Review

Interprofessional Collaboration and Interprofessional Education Interventions in Clinical Healthcare Settings: A Realist Review

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Abstract

Interprofessional collaboration (IPC) and interprofessional education (IPE) are two concepts that have gained interest during the last decade, for the positive change they enable, especially in clinical healthcare settings. Despite this surge of attention, there are few studies that systematically analyse interventions aiming at fostering IPC/IPE within clinical teams. Developing additional knowledge around factors that impact the efficiency of similarly targeted interventions can help improve the quality of patient care in clinical settings. To this end, the paper offers a systematic, realist review of the IPC/IPE interventions outlined in the literature, seeking to better understand how the context and mechanisms which shape these interventions interact to produce the desired outcomes (ie, improve IPC). Electronic databases searched were PubMed, PsycINFO, CINAHL and Web of Science. Seventeen articles met the inclusion criteria and were analysed independently by two reviewers following the RAMESES guidelines. The authors propose an explanatory model for the interventions examined and a conceptual framework that can be used as a starting point for the study of effective IPC/IPE interventions within clinical settings. Finally, this realist review highlights discrepancies in the terminology and methodology used to study similar cases, which will need to be systematically tackled by future research to further our understanding of those cases and of key elements of IPC/IPE in clinical working groups.

Keywords

interprofessional collaboration, interprofessional education, interventions in healthcare, interprofessional care, explanatory model, conceptual framework

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Introduction

Interprofessional collaboration (IPC) is fundamental for good quality healthcare. The concept of IPC was first introduced by the World Health Organisation (WHO) in 1978 as a way to guarantee the effectiveness of primary healthcare.[1] IPC refers to two or more professions working together to achieve common goals and is often used as a means for solving a range of problems and complex issues.[2] Literature suggests that not only IPC increases collaboration, communication and quality of care both among healthcare professionals and patients, but also reduces costs, patient readmissions, length of stay and, consequently, mortality.[3] When healthcare professionals work in a collaborative professional context, there is a better understanding of patient care needs, team decision-making and an increased climate of trust amongst employees.[4,5] Institutions that support teamwork and collaboration among their healthcare staff experience a reduction in adverse events.[6] Poor teamwork and poorly integrated care can lead to medical errors and generally diminished quality of patient care.[7]

Effective IPC is a concept that has gained interest in both the literature and healthcare policies. Notwithstanding this renewed attention, IPC remains a complex concept often taken for granted by organisations. If the outcomes of IPC are to be achieved, health professionals need to gain and develop certain skills and knowledge, prior to working within IPC contexts. Leadership, mutual respect, coordination, cooperation, shared responsibility and good communication are essential factors of interdisciplinary collaboration.[8] Interprofessional education (IPE) is an

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effective way to enhance the work of healthcare professionals in IPC.[9] IPE can be defined as instances where "two or more professionals learn with, from and about each other to improve collaboration and the quality of care."[10] An accomplished interprofessional collaborative healthcare worker is someone with the competency to work efficiently in a team where patient care is dealt through joint intervention among professionals from different disciplines and the patient itself.[11]

An increased number of studies report a variety of educational interventions that enhance IPC/IPE in a clinical setting, even though the characteristics of these interventions may strongly differ in terms of duration, framework, protocol and guidelines, to name but a few.[12–14] Several realist reviews have also been published in the literature on IPC/IPE regarding reflective practice,[15] cultural safety,[16] young professionals[17] and, predominantly, undergraduate education.[17–20] However, there is little evidence in the literature regarding interventions that take place in already-graduated healthcare professionals in their daily clinical environment.

For this reason, the present systemic review focuses on interventions involving mainly graduated healthcare professionals and aims to, firstly, analyse IPC/IPE interventions so far outlined in the literature to summarise their key elements and, secondly, better understand how their contexts and mechanisms produce the desired outcomes, that is, improve and promote IPC and IPE.

Method

A realist synthesis approach in concordance with RAMESES II standards[21] was chosen due to its effectiveness in dealing with complex interventions where multiple interacting components and outcomes are involved. It was originally designed by Pawson et al[22] for complex social interventions to help understand the dissimilarity data that are generated when these social interventions are considered in different contexts to inform policy. A realist study posits that different contexts distinctly affect actions taken within them and responses generated by those actions; it looks to understand causal mechanisms of these responses (in this case, how are positive outcomes regarding IPC/IPE achieved). Thus, this realist review seeks to unfold the connection between the mechanism of the interventions, the context in which they happen, and their outcomes (ie, how the context interacted with the mechanism to deliver a specific outcome).[22] Reporting was in concordance with the RAMESES II reporting standards for realist evaluations[21] (Supplemental Material 1). A protocol for this realist review was registered with The Open Science Framework (available at osf.io/dcp75).

This realist review is part of a larger research project aimed at examining the importance of IPC/IPE in a large hospital setting, where various multi-professional collaborative teams work in different wards within their unique contexts. This new line of research will be conducted by the primary researcher of this paper, involving first-hand data collection on-site, by using observations and semi-structured interviews.

Search Strategy and Study Selection Criteria

Our search strategy combined MeSH terms and free text in the electronic databases PsycINFO, CINAHL, PubMed and Web of Science. There were no date restrictions applied, meaning that our search was expanded to include any records from the first run date of each database (for APA PsycInfo, this goes as far back as 1806). Only records in English were retained, to mount an analysis beyond localised backgrounds. Database searches were conducted again before the final analysis (July 5, 2024). Supplemental Material 2 displays the final search strategy that was used on PubMed; the adjusted strategies concerning the rest of the databases consulted are shown in Supplemental Materials 3 and 4.

The criteria adopted for inclusion were studies that report any kind of educational or collaborative intervention, the objective of which was to enhance IPC/IPE among healthcare professionals in a medical setting. An intervention can be defined as an action or group of actions purposely implemented to alter a behaviour, procedure, or direction to obtain a different result than the one which would have happened if the action had not taken place. The main objective of an intervention is to improve an existing condition or have a positive impact on a specific scenario. It can be applied in different fields like social services, education and healthcare.[23]

A healthcare professional is defined as any individual in the healthcare sector (including patient care, support, and administrative role) who works in a facility where medical care and support are offered to patients. Initially, specific search terms, such as 'doctor' and 'nurse', were included to describe the professions concerned. However, it was soon established that, as representative of the idea of interdisciplinary collaboration, the overarching term 'healthcare professionals' offered a sufficiently large body of evidence to cover the scope of this research, which does not claim to be exhaustive.

No articles were excluded on design, type or methodological grounds. Only studies involving undergraduate or postgraduate students were excluded, as the objective of this research review is to reflect on the context and conditions experienced by healthcare professionals in their daily practice as realistically as possible, addressing the identified research gap, mentioned previously. In addition, studies not promoting the interaction among healthcare professionals to enhance collaborative practice were also excluded. Finally, studies referring to virtual contexts were excluded, as virtual contexts would entail a separate reflection on the frameworks shaping them and an extensive revisiting of the idea of 'physical contact' between collaborating professionals, which seemed particularly consequential from the outset. Moreover, given that there were no date restrictions applied to the body of data consulted, including virtual IPC/IPE interventions would most probably create a chronological bias (majority of studies would be dating almost exclusively from the last decade).

We (GBV, CMR) carried out the article selection procedure blindly and independently in accordance with PRISMA guidelines (Preferred Reporting Items for Systematic reviews and Meta-Analyses)[24] following three phases of selection: by title, by abstract and finally a full-text review using the RAYYAN screening tool.[25] At every step, we recorded

reasons for exclusion and settled by discussion any difference in criteria. The third researcher (FM) was reached to obtain a consensus if necessary. Figure 1 shows the flow diagram of the study selection.

Eligible articles identified through the screening process underwent a quality appraisal. Given the diverse methodologies of the studies, the Mixed Methods Appraisal Tool (MMAT)[26] was selected to guide this evaluation. The qualitative studies included in this review were evaluated using the Critical Appraisal Skills Programme (CASP) Qualitative Checklist.[27]

Data extraction, Data Analysis and Synthesis of Findings

To analyse the data from a realist synthesis perspective,[22] we extracted information from the selected articles to identify key components of each intervention (descriptive data resumed in Supplemental Material 5). Next, a data matrix was created focusing on three essential elements of each intervention: context (C), mechanism (M), and outcome (O). We debated and defined the information needed to be collected under each of the three headings (results of this phase of the work presented in Table 1).

Context refers to the external factors that can alter the intervention's progression and outcome. To better understand this, we divided those factors into two categories: macro-context and micro-context. Macro-context includes the country and general setting of the intervention, the population that it is addressed to, and the professional framework that supports it. Micro-context refers to the relationship that occurs when healthcare professionals from different disciplines and backgrounds interact with each other to deal with patient care. These interpersonal encounters are a dynamic process where ideas and points of view are shared, to reach a common objective: best patient care.

Mechanism refers to the elements that contribute mechanically or contextually to a particular outcome and in what circumstance. For better understanding, Dalkin et al[28] following the work of Pawson and Tilley[29] divided Mechanism in two categories: Resources which concern all factors introduced in a context that have an impact on someone's reasoning, which, in turn leads to a change in behaviour and to an outcome, and Reasoning which refers to the attitudes, decisions, or ideas that result from the participants' taking part in the intervention, subsequently fostering behavioural change.[30] So, one aspect of analysis focused on the resources utilised in the intervention and the other on how the reasoning of individuals changes via the implementation of the intervention.

During the analysis of the connections between the C-M-O configurations, the third researcher (FM) was reached once again to obtain consensus if necessary. The analysis is grounded in the several theoretical frameworks underpinning IPC/IPE which highlight the importance of communication, teamwork, shared goals and learning among professionals from different backgrounds.

Results

We originally retrieved a total of 2163 articles, of which 25 (1.1%) were selected for review, following the inclusion criteria. Eight (0.3%) more articles were ultimately excluded (2 involved students only, 3 did not promote IPC/IPE, 2 did not have an intervention, and 1 was a virtual environment). The final 17 (0.7%) articles included in the review revealed 17 completely different interventions (one per article) which were analysed using the realist synthesis method.[22]

General Characteristics of the Reviewed Articles

Supplemental Material 5 shows the characteristics of each included article (17 in total), that is, each study's design and objectives, sample groups, frameworks and their respective focuses, with respect to the assessment instruments.[31–47] The retained articles were published between 2002 and 2021 and most of them originated from the UK (8).[32–34,36,39,41,44,46]

Among the studies reviewed, most were qualitative ones (9),[33,35,37–39,42–45] only 2 were quantitative[46,47]; the remaining 6 were of mixed methodology.[31,32,34,36,40,41] Overall, 6 of the 17 included articles employed a quasi-experimental design, including 4 mixed methodology studies[31,32,40,41] and 2 quantitative studies[46–47]; no qualitative study used this research approach. All studies used a variety of evaluation techniques, including interviews, surveys of different types (questionnaires/open-ended or rigidly structured), and even observation data.[39] All studies referred to post-implementation evaluations, while 6 also included pre-implementation ones.

More than 50% of the reviewed studies (9) focused on holistically framed interventions, defined here as comprehensive IPC/IPE programmes addressing IPC at the level of organisations or whole teams instead of single, isolated activities. The remaining studies (8)[34,37,38,40,41,43,45,46] looked at independent IPC/IPE interventions, either one-off or iterative, including evaluation of IPC everyday settings.

Seven of the interventions/articles[31,35,36,42–44,47] analysed were based on one or more conceptual frameworks; social identity theory,[31,36] reflective and experimental theory,[31] social impact theory,[35] adult learning theory,[36] contact hypothesis,[36] interprofessional teamwork model,[42] social constructionism,[42] systems theory,[42] solution-focused approach (SFA),[43] collaborative learning approach,[44] social constructivist ontology,[44] Vygotsky's proximal development,[44] and experiential education.[47] The remaining ones[32–34,37–41,45,46] were based on different methods and approaches: action research,[32] problem-based approach,[33] multidisciplinary (MDT) team approach,[34] analytic induction,[37] face-to-face communication,[38] interprofessional teamworking,[39] quality improvement collaborative (QIC) methodology,[40] action learning,[41] national quality forum (NQF)[45] and teamworking.[46]

General Characteristics of the Reviewed Articles

Context. *Macro-context:* As previously mentioned, most of the interventions referenced took place in English-speaking countries (15), except for two that were situated in Scandinavian countries.[38,42] The general settings of the interventions (12) were mainly based in large hospitals without distinctive differences among the different countries while

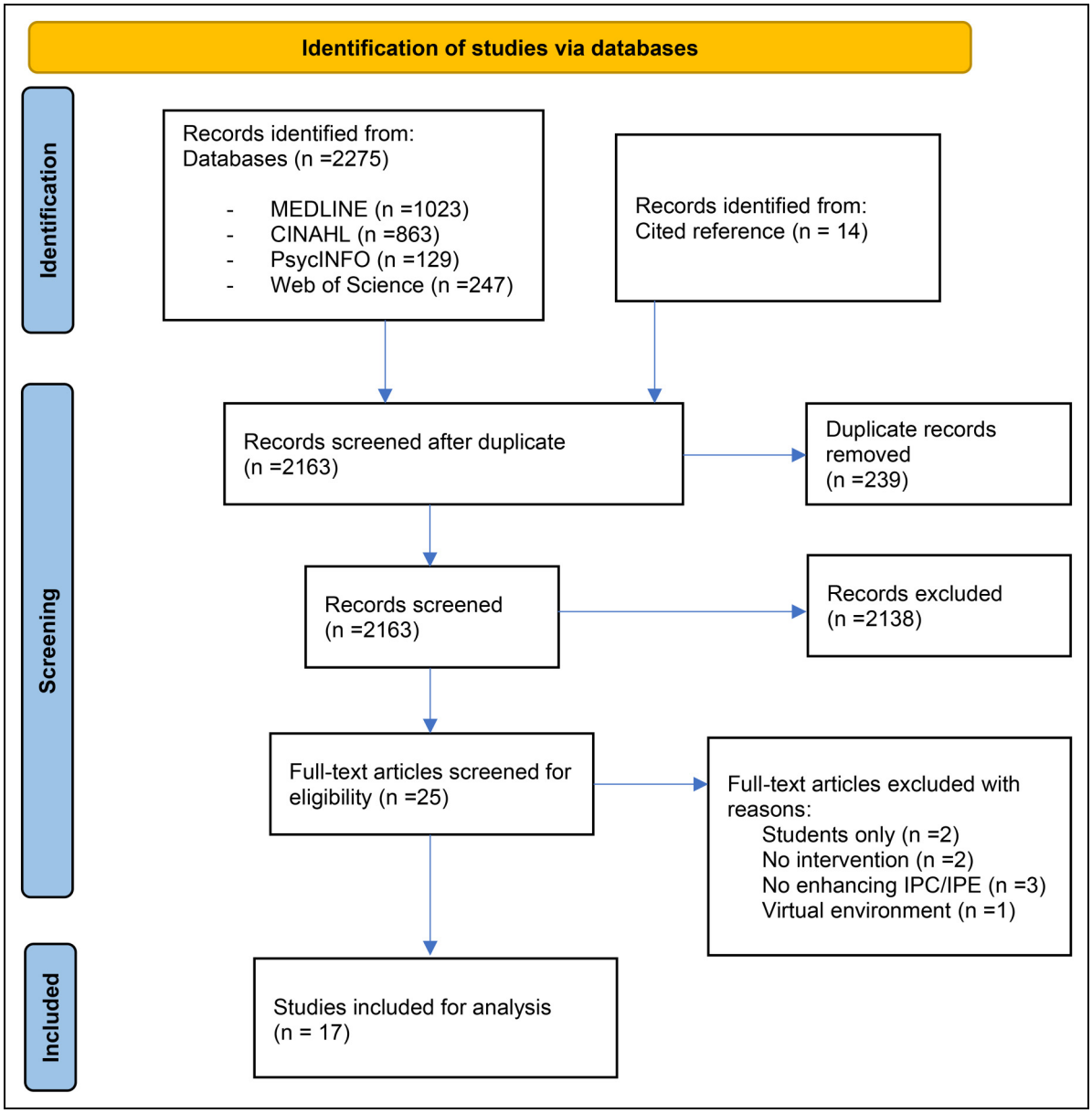

Figure 1. PRISMA flowchart diagram of search results up to July 2024.

five interventions were based in local primary care settings.[33,40–42,44]

Following our inclusion criteria, the target population in our review consisted primarily of professionals involved in healthcare delivery and related services, with one study additionally including patients.[44] Across the included studies, participants comprised medical staff[31–34,36–42,44–47] such as physicians, specialist, and consultants; clinical staff including nurses,[31–47] pharmacists,[33,35,37,41,43,44] physiotherapists,[32,38–40,42,44] occupational therapists,[32,36–41] physchologists,[36,42,44] social workers,[36–37,39–43,45] and other allied healthcare professionals[31,34,37–40,43,46]; support and administrative staff such as managers,[32,40,41,44] administrators,[40,41] clerks[40] and porters[43]; and educational and community staff including teachers,[42] researchers,[44] and chaplains.[37,45]

Micro-context: There was a general agreement within the reviewed articles, that IPC was enhanced when there was an increase of interpersonal time spent in the team. Six of the reviewed studies[34,35,38,39,41,45] placed distinctive emphasis on the positive correlation between IPC and interpersonal time. According to them, "the introduction of regular team meetings offered an important meeting point for staff and a positive forum where staff could forge closer working relationships."[39] It is in fact worth noting that those articles used different methodological approaches (4 qualitative, 2 of mixed methods), which points to a broader validity of the findings; also, that four of those studies reported interventions within large hospital settings.[34,38,39,45] Large hospitals manage a relatively heavier workload; therefore, they could be considered as less likely to hold regular face-to-face meetings. In fact, one of the reviewed articles[34] characteristically reported in its final analysis: "Case volume (relating to a large hospitaĺs workload) may not influence the likelihood of holding MDT meetings."[34]

Mechanism. Resources: Through the analysis of the 17 interventions, we identified four resources:

Table 1. Characteristics of the Seventeen Interventions Implemented with Healthcare Professionals, as Derived from the Realist Synthesis Approach up to July 2024.

	Context	Mechanism						Outcomes	
	Macro-context	Resources							
Author and Method	Target Population, Setting and Country	Structure and Characteristics of the Intervention (What it is?)	Development of the Intervention: Training/ Teaching Modalities (How does it work?)	Duration	Describes the Content	Manual Available	Training Required to Apply it	Reasoning	Outcomes or Qualitative Results	Main Reflection or Comment/ Main Conclusions
Owen 2014, USA. The EHPIC	Faculty and clinicians at sepsis care, University of Virginia, USA	Intervention of three activities: 3 days of faculty/clinician training (ice-breakers, didactic lectures, small group case study work and discussions) Use of a high-fidelity IPE sepsis simulation case	- first activity: to engage professionals in learning how to work together by providing the knowledge, skills, and attitudes required to effectively collaborate. Also, in engaging in reflective journaling after each activity. - second activity: asked to code the surviving sepsis guideline as who is responsible of what. Then saw a videotape of a team working in IPC. Then asked to code again after video and compare - third activity: reflective journaling about IPP	6 months first act. 3 days for 2 months second and third act. 4 months	(+)	(-)	(-)	CIPE to improve sepsis care by enhancing healthcare team collaboration.	first activity Day 1 The pre/post scored did not change significantly. Day 2 content not adequate. Day 3 86% strongly agree topic met their expectations. second activity: better understanding to implement the sepsis practice guidelines. third activity: N/A	Positive changes in provider perceptions and commitment to team-based care can be achieved with well-designed CIPE programs.
Atwall 2002, UK. Action research	Multidisciplinary teamwork in the acute sector, London teaching hospital, UK.	The project involved: video recording (Bales' interaction) Interviews (critical incident approach) Delphi survey	Five-step process: strategic planning, implementing the plan, observation, evaluation and self-evaluation, critical and self-critical reflection. which require the action research group to make decisions for the next cycle of action research.	Audit lasted 3 months	(+)	(-)	(-)	Improvement in the management of patients, communication patterns, and reduction in the length of stay.	While demonstrating improved outcomes, it did not demonstrate and overall improvement in the team process. Key factors in discharge delays appeared to organisational rather than professional.	Action research has enabled members of the team to evaluate and question current practice.
Barlett 2021, UK. Problem-based approach	Interprofessional (with at least one pharmacist), primary care professions, UK.	Training the facilitators Groups were given topics to read prior meeting. Discuss cases and propose solutions	Small group discussions allow for reflection on habits and assumptions. The exchange of experiences and perspectives led to the sharing of strategies for implementing positive changes to practice and overcoming barriers.	12 months	(+)	(-)	(-)	Promote professionals to gain new knowledge and to challenge themselves and push beyond the comfort zone.	It promoted understanding of each other's roles. It shared knowledge, driving whole-practice change and reducing feelings of isolation.	The programme appears to be a valuable approach to learning and demonstrates potential for extension beyond the pilot phase.
Bharathan 2016, UK. Multidisciplinary team approach	Multidisciplinary team in the early pregnancy assessment unit, St George's hospital, UK.	The study had three phases: a national survey was carried out. A semi-structured interview and a questionnaire was	Increase face to face time among healthcare professionals.	3 months	(+)	(+)	(-)	Increase of MDT meetings. Increase of patient contact per week. Reduction of staff stress and	Increase of learning, communication and team dynamics although time constrains was a handicap regardless of the size of the hospital.	MDT meetings support professional activities and patient care as complex case are highly monitored.

(continued)

Table 1. Continued.

Author and Method	Context: Macro-context: Target Population, Setting and Country	Mechanism: Resources: Structure and Characteristics of the Intervention (What it is?)	Mechanism: Resources: Development of the Intervention: Training/ Teaching Modalities (How does it work?)	Mechanism: Resources: Duration	Mechanism: Resources: Describes the Content	Mechanism: Resources: Manual Available	Mechanism: Resources: Training Required to Apply it	Mechanism: Reasoning	Outcomes: Outcomes or Qualitative Results	Outcomes: Main Reflection or Comment/ Main Conclusions
		conducted. Retrospective review of the MDT workload.						awareness of each other's roles.	Case discussion and feedback within a 'closed' forum optimises the educational value of clinical encounters.	
Vachon 2013, Canada. Social impact theory	Front-line healthcare professionals, family practices, Quebec (Canada).	Intervention developed by: literature review. Regular attendance at the meetings. Direct observations. Interviews to participants. Focus group with facilitators	The intervention is designed for 20–25 professionals and is composed of 3 main activities: a) providing feedback, reflective learning, and action planning. The feedback is delivered face-to-face at the beginning of the workshop.	3 h workshop 30 min telephone interview	+	+	-	Development of a shared view, identify performance gaps, setting a mutual goal, and adoption of cooperative changes.	The workshop increased professionals understanding of each other's roles and their complementarity. It developed a community oriented primary care vision. It also allowed professionals to improve their knowledge.	Using feedback and reflective learning increases participants' awareness of practice gaps and the need to improve how they collaborate.
McDevitt 2018, UK. Case-based learning approach	Multidisciplinary mental health clinicians, University of Warwick, UK.	Five CIPE sessions (2 h each). The attendees steered content and cases.	Case discussion was the core component. Participants brought complex cases for presentation, discussion, reflection and advice.	4 months	+	-	-	It provided a space for self-reflection, supported their learning needs and respected their level of knowledge.	Change in clinical practice was reported in terms of communication, clinical activity, outcome evaluation and confidence.	Provided specialist training in an existing service. Potential impact on knowledge, behaviour and service delivery.
Richeson 2008, USA. Analytic induction	Multidisciplinary team in an acute care, University of Maine Medical Center. Portland, USA.	William Randolph Hearst Scholars Program (HSP). Presentations by national, community, and hospital experts: case discussions, interdisciplinary collaboration, and change initiatives.	Interdisciplinary interaction and share of knowledge.	Monthly seminars for a year (50 h)	-	-	-	Participants felt more confident for communicating, making decisions, identifying problems, creating solutions, and taking action for improved patient care.	Data revealed an overarching theme of empowerment in: knowledge, connection, barriers, and hopeful trends.	HSP was a success. The empowerment emerged as an overarching theme that embraces all of the topical areas.
Abrahamsen 2017, Denmark Face-to-face communication	Healthcare professionals in an orthogeriatric unit, Kolding hospital, Denmark.	Structures and processes guiding IPC at the hospital were changed: tasks distributed in a new way. Increased timings Agreement on shared responsibility. Every weekday meeting.	Meetings (20 min) to secure shared goals and optimal treatment. These were followed by smaller interprofessional groups for the coordination of patient care.	2 years	+	-	-	Increase sense of communication, collegial solidarity, respect, shared goals, IPC and professional growth.	Patient benefitted from the introduction of the orthogeriatric care and treatment (patient-centred approach). It also supported the healthcare workers to collaborate towards common goals.	It had improved the quality of care and treatment. However, differences in approaches challenged the model.
Jones 2011, UK. Interprofessional teamworking	Interprofessional team in a rehabilitation ward, teaching hospital, UK.	Three changes took place: therapy and social work (full-time) services to be relocated to Ward G. Consultant-led daily ward	Workshops encouraged co-ordinated working and problem solving. It was encouraged a closer physical proximity of	12 months	+	-	-	Increase rapport, trust, positive working and professional autonomy within the team.	Four themes emerged: collegial trust within the team. The importance of participative safety	This study contributes important insights into the development of teamworking in healthcare.

(continued)

Table 1. Continued.

Author and Method	Context: Target Population, Setting and Country	Mechanism: Resources: Structure and Characteristics of the Intervention (What it is?)	Mechanism: Resources: Development of the Intervention: Training/ Teaching Modalities (How does it work?)	Mechanism: Resources: Duration	Mechanism: Resources: Describes the Content	Mechanism: Resources: Manual Available	Mechanism: Resources: Training Required to Apply it	Mechanism: Reasoning	Outcomes: Outcomes or Qualitative Results	Outcomes: Main Reflection or Comment/ Main Conclusions
		rounds and weekly team meetings. Workshops were created.	staff to patients, in addition to more timely decision-making.						Shared objective in conflict management Value of autonomy.	
Bajnok 2012, Canada Quality improvement collaborative methodology	Healthcare teams (at least one physician and one nurse in each team), Ontario (Canada)	Three sessions of 2 days each: specific learning sessions with experts interspersed with application time. Team presentations	The participants learned about the team development strategies (conflict resolution, critical conversation methodology, cultivating a teamwork culture). Each team had the assistance of an advisor/ mentor.	8 months (3× two day sessions)	+	+	-	Raise awareness of what IPP meant, the roles and responsibilities of team members, and effective team functioning.	Themes raised: trust, change, pride, personal growth, team growth, and better patient care. The program also gave participants the tools they needed to improve interprofessional practice	There was an improvement in patient care, knowledge and attitudes. However, time and resources play a role.
Slater 2012, UK Action learning	Multi-professional junior doctors, health organisation in Bradford, UK	No information provided about the structure of the program.	Key principles underpinning the program: helping to learn together. Reduce time away from workplace. Learning through action. Using a bottom-up approach. Using quality improvement methods to support change.	20 weeks	+	-	-	Improvement in communication openness and organisational learning. However, dimension of safety culture remained the same.	Promoted better multi-professional communication and teamwork in certain teams. It also improved patient safety practices and/or outcomes. Time constrains the main barrier.	Quality improvement method to address patient safety is feasible to improve patient safety, provided participants are given the needed time and space.
Larivaara 2009, Finland. Interprofessional teamwork model	Professionals working in the field of primary services, Oulu, Finland	Contact instruction based on lectures, role play, monitoring, and group and individual assignments including charting family and working communities. Independent study (512 h).	The learning methods were lectures, role play, mentoring, and group and individual assignments including charting family backgrounds (genogrammes) and working communities (network charges)	2 years	+	-	-	Increase awareness of the benefits of IP teams, the theory behind it, and the need to change from an expert orientation	IP teams helped to alleviate the psychical burden on individual workers. Also, families were better supported in using their own resources in solving problems.	IPE enhances workers' professional competence, consolidate their identities and help themselves to cope better at work.
Boaro 2010, Canada. Solution-Focused Approach	Interprofessional team in one rehabilitation ward, Toronto institute, Canada.	SBAR tool: situation-background-assessment-recommendation.	Educational workshops were provided to give clinical and support staff and understanding of communication tissues and safety, barriers to communication, and how communication may be structure using the adopted SBAR tool. 3 workshops totalling four hours.	6 months	+	-	-	Staff gained better understanding of communication issues and safety, barriers to communication, and how communication may be structured using SBAR.	It enhanced accountability and a 'solution-focuses approach' to strategies rather than blaming the individual. It also allowed the team to develop more effectively concrete actions to help resolve the issue.	SBAR is a useful means of structuring verbal communication within an IP team in a rehabilitation setting.

(continued)

Table 1. Continued.

Author and Method	Context Macro-context Target Population, Setting and Country	Mechanism Resources Structure and Characteristics of the Intervention (What it is?)	Development of the Intervention: Training/ Teaching Modalities (How does it work?)	Duration	Describes the Content	Manual Available	Training Required to Apply it	Reasoning	Outcomes Outcomes or Qualitative Results	Main Reflection or Comment/ Main Conclusions
Myron 2018, UK. Collaborative learning	Patients and healthcare professionals, Imperial College London, UK.	12 days face to face learning: 8 days were small group workshops. 4 days large meetings (100 delegates)	The programme was designed using principles of collaborative learning and contained the key features of effective IPE. Participants worked in small groups to discuss presented material and the application of this in the real world. Workshops were tailored to their needs and made relevant to their setting and topic area.	1 year	(+)	(-)	(-)	It enabled participants to be honest in discussions about the curricula. It increased their learning as participants had to step out of the comfort zone.	It helped to identify common problems and better understanding of other roles/perspectives. Challenging for patients to enter a traditional professional environment. Some professionals changed their behaviour just because patients were present.	The study indicated that a collaborative learning approach, where patients and professionals learn together, is effective in developing skills in quality improvement.
Terashita-Tan 2013, USA. National Quality Forum (NQF)	Transdisciplinary team in palliative care, USA	Regular face to face meetings (once a month) to achieve an ongoing partnership to serve several different functions such as team building, inter-department collaboration, improvement of whole-person care with increased patient contacts with other departments.	Create sustainable and cost-effective transdisciplinary teamwork activities. Team rounds created too. Meetings were organised for better integration between departments. New tasks were identified and monitored in regular meetings to check if working	On going	(-)	(-)	(-)	Increased partnership and relationship between two departments.	Increase presence of HM chaplain residents in P&PC rounds to 100% Patient population increased spiritual care visits.	The ACE Project experience empowered the change agent role and encouraged participants to move palliative care forward.
Watts 2007, UK. Teamworking	Clinical healthcare teams, Acute Healthcare Trust, UK	5 team meetings co-ordinated by an educational facilitator. 2 h each meeting. One a month except for last meeting in the eighth month.	First meeting is used to discuss topics they'd like to progress or develop. Work towards the goals selected reporting back on following meeting.	8 months	(+)	(+)	(-)	Enhanced each team member to feel valued within the team and promote the effective contribution of their own professional expertise to the goals of the team.	Team climate had improved after 4 months, and was sustained at 8 months. IPL helped members enhance their understanding of each other's roles. Results should be taken with caution as only 42/71 answered the questionnaires. And all were self-reported data	IPL can improve team climate and raise awareness of professional roles within established clinical teams.

(continued)

Table 1. Continued.

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Ginsburg 2017, Canada. Multifaceted intervention	Front-line clinicians, staff, volunteers working at least 2–3 shifts per week in the ED and the ICU, Southlake Regional Health Centre, Canada	The intervention consisted in: a role-playing simulation workshop. Follow-up discussion briefings with front-line interprofessional team members about teamwork climate Other department-led initiatives aimed at building trust and promoting teamwork and speak up	First workshop incorporated: (a) arts-based opening monologues, (b) introduction of "script conversation and listening enablers," (c) role-playing simulation, (d) debriefing sessions, (e) exit survey. Second Discussion of "speaking up" for 6 weeks among staff. Third Leadership initiatives that promote speaking up and teamwork.	7 months	(+)	(+)	(-)	Improved the culture of trust, safety and quality in the department. It also improved staff perceptions of teamwork climate.	This study suggests that improving communication can improve staff perceptions of teamwork climate. However, results remain exploratory given the small number of respondents across the three waves of data. Additional research with larger samples is needed.	Changing communication behaviours and a creating a climate that supports speaking up is immensely challenging

- the intervention's structure and characteristics (including target population)
- its development (including educational content and circumstances)
- its duration, and finally,
- aspects connected with its implementation tackling prior preparation and guidance (including conceptual framework).

Structure and characteristics (What is it?) In the pursuit of identifying the characteristics of effective strategies that enhance IPC/IPE, we conducted an analysis of various interventions. These ranged from comprehensive educational programs covering theoretical concepts and methodologies[21,23,27,33,34,37] to hands-on clinical simulations.[31,47] From the analysis, we could infer that, when the intervention in practice is underpinned by a theoretical foundation, there seems to be a better understanding of the elements that impact the effectiveness of IPC/IPE; this does not seem to be influenced by the setting (large hospitals or primary care local communities).[31,35,36,42,44] Interaction-based strategies, such as role-playing,[47] focus groups,[35] small group discussions,[31,33,38,44] and interviews,[32,34,35] were employed to foster collaboration.

Regarding how similar strategies act on the different individuals, there is evidence to suggest that these are more effective if the volume of the group is kept relatively small, as this allows everyone to have a voice. This was supported by the outcomes of interviews reported in one of the reviewed articles,[33] where participants expressed concern about speaking up in larger groups due to fear of criticism. Groups formed by professionals who are already familiar with each other and distributed evenly among the different professions appear also to constitute factors contributing to positive results.[33] It is noteworthy that newly qualified professionals appear to be less interested in working in IPC/IPE, according to the findings of one of the reviewed articles,[36] which reported a statistically significant difference in evaluation scales between clinicians with more experience and those with less.

In terms of professions, the review analysis unveiled that nurses seem to have more positive attitudes towards the benefits of IPC/IPE than doctors. This was highlighted in one of the focus groups discussions[38] which explored differences in expectations and experiences when working in a collaborative environment involving the coordination of the different healthcare professionals that provide care to a single patient.[38,40] Having said that, workload and individual interest are contextual aspects that can affect the initial positive attitude expressed by nurses.[38]

When it comes to collaborating with patients with the objective of gaining further insight into IPC/IPE, the analysis found that the learning process seems to be more ambitious and difficult to work with but ultimately with positive outcomes.[44] Interview findings revealed both patients and healthcare workers felt that the presence of patients initially hindered the flow of communication. However, once this barrier was overcome, the patients' input was considered valued and unique.[44]

Workshops were also used as strategies which delved into essential aspects like speaking up,[47] leadership initiatives,[45,47] work roles,[33–35,40,44] workplace environment,[44] problem solving,[37,39,42,44] action planning,[35] self-reflection,[32,36] conflict resolution,[39,40] adaptation to change,[41,42,44,45] trust,[39,40,47] interaction process,[37] building core communication and relationship skills[45,47] and a competency-based approach.[42] Additionally, seminars,[37] presentations[36,40] and case discussions[31,33,34,36,37] also played a paramount role in IPC, along with team meetings held on a daily,[38] weekly,[39] or monthly basis,[37,45,46] emphasising face-to-face communication[34,35,38,44,45] and closer physical proximity.[34,39] During the implementation of these strategies, the facilitator, who serves as a contextual anchor, appears to play a critical role in guiding the process and creating a relaxed atmosphere,[33,46] as highlighted in interview responses. One interviewee stated: "I think the first few where we weren't 100% how it was going to go, you need someone to facilitate it to get you all talking about the right things and in the right manner."[33] Other key elements include the use of case-base-learning strategies and case group discussions, which seem to elicit a positive response by engaging them in real-world contexts, ultimately enhancing collaboration and interaction.[33–36,44,46]

Development of the intervention (How does it work?) The interventions analysed revealed the methods by which these were facilitated to new learners. We unveiled distinct strategies, including self-reflection,[32,36] opening monologues that promoted uncovering thoughts and feelings,[47] conversation and listening skills that employed communication tools,[31,40,44,47] debriefing sessions that followed up with questions and interaction,[37,47] ice-breakers such as didactic lectures and group discussions,[31,33,38,42,44] and the incorporation of staff huddles and one-to-one meetings.[31,40] There was a common dynamic pattern in all of these strategies which was the repeated engagement of the individuals through a variety of approaches in an attempt to enhance collaborative skills for better and more efficient patient care.

The thematic content on which the above-mentioned methods are based appears to play a key role in enhancing IPC/IPE. This content is actively influenced by each organisation, its local context, and the behaviours of the participants. To be effective, as some of the interviewees pointed out, the content should be engaging, relevant to the community's needs,[33,36,40] and supported by management so that participants can apply in practice.[40] Some participants mentioned they were unable to follow the program due to the content being too challenging and technical.[36] Regular feedback from participants helps to adjust both the message and its delivery to better meet their needs.[31,34–36] Factors such as resource shortages and lack of time can directly impact the success of the intervention.[31,41]

Duration of the intervention: The structure and duration of the intervention varied considerably; most of the articles referred to interventions lasting from 3 to 12 months. Two out of the 17 referred to interventions spanning 2 years[38,42] and there was also one case in which the article referred to a permanent, ongoing intervention.[45] In terms of the structure of the duration, the intervention was usually divided using distinct strategies. Again, there was diversity between cases and not all of them provided detailed information; from 3 h to 512 h was the mean duration of the interventions divided into an average of 6 to 10 sessions. Through the analysis of

the reviewed articles, we could not identify any common pattern between the duration of the intervention and its structure. However, once more, the analysis did reveal that interventions involving regular meetings have a positive effect on education, communication and stress management for both patients and healthcare workers, as highlighted by the themes that emerged from interviews in the reviewed articles.[34,41] In one of the studies in particular,[34] regular meetings were reported to help eliminate barriers and foster more fluid communication between junior and more experienced staff.

Other aspects concerning implementation (guidance and prior preparation). Additionally, we examined whether manuals, which guarantee the accuracy of the intervention's design existed or not; in 50% of the cases involved in our analysis, this turned out to be the case. Also, we looked at whether previous training to implement the intervention had been implemented or not; this was negative in all cases (Table 1).

Regarding the conceptual framework of the interventions analysed, 7 (41.1%)[31,35,36,42–44,47] were based on 13 different conceptual frameworks, as previously mentioned. Seven of those 13 frameworks (social identity theory,[31,36] social impact theory,[35] social constructionism,[42] social constructivist ontology,[44] Vygotsky's proximal development,[44] collaborative learning approach[44] and interprofessional team model)[42] shared a constructivist foundation where meaning and knowledge arise from social engagement and interaction with others. They underpin learning as an active, socially embedded process.[48] One particular conceptual framework[44] referenced Vygotsky's concept of the Zone of Proximal Development (ZPD),[49] which posits that every individual has an initial zone of development and with guidance and collaboration from others, they can expand their knowledge. A peer or experienced instructor can help broaden an individual's competencies, introduce new ways of thinking, and thereby enlarge the individual's initial zone of development.[49] The remaining six conceptual frameworks (reflective and experimental theory,[31] adult learning theory,[36] contact hypothesis,[36] systems theory,[42] SFA[43] and experiential education)[47] also maintained a constructivist perspective, emphasising learning through reflection, experience and these being context-dependent.[50,51] The importance of a theoretical framework supporting the intervention should be examined in direct relation to the existence of manuals and any other preparatory material training the participants with respect to the intervention's components.

Reasoning. In our research analysis, we identified several crucial reasoning aspects. These encompassed fostering ease in interprofessional communication by reducing barriers,[33,37,43] understanding professionals' roles which enhanced team collaboration,[32,38,40,44,45] establishing new cultural norms,[40,47] empowering each team member to acquire knowledge,[31,33,35–37,40] feeling valued[46] and contributing to the team's final goal,[35,38,46] altering communication behaviours to create a climate of trust,[39,40,47] openness,[41] empathy and compassion within the team,[45] and improving team conflict resolution methods.[39,40] For example in one of the reviewed articles,[33] several interviewees appreciated the knowledge sharing, stating: "Everyone has really good habits in different areas, and everyone has their own strengths, and it's nice sharing those," and "It makes you tackle areas which I probably wouldn't have done otherwise."

The effectiveness of these crucial reasoning aspects was also interrelated with their local context. Individuals tended to act more proactively towards members of different professions when pre-existing informal relationships were already in place,[33] and when their professions[39] and autonomy[36] were respected. However, individuals are less inclined to collaborate with others if acting alone or if they are perceived merely as representatives of their profession.[31]

Outcomes. From the 17 interventions analysed in our research study emerged three different layers of outcomes. The first level corresponds to the changes triggered by having the interventions implemented to enhance IPC such as the employment of extra staff. This included increased presence of consultants in the clinic fostering more engaging dialogues.[39] In addition, decision-making processes saw greater participation from healthcare workers,[37,39] while leadership initiatives within the department were initiated and expanded.[45,47] Routine morning huddles,[47] regular seminars,[37] case discussions,[31,33,34,36,37] and extra one-to-one meetings enhanced cross-professional interaction.[37,46] The introduction of simulation cases,[31,47] reflective journaling,[31,35,36] and didactic lectures[31,42] promoted learning experiences.

The second layer of outcomes relates to participants' personal perceptions and reflections on the intervention they were involved in. These subjective opinions appeared during the interviews and follow-up workshops. Outcomes included an overall improvement in teamwork climate[46] with knowledge sharing,[33,37] a reduction of staff stress[34] through peer support,[34,38] a deeper understanding of responsibilities and practice's roles[34,46] and behaviours,[36,44,47] feeling respected[38] and empowered to take decisions[37] and leading roles[47] for greater patient care. In addition, there was a reduction in feelings of isolation[33] by fostering a sense of group membership,[40,46] with greater enthusiasm, excitement, motivation, and interest in the work, ultimately contributing to personal growth.[40]

The third layer of outcomes focuses on the clinical benefits that emerged from the implementation of the interventions. Notable outcomes include a patient-centred approach[38] with enhanced patient care,[34,37,40] patient safety,[41] team climate,[46,47] patient management,[32] and closer physical proximity of staff to patients[34,39] leading to a more comprehensive care plan.[32,35] In addition, a decrease in hospital readmissions,[32] length of stay[32] and staff sickness.[39]

Even though the various layers of outcomes mentioned above highlight the importance and success of IPC/IPE interventions, they are influenced by the context in which they occur. Factors such as organisational cultures,[38] personal interests,[38] incentives,[33] motivation,[32] financial implications,[33] organisational support,[37] among others, can affect individual and group behaviours, leading to changes in the collaborative environment occurring at different speeds.[38] As highlighted by some participants (nurses) in the interviews, doctors were criticised for not completing the MDT pathways correctly, which led to communication breakdowns.[32]

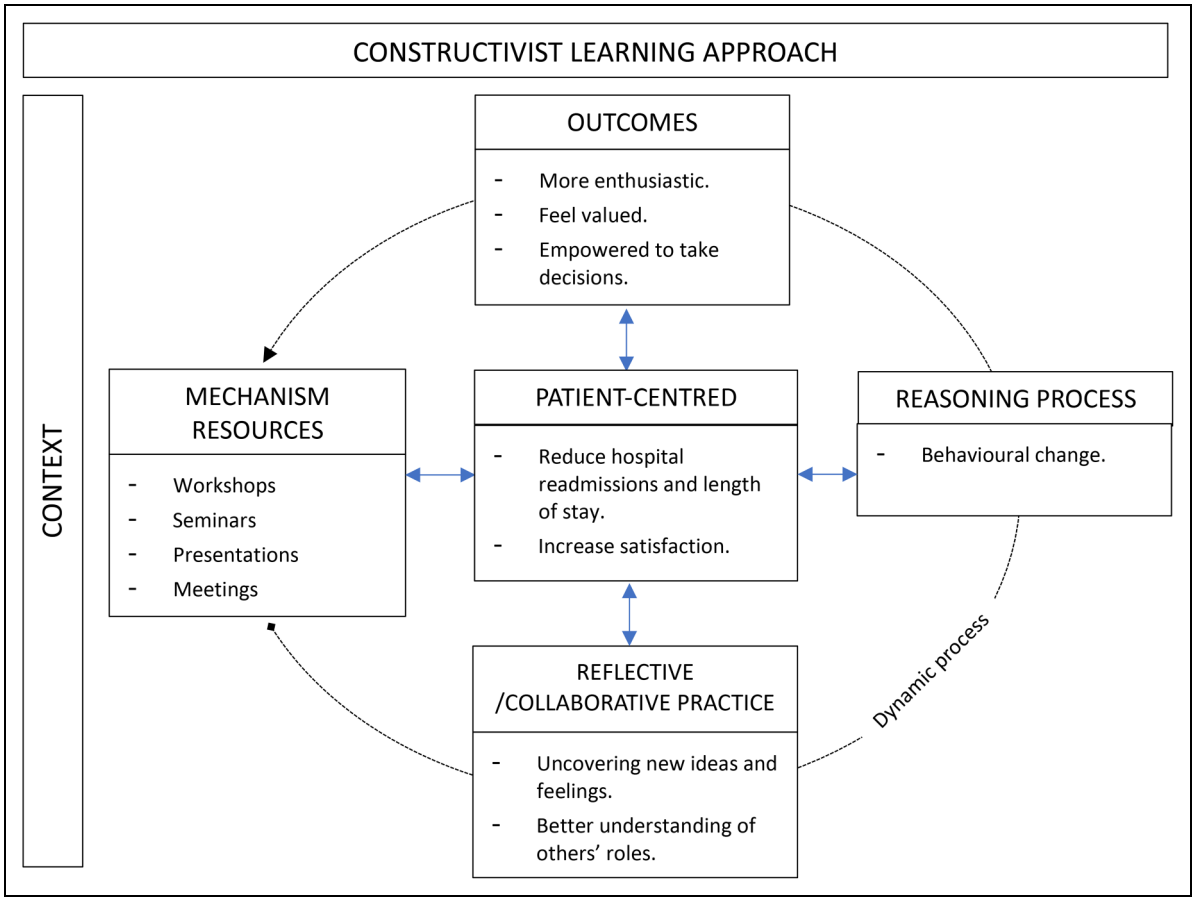

Figure 2. The explanatory model derived from the scrutiny of context-mechanism-outcome composition in the different IPC/IPE interventions up to July 2024.

Discussion

Through the realist review, we analysed 17 articles which described different interventions with the aim of promoting any form of IPC/IPE among different healthcare workers and with the ultimate objective of improving patient care. This data analysis facilitated the creation of an explanatory model (Figure 2) concerning all interventions, which provides insight into the relation between the context of the intervention, its mechanism of action (including the theoretical framework on which it is based), and the desired outcomes. Identifying common ground or patterns in the implementation of the IPC/IPE intervention to achieve specific outcomes is of paramount importance for healthcare workers who would like to either create a new intervention or adopt an existing one to improve patient care.

It has been found that the learning theory of constructivism can serve as a foundational framework based on the principles of social collaboration.[52] It emphasises real-world meaningful contexts and builds on prior knowledge through reflective techniques, which are central to the interventions analysed.[53] Constructivism views learning as a dynamic, flexible process that promotes individual exploration and growth.[53] As such, it provides an effective analytical lens for understanding the different interventions addressed in this realist review, responding to each one's unique framework. It can similarly be considered as a key part of IPC/IPE enhancement processes, as it can help learners to deepen their understanding of those processes.

Social Collaboration

A critical element derived from the data analysis is the interrelationship among the different healthcare workers with the objective of learning from each other so that the collaborative practice runs more efficiently towards delivering high patient quality of care. Literature suggests that education by itself seems not to be sufficient for behavioural change but interventions that focus on a repetitive engagement of the participants seem to make a difference.[54,55] This repetitive engagement was reflected in the various methods used during the "*Development of the intervention (How does it work?*")*,* with a common dynamic pattern observed in the reviewed articles, aiming to repeatedly engage individuals through a range of approaches.

According to D'Amour et al,[56] collaboration is based on two components: the development of a collective activity that deals with the complexity of participants' needs, and the development of a team dynamic that integrates each person's point of view while enabling mutual understanding, trust and respect between all people involved. Regular feedback from participants, as revealed in our analysis can help adjust both the thematic content and its delivery to better meet their needs.[31,34–36] Interestingly, our analysis also revealed that doctors and newly qualified professionals were criticised in several of the reviewed articles as participating in IPC/IPE interventions less effectively than other healthcare professionals, such as nurses.[32,36,38] One reason for this, as noted by Hall[57] could be that doctors are trained

to focus primarily on a patient's well-being rather than coordinating with healthcare professionals from different disciplines (ie, nurses, nurse assistants, pharmacists, physiotherapists). In contrast, nurses focus more on the patient's overall well-being, including the patient's subjective perception of it, through high-quality care, which requires building a more cohesive team dynamic. Regarding newly qualified professionals' poor interest in IPC/IPE,[36] as noted also by Tunstall-Pedoe et al,[58] this could be due to their limited experience, which does not immediately allow them to appreciate the importance and benefits of collaborative work. This is why the WHO has advocated for the introduction of IPC/IPE at the undergraduate level.[59]

'Dialogue' is a key component within the constructivist learning approach.[53] According to the National Coalition for Dialogue and Deliberation,[60] contemporary in-group dialogue performance is an activity designed to make participants engage together with the aim of exploring disharmonic social concerns, collaborative activity, decision-making and conflict resolution. The aim behind this engagement is to enhance relationships, empower individuals, offer a voice in shaping public policies, and promote learning.[61] Despite the diversity in the strategies used across the reviewed articles, dialogue (regarding activities and aims) was consistently found to be a fundamental dimension in all 17 interventions. However, dialogue also comes with challenges, as highlighted in our analysis. When patients were involved, the learning process became more ambitious and difficult to manage, yet ultimately resulted in positive outcomes.[44] These findings are consistent with those of other authors.[62,63]

Real-world Meaningful Contexts

Learning that takes place within communities of practice is based on social activities framed against a specific context, in this instance, the healthcare environment. Two main things thus occur: (i) learning is closely determined by the context and (ii) interaction between individuals induces learning.[64,65] Both elements are also present in a constructivist learning approach as previously reported.[52,53]

Through the analysis of the reviewed articles, we could infer that context (i) plays a critical part in shaping the planning, application, and effectiveness of an intervention. The design of the intervention which should be adapted to the local context,[33,36,40] could be influenced by factors such as time,[35,37,39–43] available resources,[33] organisational frameworks,[35] the target community,[31,43] as well as the engagement and support of both participating individuals[32,33,36,38,39,41,45] and leadership. The success of an intervention is closely aligned with the social interactions (ii) that occur during its implementation.[34,38] These interactions, while not exclusively, are influenced by factors such as (a) the size and distribution of healthcare professionals within different groups, (b) the thematic content on which the strategies are based, and (c) the task of a facilitator.

As noted by Wakeling et al,[66] larger groups, particularly those with 10 or more members, where professionals are unfamiliar with one another or unevenly distributed across different professions, can hinder individual engagement, trust-building, and dialogue.[33] Regarding thematic content, it should be appealing and aligned with participants' needs, as revealed in our analysis.[33,36,40] Strategies such as case-based-learning and group discussions have been shown to enhance positive responses by engaging participants with real-world contexts.[33–36,44,46] The facilitator also emerged as a crucial factor[33,44,46] in ensuring the effectiveness of interventions. They are instrumental in adjusting the content to meet participants' needs and creating a relaxed environment where professionals from diverse backgrounds can collaborate and agree on common goals to improve patient care, aligning with the findings of O'Halloran et al.[67] It is worth noting that this crucial role of the facilitator finds parallels with Vygotsky's ZPD theory, which suggests that with guidance and collaboration from an experienced instructor, people can expand their knowledge.[49] Vygotsky's conceptual framework was utilised in one of the reviewed articles[44] and aligns closely with the core principles of constructivism.[53]

In addition, the review analysis revealed that the "*Macro-context*" did not seem to have an impact on the design, implementation, or effectiveness of the various interventions. Despite interventions taking place in different countries, languages, and settings (such as large hospitals vs primary care, or distinct wards, such as Early Pregnancy Assessment, Orthogeriatric, or Palliative), these factors did not seem to affect the positive outcomes of the interventions, as long as other crucial parameters, such as the ones mentioned before were observed. On the other hand, one of the reviewed articles[34] pointed to the fact that a heavier workload in larger hospitals did not seem to hinder regular face-to-face meetings, reinforcing the idea that the "*Micro-context*" understood principally as social interaction is more consequential than the "*Macro-context*."

In line with what has been observed regarding the "*Macro-context*," it is worth noting that four of the reviewed articles[31,36,42,44] which used the same conceptual frameworks (social identity theory[31,36] and social constructivism),[42,44] obtained similar outcomes, such as improved teamwork,[31,36] enhanced professional competencies,[42] and a better understanding of one another's roles,[44] despite being conducted in different countries (USA,[31] UK[36,44] and Finland),[42] employing varied methodological approaches (mixed methodology[31,36] and qualitative research),[42,44] strategies (clinician training,[31] case discussion,[36] role-play[42] and group discussion)[44] and intervention durations (4 months,[36] 6 months,[31] 1 year,[44] 2 years).[42]

The need for an intervention manual, available in only five (29.4%) of the articles,[34,35,40,46,47] or for prior training, in turn lacking in all of them, was not confirmed as the existence of either of these two parameters did not seem to affect the outcome of the interventions.

Building on Prior Knowledge and Reflective Techniques

Building on prior knowledge and self-reflection techniques are a fundamental part of the constructivist learning approach because they support the creation of an individualised and meaningful learning experience.[53] Associating new pieces of knowledge to information learners already possess through deep reflecting thinking triggers cognitive activity, encouraging individuals to actively take part in the integration of new knowledge while consolidating the familiar one.[53] Through the analysis of the reviewed articles, we

could not identify any common pattern between the duration of the intervention and the structure of it. However, the analysis did reveal that IPC/IPE was enhanced when teams increased their interpersonal time together, either by increasing the frequency of regular meetings or extending the duration of each encounter.[34,35,38,39,41,45] This additional face-to-face contact time appeared to be closely linked to improved understanding and trust-building among healthcare workers.[52] It also provided opportunities for participants to actively construct meaning and integrate new insights into their prior knowledge, making the learning process more effective and valuable.[53] Strategies that were found in our review analysis to strengthen this process were: role-playing,[47] focus groups,[35] small group discussions,[31,33,38,44] problem solving,[37,39,42,44] action planning,[35] self-reflection,[32,36] conflict resolution,[39,40] building core communication[45,47] and adaption to change.[41,42,44,45] Even though the activities varied substantially among them, the core element was to engage participants in an active, self-driven learning process taking into consideration local needs. That being said, factors such as resources, time constraints, workload, personal interests and motivation need to be considered within the context, as they can significantly influence participants' active engagement.[31,38,41]

Explanatory model. The scrutiny of the context, mechanism and outcomes (CMO) composition gives an indication that the physical aspect that comes with each intervention and its characteristics produces an emotional, psychological and social effect on the multiple dimensions of the participants that increases simultaneously the effectiveness of the mechanism of the intervention. This dynamic relationship is divided into different stages which are interrelated and happen under the umbrella of a specific context and a conceptual framework; the mechanism resources enhance the creation of ideas and attitudes within the community that then lead to a behavioural change in the individuals *(Reasoning)*. In turn, this change leads to an emotional sensation of fulfilment and personal enrichment when improving patient care (*Outcomes*). This continuous data of patient and staff feedback closes the dynamic cycle process by making the mechanism improve and be more effective. Figure 2 shows the explanatory model created from the 17 CMO interventions.

Strengths, Limitations and Future Research

The strength of this study is that through a realist synthesis approach, it has managed to analyse, integrate and find common ground from a wide range of data originating from diverse backgrounds, methodologies, outcome evaluation techniques, and conceptual frameworks. At the same time, the same diversity of the analysed articles highlights the need for further research to compare and validate the findings.

Another important limitation of our research is the discrepancy found among the different articles reviewed when it comes to the standardisation of the IPC/IPE concept, taking into account that different definitions and terminologies have been widely used to convey similar meaning. Concepts like interprofessional (IP) learning, IP team working, IP practice, IP care, continuing IP education, team working, multi-professional meetings, multi-professional education, multidisciplinary team learning, multidisciplinary team collaboration, interdisciplinary interactions, interdisciplinary team training, transdisciplinary teamwork, collaborative multidisciplinary care teams were used indistinctively in the literature concerned by our research, without a clear consensus regarding their definitions, competencies and limitations. Further research is needed to identify the causes of this discrepancy and clearer guidelines should be in place for researchers to follow. For this same reason, our findings constitute a valued addition to the current knowledge in this field since, on the one hand, we managed to uncover this limitation in current terminology and, on the other, we managed to achieve clear conclusive outcomes, despite it.

A final limitation we encountered relates to the outcomes of the articles reviewed. The participants in the different studies may not represent realistic scenarios in many other professional settings experienced by healthcare professionals, as those selected for the intervention were chosen on their prior willingness, availability, and interest in IPC and/or IPE. Therefore, the positive outcomes obtained in each article may not be entirely attributable to the success of the interventions. In addition, in most of the articles (64.7%),[31–35,38–40,43,45,47] there were only a small number of respondents (less than 50%) to the intervention follow-up interviews and/or focus groups.

Conclusion

This systematic realist review has produced an in-depth evaluation of all the interventions described up to date that enhance IPE/IPC among healthcare professionals with the ultimate goal of improving patient care. Despite this being a hot topic in the current literature, the number and design of the interventions remain small and diverse. The explanatory model obtained from the analysis in this review should be of considerable help to future clinicians who decide to implement an already-described intervention or create a new one in their workplace.

At the same time, as the concepts of IPE and IPC continue to develop, this review will be useful to future research, when it comes to a clear definition of the aims, design of the interventions (context-mechanism-outcomes), participation and measurement of results. There is a need for further research that considers the limitations described here and investigates in depth the complex dynamics among healthcare professionals with the ultimate goal of improving the delivery of patient care.

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Ethical Considerations

This article does not contain any studies with human or animal participants.

Consent to Participate

Not applicable.

Consent to Publication

Not applicable.

Author Contributions

GBV conceived the study as part of doctoral research, led the study design, conducted the literature search, performed the article selection process, and drafted the manuscript.
FM contributed to study design, discussed selection of relevant articles, provided methodological guidance and critically reviewed the manuscript.
CMR contributed to the conception and study design in a supervisory capacity, independently conducted article selection, contributed to interpretation of findings, and critically revised the manuscript.
All authors reviewed and approved the final version of the manuscript and agree to be accountable for all aspects of the work.

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Supplemental Material

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References

1. World Health Organization. Declaration of Alma-Ata. Published 1978. Accessed August 10, 2024. https://cdn.who.int/media/docs/default-source/documents/almaata-declaration-en.pdf?sfvrsn=7b3c2167_2
2. Green BN, Johnson CD. Interprofessional collaboration in research, education, and clinical practice: working together for a better future. *J Chiropr Educ*. 2015;29(1):14-36. doi:10.7899/JCE-14-36
3. Kammerlander C, Roth T, Friedman SM, et al. Ortho-geriatric service: a literature review comparing different models. *Osteoporos Int*. 2010;21(4):637-646. doi:10.1007/s00198-010-1396-x
4. Christensen C, Larson JR Jr. Collaborative medical decision making. *Med Decis Making*. 1993;13(4):339-346. doi:10.1177/0272989X9301300410
5. Kucukarslan SN, Peters M, Mlynarek M, Nafziger DA. Pharmacists on rounding teams reduce preventable adverse drug events in hospital general medicine units. *Arch Intern Med*. 2003;163(17):2014-2018. doi:10.1001/archinte.163.17.2014
6. Hüner B, Derksen C, Schmiedhofer M. Reducing preventable adverse events in obstetrics by improving interprofessional communication skills: results of an intervention study. *BMC Pregnancy Childbirth*. 2023;23(1):55. doi:10.1186/s12884-022-05304-8
7. Kaba A, Wishart I, Fraser K, Coderre S, McLaughlin K. Are we at risk of groupthink in our approach to teamwork interventions in health care? *Med Educ*. 2016;50(4):400-408. doi:10.1111/medu.12943
8. Menefee KS. The Menefee model for patient-focused interdisciplinary team collaboration. *J Nurs Adm*. 2014;44(11):598-605. doi:10.1097/NNA.0000000000000132
9. World Health Organization. Framework for action on interprofessional education and collaborative practice. Published 2010. Accessed August 10, 2024. https://www.who.int/publications/i/item/framework-for-action-on-interprofessional-education-collaborive-practice doi:10.1007/s10461-020-03051-5
10. Yan J, Gilbert JH, Hoffman SJ. World Health Organization study group on interprofessional education and collaborative practice. *J Interprof Care*. 2007;21(6):588-589. doi:10.1080/13561820701775830
11. Vaseghi F, Yarmohammadian MH, Raeisi A. Interprofessional collaboration competencies in the health system: a systematic review. *Iran J Nurs Midwifery Res*. 2022;27(6):496-504. doi:10.4103/ijnmr.ijnmr_476_21
12. Buljac-Samardzic M, Doekhie KD, van Wijngaarden JDH. Interventions to improve team effectiveness within health care: a systematic review of the past decade. *Hum Resour Health*. 2020;18(1):2. doi:10.1186/s12960-019-0411-3
13. Reeves S, Clark E, Lawton S, Ream M, Ross F. Examining the nature of interprofessional interventions designed to promote patient safety: a narrative review. *Int J Qual Health Care*. 2017;29(2):144-150. doi:10.1093/intqhc/mzx008
14. Simons M, Goossensen A, Nies N. Interventions fostering interdisciplinary and inter-organizational collaboration in health and social care: an integrative literature review. *J Interprof Educ Pract*. 2022;28:100515. doi:10.1016/j.xjep.2022.100515
15. Richard A, Gagnon M, Careau E. Using reflective practice in interprofessional education and practice: a realist review of its characteristics and effectiveness. *J Interprof Care*. 2019;33(5):424-436. doi:10.1080/13561820.2018.1551867
16. Wilson C, Crawford K, Adams K. Translation to practice of cultural safety education in nursing and midwifery: a realist review. *Nurse Educ Today*. 2022;110:105265. doi:10.1016/j.nedt.2022.105265
17. Fukkink R, Lalihatu ES. A realist synthesis of interprofessional collaboration in the early years: becoming familiar with other professionals. *Int J Integr Care*. 2020;20(3):16. doi:10.5334/ijic.5482
18. Krystallidou D, Kersbergen MJ, de Groot E, et al. Interprofessional education for healthcare professionals: a BEME realist review of what works, why, for whom and in what circumstances in undergraduate health sciences education. BEME guide no. 83. *Med Teach*. 2024;46(1):1-18. doi:10.1186/s13561-015-0077-z
19. Kent F, Hayes J, Glass S, Rees CE. Pre-registration interprofessional clinical education in the workplace: a realist review. *Med Educ*. 2017;51(9):903-917. doi:10.1111/medu.13346
20. Padiyath A. A realist review of undergraduate student attitudes towards ethical interventions in technical computing courses. *ACM Trans Comput Educ*. 2024;24(22):1-19. doi:10.1145/3639572

21. Wong G, Westhorp G, Manzano A, et al. RAMESES II reporting standards for realist evaluations. *BMC Med*. 2016;14(1):96. doi:10.1186/s12916-016-0643-1
22. Pawson R, Greenhalgh T, Harvey G, Walshe K. Realist review: a new method of systematic review designed for complex policy interventions. *J Health Serv Res Policy*. 2005;10(1):21-34. doi:10.1258/1355819054308530
23. National Institute for Health and Care Research. Glossary. Accessed August 10, 2024. https://www.nihr.ac.uk/glossary, doi:10.1177/2325958220936014
24. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Syst Rev*. 2021(10):89. doi:10.1186/s13643-021-01626-4
25. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan: a web and mobile app for systematic reviews. *Syst Rev*. 2016;5(1):210. doi:10.1186/s13643-016-0384-4
26. Hong QN, Fabregues-Feijoo S, Bartlett G, et al. The mixed methods appraisal tool (MMAT) version 2018 for information professionals and researchers. *Educ Inf*. 2018;34(4):285-291. doi:10.3233/EFI-180221
27. Critical Appraisal Skills Programme. CASP qualitative studies checklist. Published 2018. Accessed August 10, 2024. https://casp-uk.net/casp-tools-checklists/qualitative-studies-checklist/ doi:10.1016/j.jval.2022.01.015
28. Dalkin SM, Greenhalgh J, Jones D, et al. What's in a mechanism? Development of a key concept in realist evaluation. *Implement Sci*. 2015;10(1):49. doi:10.1186/s13012-015-0237-x
29. Pawson R, Tilley N. An introduction to scientific realist evaluation. In: Chelimsky E, Shadish WR, eds. *Evaluation for the 21st century: a handbook*. Sage Publications, 1997; 405-418. doi:10.5395/rde.2015.40.2.172
30. Lacouture A, Breton E, Guichard A, Ridde V. The concept of mechanism from a realist approach: a scoping review to facilitate its operationalization in public health program evaluation. *Implement Sci*. 2015;10(1):153. doi:10.1186/s13012-015-0345-7
31. Owen JA, Brashers VL, Littlewood KE, Wright E, Childress RM, Thomas S. Designing and evaluating an effective theory-based continuing interprofessional education program to improve sepsis care by enhancing healthcare team collaboration. *J Interprof Care*. 2014;28(3):212-217. doi:10.3109/13561820.2014.890581
32. Atwal A, Caldwell K. Do multidisciplinary integrated care pathways improve interprofessional collaboration? *Scand J Caring Sci*. 2002;16(4):360-367. doi:10.1046/j.1471-6712.2002.00101.x
33. Bartlett S, Bullock AD, Hodgson K. An evaluation of a new practice-based small group learning initiative in Wales. *Educ Prim Care*. 2020;32(3):172-176. doi:10.1080/14739879.2020.1813054
34. Bharathan R, Farag M, Hayes K. The value of multidisciplinary team meetings within an early pregnancy assessment unit. *Obstet Gynecol*. 2016;36(6):789-793. doi:10.3109/01443615.2016.1154510
35. Vachon B, Desorcy B, Camirand M, et al. Engaging primary care practitioners in quality improvement: making explicit the program theory of an interprofessional education intervention. *BMC Health Serv Res*. 2013;13(1):106. doi:10.1186/1472-6963-13-106
36. McDevitt S, Passi V. Evaluation of a pilot interprofessional education programme for eating disorder training in mental health services. *Ir J Psychol Med*. 2018;35(4):289-299. doi:10.1017/ipm.2015.61
37. Richeson NE, White P, Nadeau KK, et al. Geriatric, ethics and palliative care: tending to the mind and spirit. *Educ Gerontol*. 2008;34(7):627-643. doi:10.1080/03601270801960291
38. Abrahamsen C, Nørgaard B, Draborg E, Nielsen DS. Reflections two years after establishing an orthogeriatric unit: a focus group study of healthcare professionals' expectations and experiences. *BMC Health Serv Res*. 2017;17(1):602. doi:10.1186/s12913-017-2550-3
39. Jones A, Jones D. Improving teamwork, trust and safety: an ethnographic study of an interprofessional initiative. *J Interprof Care*. 2011;25(3):175-181. doi:10.3109/13561820.2010.520248
40. Bajnok I, Puddester D, Macdonald C, Archibald D, Kuhl D. Building positive relationships in healthcare: evaluation of the teams of interprofessional staff interprofessional education program. *Contemp Nurse*. 2012;42(1):76-89. doi:10.5172/conu.2012.42.1.76
41. Slater BL, Lawton R, Armitage G, Bibby J, Wright J. Training and action for patient safety: embedding interprofessional education for patient safety within an improvement methodology. *J Contin Educ Health Prof*. 2012;32(2):80-89. doi:10.1002/chp.21130
42. Larivaara P, Taanila A. Towards interprofessional family-oriented teamwork in primary services: the evaluation of an education programme. *J Interprof Care*. 2004;18(2):153-163. doi:10.1080/13561820410001686918
43. Boaro N, Fancott C, Baker R, Velji K, Andreoli A. Using SBAR to improve communication in interprofessional rehabilitation teams. *J Interprof Care*. 2010;24(1):111-114. doi:10.3109/13561820902881601
44. Myron R, French C, Sullivan P, Sathyamoorthy G, Barlow J, Pomeroy L. Professionals learning together with patients: an exploratory study of a collaborative learning fellowship programme for healthcare improvement. *J Interprof Care*. 2018;32(3):257-265. doi:10.1080/13561820.2017.1392935
45. Terashita-Tan S. Striving for wholeness and transdisciplinary teamwork at a Pacific Basin pain and palliative care department. *Int J Manag Sci*. 2013;67(1-2):207-212. doi:10.2190/OM.67.1-2.y
46. Watts F, Lindqvist S, Pearce S, Drachler M, Richardson B. Introducing a post-registration interprofessional learning programme for healthcare teams. *Med Teach*. 2007;29(5):443-449. doi:10.1080/01421590701513706
47. Ginsburg L, Bain L. The evaluation of a multifaceted intervention to promote speaking up and strengthen interprofessional teamwork climate perceptions. *J Interprof Care*. 2017;31(2):207-217. doi:10.1080/13561820.2016.1249280
48. Prawat RS. Teachers' beliefs about teaching and learning: a constructivist perspective. *Am J Educ*. 1992;100(3):354-395. doi:10.1086/444021
49. Vygotsky LS. *Mind in society: the development of higher psychological processes*. Harvard University Press; 1978.
50. Mukhalalati BA, Taylor A. Adult learning theories in context: a quick guide for healthcare professional educators. *J Med Educ Curric Dev*. 2019;6:2382120519840332. doi:10.1177/2382120519840332
51. Pettigrew TF, Tropp LR. A meta-analytic test of intergroup contact theory. *J Pers Soc Psychol*. 2006;90(5):751-783. doi:10.1037/0022-3514.90.5.751

52. Johnson MD, Bradbury TN. Contributions of social learning theory to the promotion of healthy relationships: asset or liability? *J Fam Theory Rev*. 2015;7(1):13-27. doi:10.1111/jftr.12057
53. Mascolo MF, Fischer KW. Constructivist theories. In: Hopkins B, Barr RG, Michel G, Rochat P, eds. *Cambridge encyclopedia of child development*. Cambridge University Press; 2005:49-63.
54. Kwasnicka D, Dombrowski SU, White M, Sniehotta F. Theoretical explanations for maintenance of behaviour change: a systematic review of behaviour theories. *Health Psychol Rev*. 2016;10(3):277-296. doi:10.1080/17437199.2016.1151372
55. Arlinghaus K, Johnston CA. Advocating for behaviour change with education. *Am J Lifestyle Med*. 2018;12(2):113-116. doi:10.1177/1559827617745479
56. D'Amour D, Ferrada-Videla M, San Martin-Rodriguez L, Beaulieu MD. The conceptual basis for interprofessional collaboration: core concepts and theoretical framework. *J Interprof Care*. 2005;19(Suppl 1):116-131. doi:10.1080/13561820500082529
57. Hall P. Interprofessional teamwork: professional cultures as barriers. *J Interprof Care*. 2005;19(Suppl 1):188-196. doi:10.1080/13561820500081745
58. Tunstall-Pedoe S, Rink E, Hilton S. Student attitudes to undergraduate interprofessional education. *J Interprof Care*. 2003;17(2):161-172. doi:10.1080/1356182031000081768
59. World Health Organization. *Framework for action on interprofessional education and collaborative practice*. World Health Organization; 2010. Accessed August 10, 2024. https://www.who.int/publications/i/item/framework-for-action-on-interprofessional-education-collaborative-practice
60. National Coalition for Dialogue and Deliberation. Resource guide on public engagement. Published 2010. Accessed August 10, 2024. https://www.ncdd.org/resource-guide.html
61. Dessel A, Rogge ME. Evaluation of intergroup dialogue: a review of the empirical literature. *Confl Resolut Q*. 2008;26(2):199-238. doi:10.1002/crq.230
62. Brown PC, Roediger HL, McDaniel MA. *Make it stick: the science of successful learning*. Harvard University Press; 2014.
63. Busari J, Moll F, Duits A. Understanding the impact of interprofessional collaboration on the quality of care: a case report from a small-scale resource-limited healthcare environment. *J Multidiscip Healthc*. 2017;10:227-234. doi:10.2147/JMDH.S140042
64. Nomikou I, Leonardi G, Rohlfing KJ, Raczaszek-Leonardi J. Constructing interaction: the development of gaze dynamics. *Infant Child Dev*. 2016;25(3):277-295. doi:10.1002/icd.1975
65. De Felice S, Hamilton AFC, Ponari M, Vigliocco G. Learning from others is good, with others is better: the role of social interaction in human acquisition of new knowledge. *Philos Trans R Soc Lond B Biol Sci*. 2023;378(1870):20210357. doi:10.1098/rstb.2021.0357
66. Wakeling J, Ferguson J, Cunningham DE, et al. Interprofessional small group learning: a case study of two pharmacist-facilitated groups in Scotland. *Pharm Educ*. 2016;16(1):210-217. https://pharmacyeducation.fip.org/pharmacyeducation/article/view/400. Accessed August 10, 2024.
67. O'Halloran C, Hean S, Humphris D, Macleod-Clark J. Developing common learning: the new generation project undergraduate curriculum model. *J Interprof Care*. 2006;20(1):12-28. doi:10.1080/13561820500471854