> ³⁹	2015	Brazil	Portuguese	Descriptive study with qualitative approach	Students: [unspecified] Preceptors: medicine, nursing, dentistry, nutrition, psychology, pharmacy and social service	Graduation	Health Care Unit and Psychosocial Care Center

Source: Devized by the authors, 2023.

Chart 2. Barriers to Preceptorship in Interprofessional Education.

Barriers to preceptorship in IPE	Level
Personal and professional availability for IPE and collaborative practice ^{27, 30-35} Dissatisfaction with work ²⁷ Ignorance of interprofessional practice ^{32, 29-35} Ignorance/doubt about preceptorship performance ^{26, 39} Difficulty mediating interpersonal relationships ²⁸ Lack of understanding of residency role ²⁶ Lack of training for preceptorship ^{25, 26, 27, 28, 31, 32, 33-35, 38, 39} Fragility of the evaluation process ^{26, 31} Resistance of professionals to interprofessional work ^{39, 26, 29} Devaluation of preceptorship ³⁹	Micro
Lack of institutional support ^{26, 27, 33} Fragility in the sustainability of the IPE proposals ^{27, 28, 37} Reconcile demand of the service with preceptorship activities ^{10-25-13, 36, 38, 39} Incompatibility of agenda between curriculum activities and health services ^{28, 31-35, 37, 38, 39} Temporary contracts and precarious links ^{27, 31} Insufficient number of professors and preceptors ^{13-35, 37} Few opportunities for interprofessional work in the services ^{26, 27, 28, 37} Lack of integration between students and service professionals ^{26, 38} Recommendation of preceptors differs among professions ³¹ Precarious infrastructure in health services and educational institutions ^{25-27, 28, 33, 39} Different forms of student engagement in the same IPE proposal: mandatory and non-compulsory format ³⁷ High turnover of professionals, professors and administrators ^{27-35, 37, 39} Work overload ^{26, 33, 36, 37, 38}	Meso
Lack or absence of remuneration for preceptors ^{27-36, 37, 39} Professional hierarchy / power ^{27, 32} Care model centred on disease and individual healing care ^{28-35, 37} Pandemic context ³⁰⁻³⁴ Predominance of uniprofessional training in the health area ^{27, 28, 37, 39}	Macro

Source: Devized by the authors, 2023.

an important element for the implementation of IPCP, as it is influenced by interactive factors, such as adherence to its principles and commitment to cooperative practice²⁸; and, finally, the ignorance/doubt about the performance of the preceptorship^{26,39} as a result of the different configurations assumed by the individual (preceptor and health professional) and preceptorship itself (preceptor nucleus and field preceptor).

In this scenario of micro barriers, there are preceptors that do not understand their importance. Therefore, they feel devalued³⁹ and dissatisfied with work²⁷, as well as devalue the performance of the students, making them claim that they delay consultations, do not contribute to the service in progress³⁹ and are not members of the care service³⁷, thus affecting teaching-service integration³⁹. Furthermore, the mistaken interpretation that the resident acts to

cover personnel gaps limits the integration and role of residents in the services²⁶. This reflects what is observed in the study with preceptors of the medical interns, who demonstrate lack of understanding of the importance of IPE and IPCP for teamwork²⁹.

Specifically, the dissatisfaction with the work¹⁵ is a reflection of the barriers at the meso level. Preceptors see themselves in a context of misalignment between the workload provided for the preceptorship by the service and the workload required by the residence program, aggravated by the precarious working conditions, such as accumulation of contracts and temporary contracts²⁷.

The barriers identified at the micro level reflect challenges in the individual professional training in the teaching context and in the interactions between health professionals and stu-

dents. These barriers require strategies such as training and awareness programs to improve the professionals' engagement in interprofessional practices. Preceptor engagement is crucial for student participation³⁵. It is recommended that the pedagogical preparation include the planning and development of the teaching-learning actions in IPE in the scenarios of practice, aligned with the learning objectives and evaluation that foster a teaching-learning process that goes beyond the mere transmission of knowledge with stimulation to the students' protagonism and reflection on the health work process, placing them at the nucleus of teaching, and promoting problematization of the social and health demands of users and the community^{4,32}.

In training, the socialization of information about what residency is and what the role of residents and students is²⁶, contributes to the insertion of these in the scenario of practice and link with the professionals. It is important that the initiative in IPE aligns preceptors with different levels of experience, dedication and engagement, since preceptors with IPE training are not yet common³¹.

In the study⁴⁰, approximately 50% of the respondents indicated that they have training for facilitation in IPE, and expressed the need for proactive, engaged professionals and students prepared in IPE. The professional training, reward and recognition systems were essential for the success of IPE. Those trained and prepared for IPE facilitation are key subjects that can promote local solutions regarding barriers, and drive cultural change at meso and macro levels⁴⁰.

Preceptorship barriers in IPE: meso level

At the meso level, preceptors are facing the incompatibility of an agenda between curriculum activities and health services, generating difficulty in reconciling the demand for the service with the preceptorship. Another study³⁸ showed that, when asked about intentionality in teaching IPE, 62% (n = 50) of the preceptors indicated time as the main barrier, and it was also observed that preceptors had almost double probability in relation to professors to state this main barrier to IPE. The preceptor faces curriculum matrixes with times and structures of different undergraduate courses that do not dialogue with each other, making it difficult to organize interprofessional activities.

Added to this reality, with the high demand for individual care and productivity, reflection of the disease-centred (macro level) care model, the absence of remuneration (macro level), precarious contract links and work overload, the barrier to active integration of preceptors with IPE emerges, and among professionals and students. A study³³ that evaluated training demonstrated a reduction in the perception of preceptors about four barriers, but work overload and the demand for productivity remained unaltered. Professionals become reluctant to accept additional responsibilities, such as the preceptorship³⁷. The fragile employment link^{27,31} makes professionals see preceptorship as an "obligatory" activity when it is indicated by the administrator²⁷. Such a reality can contribute to a high turnover of professionals, a fact that compromises the continuity and quality of training in service²⁷.

Another reality that needs to be mentioned is the distinction between the contracts of the preceptors of different professions. While the preceptor of medicine had a direct link with the university, nursing preceptors, pharmacy, social service and nutrition had contractual agreements between the university and the health service³¹, making the latter more likely for the work to become precarious.

The turnover of professors and administrators is also observed. In another study³⁵, administrators involved in interprofessional initiatives were replaced by others who did not support the team, resulting in the loss of important workers for IPE. In Brazil, the high turnover of administrators can be related to the unpredictable political scenario²⁷, generating concerns about the loss of specialized knowledge and weakening the links with the universities³⁷. Thus, fragility is observed in the sustainability of IPE strategies, as their implementation depends on the enthusiasm of the administration and leadership, the pedagogical direction and the personal, professional and institutional interests involved^{27,37}.

The precariousness of the infrastructure in the services and educational institutions was identified as a barrier, expressed by lack of transport and difficult access^{25,28}, with deficient resources and physical structure for actions to promote health and education, associated with the lack of institutional support^{26-27,32}. Preceptors are often absent from scheduled meetings due to lack of release or authorization for planned activities²⁷.

In line, another study⁴⁴ identified as the main challenge at the meso level the fragility of institutional support. Often, existing initiatives are isolated efforts by professors, compromising their visibility and sustainability. Institutional support requires efforts to transform the relational and procedural aspects that need to be inserted into the context of a commitment to changing health training and work culture. IPE sustainability is a complex aspect, as it requires coordination between these aspects and different factors that interfere with IPE⁴⁵. The lack of coordination and institutional support is reflected in the isolated practices of preceptors, compromising not only the sustainability of these initiatives, but the effectiveness of collaboration among different professions^{40,44-45}.

The debilitated physical structure associated with the care model and demand for productivity (macro), resistance and little availability for IPE and IPCP (micro) reflect the few opportunities for interprofessional work. There is a juxtaposition of the professional practices with an emphasis on addressing the referral, configuring the proposal for multiprofessionality more than in interprofessionality²⁶. The current configuration of the work organization has not favored interprofessional meetings^{26,28}, but rather professional isolation³⁷. Even with good examples of collaboration in the daily work quotidian, and even if preceptors understand the concept of IPE and IPCP and recognize the relevance of teamwork, they cannot manage to do so^{26,28,37}.

Two other barriers refer to the insufficient number of professors and preceptors^{15,35,37} and the different forms of student engagement in the same IPE proposal: obligatory and non-obligatory format³⁷. Some students are implementing the IPE program and their internships as extracurricular activities, while others can use the experiences as course credits. This creates a challenging “double status” situation: the students for whom the internship is extracurricular may not feel so committed to completing obligatory or other learning activities³⁷. This same configuration was highlighted in a study as a challenge at meso level⁴⁴, and this variation in the IPE curriculum implementation impacts student engagement. Curriculum inclusion of IPE in both formats, obligatory and optional, is recommended to ensure student attendance and participation, and the involvement of those interested in IPE⁴⁶.

The barriers identified represent intermediate challenges that establish a connection between the characteristics of teaching and interaction (micro level) and broad political, educational and social factors (macro level). They reflect the complex interaction between organizational structures, labor dynamics and administrative processes that influence the effectiveness of IPE. The challenges require strategic intervention that transcends the individual level, seeking to improve the structures, practices and collaboration in health and educational institutions.

Preceptorship barriers in IPE: macro level

The care model centred on disease and individual, healing care is a barrier, as the integration of professionals committed to IPE conflicts with the dominant health care model, which favors individual care^{35,37}. As evidenced at the meso level, this model does not favor the organization and the work process for IPCP^{13,28}. Thus, the productivity model constitutes a barrier for IPE and IPCP²⁸.

Interprofessional activities in SUS face the significant challenge of counteracting the influence of the fragmented model of work organization, in which each professional performs his/her work in isolation without integration with the other professions, to meet individual and specialized demands⁴⁷. In Brazil, SUS was conceived based on the provision of comprehensive, equitable health care, and, amid the sustainability challenges faced over the last 30 years, SUS moves between a fragmented system, polychial networks, and production of connections in the care spaces in an attempt to reorient the system in the HCN model. HCN have characteristics centred on APS, health services with different levels of care that are articulated horizontally and with interprofessional assistance⁴⁸.

The lack or absence of remuneration for the preceptors is a major problem that portrays the precariousness of the work, and contributes to the barriers observed at the meso and micro levels. When there is, the finance of preceptors is variable, depending on the entity responsible linked to the program and agreements made. In the study²⁷, the residence program is made viable by a tripartite articulation, where the Ministry of Health (MH) finances resident scholarships, the State Secretariat/University assumes the pedagogical control and contracting of part of the faculty staff, and the municipal secretar-

iates provide practice scenarios and preceptors, often without proper alignment with the work demands and the workload required by the residence program, causing work and teaching overload³⁶ (meso). This contributes to the devaluation and lack of collaboration with the preceptorship³⁹ (micro).

Brazil has advanced in the recognition and financing of preceptorship in IPE, through proposals for changes in health training, among them, PET-Saúde, granting scholarships for preceptors, tutors and students²¹. In addition to PET-Saúde, in 2021, the Health Residency Strengthening Plan⁴⁹ provides scholarships for preceptors operating in multiprofessional residence programs. However, it is noteworthy that the APS funding model (Previne Brasil) has strengthened the conception of health care production linked to the performance of the professionals in teams supported by individual care productivity indicators. Units and teams that do not achieve the goals can be penalized with resource reductions. This financial model does not favor the interprofessionality among professionals and among teams, generating greater professional isolation and even competition⁵⁰. Added to this, the advances made during the pandemic with greater collaboration among the teams can recede faced with the new logic of finance and individual productivity that reinforces the isolation and competition of professionals and distance them from integral, longitudinal care from an interprofessional perspective.

Just as the health care model should redirect its focus to the user, family and community, the training of health professionals should be restructured in order to rethink the curriculums and fragmented teaching. The predominance of uniprofessional training in health is also viewed as a barrier to IPE and IPCP, as they comprise a social process that depends on the interaction and receptivity of those involved²⁸. Such training is responsible for the pedagogical unpreparedness of the preceptor (micro), resulting from a curriculum that supports the fragmentation and disarticulation of providing health³⁹, and that is formatted based on market demands²⁷, a *modus* that mismatches with the principles of IPE and IPCP.

Preceptor training, still predominantly uniprofessional, causes the development of a professional, but fragile or non-existent, team identity. The preceptors, while recognizing the importance of interprofessional practice, face

barriers arising from their uniprofessional training, which is often fragmented and disconnected from the real health needs of the population^{39,47}. This limited training impairs their performance regarding IPE theory and practice in its preceptorship, which may lead to ignorance of the different areas, hierarchy, the reinforcement of professional stereotypes, lack of confidence, communication errors and difficulty developing collaborative actions. In alignment, the professional hierarchy and power relations stand out as a barrier, with preceptors situated in a work context permeated by asymmetries in the power relations among the professionals²⁷, which can generate greater resistance to IPE initiatives, resulting in negative attitudes in relation to interprofessional teaching and work⁵¹. Intervening in power issues in interprofessional relations is a premise for the development of professionals committed to effective collaboration and teamwork⁴⁵.

Finally, the pandemic was identified in studies as a barrier to IPE. Despite the preceptors' efforts to incorporate remote methods and telemarketing for teaching and work³⁰, the lack of institutional finance negatively affected the quality of care and training. The transition to remote work, the rapid adaptation to technological skills and the impact on the mental health of preceptors were additional challenges. Remote preceptorship meetings began to serve not only as educational spaces, but also as places of emotional support for these professionals^{30,34}.

The macro level refers to systemic and structural factors that shape the training and health practices on a large scale, influencing multiple aspects of the work environment and professional education. The barriers indicate structural and cultural factors that permeate health and educational practices. Therefore, these barriers require approaches and policies at systemic level, involving structural changes, revision of remuneration policies, reformulation of health care models and comprehensive educational initiatives in order to effectively promote IPE in a broader context.

Integration of the micro, meso and macro levels

The integration of the three levels is decisive for preceptorship in IPE. The surrounding educational program must be planned, developed and evaluated among professors and preceptors,

along with involvement of service administrators and the university²⁶.

Service administrators are responsible for providing material resources and physical structure for IPE and promoting a culture that values IPCP, preceptorship and IPE^{27,31}. Formal recognition of health and educational systems for IPE facilitators is recommended, with a formal title and time dedicated to IPE^{31,35}.

The university must provide pedagogical direction and support for the preceptor²⁷. Given the workers' overload, constant cooperation and professor-disagreement-preceptor dialogue may contribute to the development of interprofessional initiatives.

The literature points out as responsible for the financing of scholarships or aid to preceptors, the creators of the educational program, maybe the MH and/or Education in cases such as PET-Saúde, medical residencies, in professional or multiprofessional areas; university in needing preceptors for institutional disciplines or projects; or services by contracting preceptors, or making time available for workers to devote themselves to preceptorship, promoting a qualification of workers' care and professional development²⁷.

The pedagogical training of the preceptors must be articulated between educational and health institutions, given their direct responsibility for the pedagogical content, the theoretical-scientific basis related to IPE and IPCP, and integral training of the health student; and the second responsibility lies in offering space, time and incentives to preceptors, the understanding being the clinical-epidemiological scenario in which the service is situated and the needs of the community. Explicit administration by educational and health institutions for IPCP and IPE has a strong influence on the success of both^{28,31}.

It is highlighted that the development of collaborative competencies for teamwork does not, by itself, guarantee the improvement of care quality for users. Alignment with the principles of interprofessionalism across the micro, meso, and macro levels is necessary. Recognising the barriers in both the educational and health sectors at various levels can contribute to integration strategies.

Final Considerations

This review identified 17 studies that presented 10 micro level barriers, 13 at the meso level

and five at the macro for preceptorship in IPE. Barriers permeate educational and professional systems, and reflect the complexity and uniqueness of the interprofessional preceptorship that significantly influences the preparation of students for IPE and the integration of IPCP into the work environment.

The health care model and the predominance of uniprofessional education are central structuring aspects that directly impact the other barriers. The health and education systems need to collaborate jointly to coordinate strategies related in the workforce in the health area. Administrative strategies need to be explored to encourage systemic alterations at the macro level. Such initiatives would encompass establishment of a shared vision for health and educational systems matching with the interprofessionality. Policies devised by different government levels can support the IPE and IPCP centered on the user.

Strengthening preceptorship requires an approach at different levels and in a range of power structures, bringing subjects of the educational and health institutions closer so as to put IPE into effect in services, considering the reality the preceptors experience in the duality between the contractual requirements of their work to achieve goals and the duty to teach students.

From the SUS and, especially, the provision of induction policies for changes in health education, through collective efforts of professors, students, administrators, users and other representatives, it was possible to strengthen teaching and interprofessional practices, enabling preceptorship to be powerful space for IPE and professional development of the workers. So far, progress has been recognized, and identification of these barriers can collaborate in the indication of critical points to improve preceptorship, favoring the support and appreciation of preceptors for education and interprofessional health practice. Recognizing the barriers is a need to advance the construction of a SUS that is stronger, collective, and integrated with health training.

A limitation of this review is the selection of the object of investigation from a single perspective (barriers, obstacles) without problematization or mention of other perspectives, making it impossible to analyze the respective contexts or the meaning attributed to these barriers.

Contributions

The author CMS Souza publicly assumes responsibility for the content of the scientific article. The author contributed to the conception, design, analysis and interpretation of data, writing of the article and its critical review, and approval of the version to be published. The author ACM de Oliveira publicly assumes responsibility for the content of the scientific article. The author contributed to the conception, design, analysis and interpretation of data, writing of the article and its critical review, and approval of the version to be published. The author VM Leonello publicly assumes responsibility for the content of the scientific article. The author contributed to the conception, design, analysis and interpretation of data, writing of the article and its critical review, and approval of the version to be published.

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