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Review

Readiness for interprofessional education in undergraduate medical and healthcare curricula: A scoping review

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Abstract. *Background and aim:* Interprofessional education is crucial for preparing healthcare professionals for collaborative practice. This scoping review aimed to synthesize available evidence on readiness for interprofessional learning among medical students exposed to interprofessional education during medical school. *Methods:* Following the JBI methodology for scoping reviews, we searched six databases (PubMed, CINAHL, Scopus, Web of Science, ERIC, and PsycINFO) for studies published between 2017 and 2022. The review process adhered strictly to the JBI guidelines for scoping reviews, including the use of standardized data extraction tools and quality assessment measures. The review process included a consultation phase with key stakeholders. Data were extracted and synthesized using a narrative approach complemented by thematic analysis. *Results:* Eleven studies met the inclusion criteria. Medical students generally demonstrated moderate to high levels of readiness for interprofessional learning, with variability across years of study. Early exposure to interprofessional experiences positively influenced readiness. Diverse educational interventions, particularly those involving simulation and immersive clinical experiences, effectively enhanced interprofessional learning readiness. Cultural and contextual factors significantly impacted interprofessional attitudes and readiness. *Conclusions:* This review highlights the importance of integrating interprofessional education experiences throughout medical curricula. The findings suggest that targeted educational interventions can positively influence readiness for interprofessional learning, with potential benefits for future collaborative practice. However, there is a need for more robust, longitudinal studies to strengthen the evidence base and address current limitations in the field. (www.actabiomedica.it)

Key words: interprofessional education, students, medical, readiness for interprofessional education, collaborative practice, scoping review, undergraduate, health professions education, curriculum, health occupations, medical education

Introduction

The increasing complexity of healthcare delivery and the evolving understanding of the multifaceted determinants of health have catalyzed discussions on improving the quality and accessibility of healthcare services (1). Within this context, interprofessional education (IPE) has emerged as a crucial strategy for preparing healthcare professionals for effective collaborative practice, which is essential for addressing the complex health challenges of the 21st century (2,3). Interprofessional education, defined as occasions when members or students of two or more professions learn with, from, and about each other to improve collaboration and the quality of care (4,5), has gained significant traction in medical education globally. This paradigm shift is reflected in the changes to medical education guidelines in various countries, including Brazil's National Curriculum Guidelines (Diretrizes Curriculares Nacionais - DCN) for medical courses in 2014 (6). These guidelines emphasize the need for generalist, humanistic, critical, and reflective training aligned with the demands of the Unified Health System (Sistema Único de Saúde - SUS), highlighting the importance of integrating knowledge and fostering interprofessional collaboration (3). The implementation of IPE in medical curricula is predicated on the readiness of students to engage in interprofessional learning. Readiness for interprofessional learning is a complex construct encompassing attitudes, perceptions, and preparedness of students to engage in collaborative learning with peers from other healthcare professions (7). Understanding this readiness is crucial for designing effective IPE interventions and for predicting future engagement in collaborative practice (8). Despite the recognized importance of IPE, the readiness of medical students for interprofessional learning remains an understudied area, particularly in the context of undergraduate medical education. A preliminary search of the literature revealed a paucity of comprehensive reviews on this specific topic, highlighting the need for a systematic mapping of the existing evidence.

This scoping review aims to address this gap by exploring the extent to which interprofessional education is addressed in undergraduate medical education and how medical students demonstrate readiness for this learning approach. By mapping the existing literature, this study will provide a comprehensive overview of the current state of research in this field, informing future directions for medical education and interprofessional practice. Specifically, this review aims to address the following question: "What data are available in the literature on the readiness for interprofessional learning among medical students exposed to interprofessional education during medical school?" By synthesizing the available evidence, we aim to elucidate patterns, trends, and gaps in the current understanding of medical students' readiness for interprofessional learning, thereby contributing to the advancement of interprofessional education in medical curricula and, ultimately, to the improvement of collaborative healthcare practice.

Methods

This scoping review was conducted in strict adherence to the Joanna Briggs Institute (JBI) methodology for scoping reviews (9) and follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines (10). The protocol for this review was published in advance (11) to ensure transparency and reproducibility**.**

Research question and eligibility criteria

The review was guided by the following research question, structured according to the Population, Concept, and Context (PCC) framework: "*What data are available in the literature on the readiness for interprofessional learning (Concept) among medical students (Population) exposed to interprofessional education during medical school (Context)?*"

Eligibility criteria were defined as follows:

Population

- Undergraduate medical students at any stage of their degree program
- Students from both public and private institutions

Concept:

- Readiness for interprofessional learning, defined as the disposition and preparation of students to engage in learning activities with students from other health professions
- Related terms: attitudes, perceptions, and willingness for interprofessional collaboration

Context:

- Undergraduate medical education
- Studies published between January 2017 and May 2022
- No geographical restrictions

Types of evidence sources:

- Primary research studies including quantitative, qualitative, and mixed methods designs
- Experimental and quasi-experimental studies, including randomized controlled trials, non-randomized controlled trials, before-and-after studies, and interrupted time series studies
- Articles published in English, Portuguese, or Spanish

Exclusion criteria:

- Studies focused exclusively on postgraduate students or residents
- Opinion pieces, editorials, and literature reviews

Search strategy

A comprehensive search strategy was developed in collaboration with a health sciences librarian. The following electronic databases were searched: Scopus, Scientific Electronic Library Online (SciELO), PubMed, Biomed Central Journal, Wiley-Blackwell, Cumulative Index to Nursing and Allied Health Literature (CINAHL), and Education Resource Information Center (ERIC). These databases were selected to ensure comprehensive coverage of medical, educational, and interdisciplinary literature. The search was conducted between May 1 and May 15, 2022. The core search strategy for PubMed, which was adapted for other databases. Filters were applied to limit results to the specified date range (2017-2022) and languages (English, Portuguese, Spanish). The complete search strategies for all databases are provided in Table S1.

Study selection

Following the search, all identified citations were collated and uploaded into Rayyan QCRI (12), and duplicates were removed. Titles and abstracts were then screened by two independent reviewers (TB and VB) for assessment against the inclusion criteria. Potentially relevant studies were retrieved in full, and their citation details imported into a Microsoft Excel spreadsheet. The full text of selected citations was assessed in detail against the inclusion criteria by two independent reviewers (TB and LS). Reasons for exclusion of full-text studies that did not meet the inclusion criteria were recorded and reported in the PRISMA flow diagram. Any disagreements that arose between the reviewers at each stage of the study selection process were resolved through discussion, or with the involvement of a third reviewer (JA). The entire selection process is illustrated in a PRISMA flow diagram (Figure 1), detailing the number of records identified, included, and excluded at each stage.

Data extraction

A standardized data extraction tool was developed in Microsoft Excel, based on the JBI template for scoping reviews and tailored to meet the specific objectives of this review. The data extraction form is provided in Table S2. The tool was pilot tested on three randomly selected included studies and refined accordingly.

Two reviewers (TB and LS) independently extracted data from each included study. The extracted data included:

- Bibliographic information (authors, year, title, journal)
- Study characteristics (design, location, duration)
- Participant characteristics (sample size, year of study, age, gender)

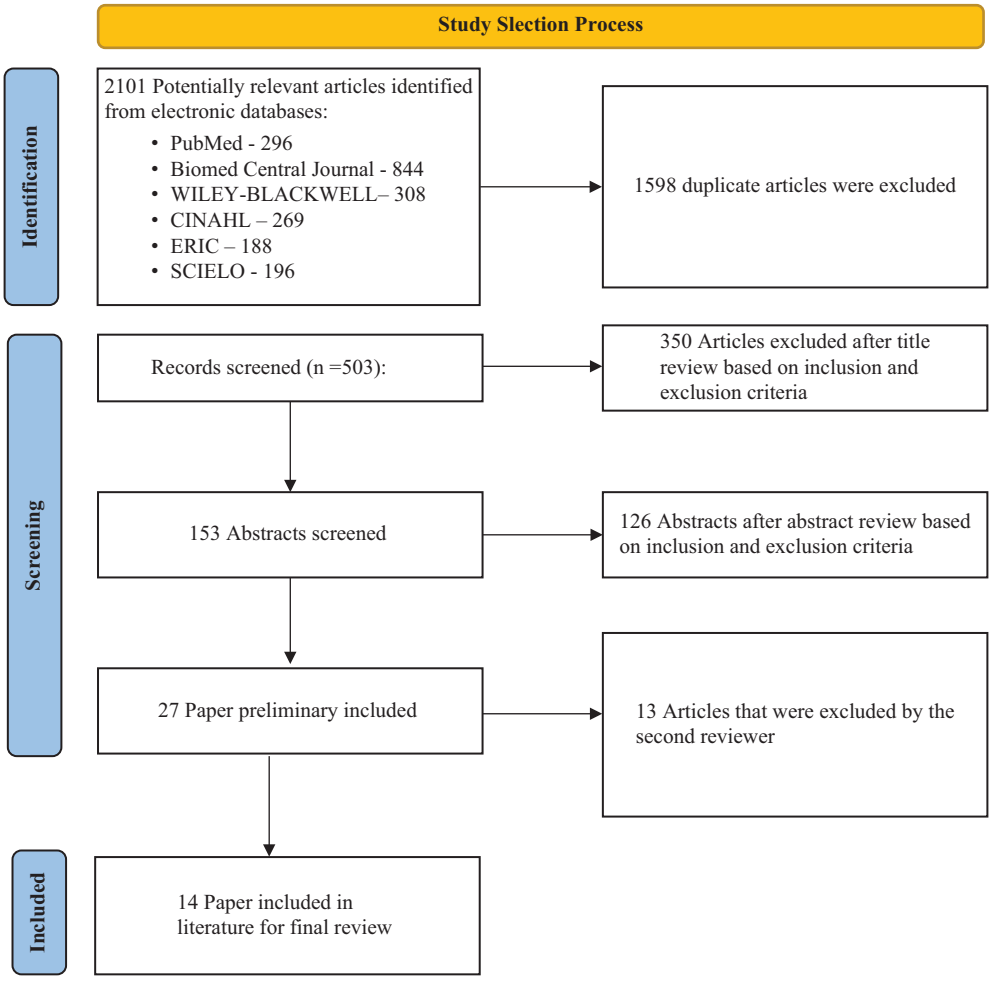

Figure 1. PRISMA flow diagram.
(Source: Author)

- Methods of assessing readiness for interprofessional learning
- Educational interventions (if applicable)
- Key findings and conclusions
- Study limitations

Any disagreements were resolved through discussion or with the involvement of a third reviewer (VB). Authors of papers were contacted to request missing or additional data, where required.

Data analysis and synthesis

A narrative synthesis approach was adopted, complemented by thematic analysis. The extracted data were initially categorized according to the PCC elements, with subcategories developed inductively as themes emerged from the data. Quantitative data were analyzed using descriptive statistics, including frequencies and percentages for key study characteristics. Qualitative data were subjected to thematic analysis to identify recurring patterns and themes across studies.

The synthesis process involved the following steps:

1. Familiarization with the data.
2. Initial coding.
3. Searching for themes.
4. Reviewing themes.

5. Defining and naming themes.
6. Producing the report.

Two reviewers (TB and LS) independently conducted the thematic analysis, with regular discussions to resolve discrepancies and reach consensus. The final synthesis was reviewed by all team members to ensure accuracy and comprehensiveness. To ensure a comprehensive and nuanced synthesis, we integrated quantitative and qualitative evidence through triangulation and complementarity approaches. Results are presented narratively, accompanied by tables and figures to aid in data presentation where appropriate.

Consultation process

To enhance the relevance and applicability of the review findings, we incorporated a comprehensive consultation phase with key stakeholders. This process was designed to integrate diverse perspectives and specialized expertise throughout the review, enriching our methodology and interpretation of results.

Consultation phases

We conducted consultations at three critical stages of the review process:

1. Initial Phase: Prior to finalizing the review protocol.
2. Intermediate Phase: Following the initial study selection.
3. Final Phase: During the synthesis and interpretation of results.

Stakeholder identification

Our consultation involved 12 individuals representing a range of perspectives:

- 3 medical educators with experience in interprofessional education.
- 2 researchers specializing in interprofessional collaboration in healthcare.
- 2 medical students at different stages of their education.
- 2 healthcare professionals from other disciplines (nursing and physiotherapy).
- 2 managers of interprofessional education programs.
- 1 expert in scoping review methodology.

Consultation methods

We employed a mixed-methods approach to gather feedback:

- 8 semi-structured individual interviews.
- 1 focus group with medical students.
- 2 rounds of online questionnaires for feedback on specific documents.

Specific contributions

Initial Phase:

- Refinement of research question and inclusion/exclusion criteria.
- Example: A medical educator suggested including a temporal perspective in the question, leading to consideration of readiness evolution throughout the medical course.

Intermediate phase:

- Review of initially selected studies and suggestion of additional sources.
- Example: An interprofessional collaboration researcher identified two relevant studies we had not initially included.

Final phase:

- Provision of insights for result interpretation and implication identification.
- Example: An interprofessional education program manager highlighted the importance of considering institutional barriers in intervention implementation.

Integration of feedback

The consultants' feedback was incorporated in several ways:

- Methodological refinement: We adjusted our search strategy based on suggestions from methodology experts;
- Scope expansion: We included considerations of institutional and cultural factors in the analysis, as suggested by managers and educators.
- Contextualized interpretation: We used healthcare professionals' insights to interpret results in the context of real clinical practice.
- Student perspective: We incorporated students' views on barriers and facilitators to interprofessional learning readiness.

Impact on review process:

The consultation process significantly influenced our review:

- Enhanced relevance: Stakeholder input ensured our review addressed pertinent issues in the field.
- Improved comprehensiveness: Additional literature sources were identified through expert suggestions.
- Deeper interpretation: Diverse perspectives allowed for a more nuanced understanding of the findings.
- Increased applicability: Insights from practitioners and program managers improved the practical relevance of our conclusions.

Challenges and resolutions:

We encountered challenges in coordinating multiple perspectives and integrating sometimes divergent feedback. These were addressed through team discussions and consensus-seeking, maintaining transparency about differing viewpoints in our final report.

Reflection on the consultation process:

The inclusion of stakeholder consultations significantly enriched our scoping review. It provided diverse perspectives that helped us interpret the results more comprehensively and relevantly for different contexts. We found this process crucial for increasing the robustness and relevance of our review, offering insights that would not have been possible through literature analysis alone. This structured consultation process aligns with best practices in scoping reviews, as advocated by Arksey and O'Malley (2005) (13) and further refined by Levac et al. (2010) (14). It demonstrates our commitment to producing a review that is not only academically rigorous but also practically relevant and responsive to the needs of various stakeholders in the field of interprofessional education in medical curricula.

Results

This scoping review synthesizes findings from 11 studies examining readiness for interprofessional learning among medical students. The results are presented in alignment with the review objectives, drawing upon the data extracted and summarized in Tables 1 through 8.

Characteristics of included studies

Table 1 presents the general characteristics of the included studies. The research spans from 2017 to 2022, representing a diverse geographical distribution including Germany, United States, Mexico, Saudi Arabia, Switzerland, Japan, Sweden, and the United Arab Emirates. This global representation allows for a broad perspective on interprofessional learning readiness across different cultural and educational contexts.

Study designs varied, encompassing cross-sectional (7 studies), longitudinal (3 studies), and mixed-methods (1 study) approaches. Sample sizes ranged from 28 to 809 participants, with a mean of approximately 423 participants per study. Most studies focused on medical students in their early years of

Table 1. General Study Information and Population Characteristics (2025).

Source	Year of Publication	Country of Study	Study Design	Total Number of Participants	Year of Medical Study	Mean Age of Participants	Gender Distribution
Liaw (23)	2017	Singapore	Quasi-experimental study	127 (58 medical students, 69 nursing students)	Third-year	Not reported	Not reported
Maharajan (24)	2017	Malaysia	Cross-sectional study	809 (232 medical students)	Years 1 to 5	Not reported	67.61% female, 32.39% male
Sincak (51)	2017	United States	Longitudinal study	783 (190 medical students)	First professional year	Not reported	Not reported
Vandergoot (52)	2017	Australia	Cross-sectional study	158 (52 medical students)	Second year	21.25 years (total), 19-20 years (79% of medical students)	Not reported specifically for medical students
Homeyer (53)	2018	Germany	Qualitative study (Delphi method)	25 experts (including medical educators)	Not applicable (expert study)	Not reported	16 female, 9 male
Pinto (54)	2018	United States	Pre-post study	332 (148 medical students)	Not specified	Not reported	Not reported
Quesnelle (25)	2018	United States	Pre-post study	90 (67 medical students, 23 pharmacy students)	First year	Not reported	Not reported
Tuiran-Gutierrez (18)	2019	Mexico	Longitudinal study	129 (93 medical students, 36 nursing students)	First to third year	Not reported	Not reported
Wipfler (21)	2019	Germany	Pilot study	28 (specific number of medical students not reported)	Final year ("practical year")	25 years (min: 21, max: 34, SD 2.75)	68% female
Alruwaili (19)	2020	Saudi Arabia	Cross-sectional study	252 (126 medical students)	4th and 5th year	Not reported	53.2% female, 46.8% male
Berger-Estilita (20)	2020	Switzerland	Cross-sectional study	213 (154 medical students)	3rd year	Not reported	Not reported
Numasawa (15)	2021	Japan	Mixed methods (quantitative pre-post and qualitative)	378 (190 medical students)	Final year	24.2 years (SD 2.1) for medical students	69.5% male, 30.5% female (medical students)
Conte (16)	2022	Sweden	Mixed methods (convergent parallel design)	45 (29 medical students)	Not specified	22.4 years (medical students)	16 female, 13 male (medical students)
Zaher (17)	2022	United Arab Emirates	Pre-post study	90 (40 medical students)	Third year	Not reported	Not reported

Source: Author.

training (1st to 3rd year), suggesting a trend towards assessing and promoting interprofessional learning readiness early in medical education. The diversity in study designs and sample sizes indicates a growing interest in this field, with researchers employing various methodologies to explore the complex dynamics of interprofessional learning readiness. However, the predominance of cross-sectional studies suggests a need for more longitudinal research to better understand how readiness evolves over time.

Interprofessional education context

Table 2 outlines the interprofessional education initiatives described in the studies. These ranged from one-day simulation programs to longitudinal curricular interventions spanning multiple years. The initiatives involved various health professions, most commonly nursing, but also including pharmacy, dentistry, and allied health disciplines.

Notable interventions included:

- Interactive workshops using simulated clinical scenarios (15)
- Clinical rotations in ambulance services (16)
- Case-based interprofessional learning sessions (17)
- Regular curriculum with a focus on interprofessional collaborative work abilities (18)

The diversity of these interventions reflects the multifaceted nature of interprofessional education and the various approaches institutions are taking to foster interprofessional learning readiness. The duration of these initiatives varied significantly, from single sessions to multi-year programs, providing insights into both short-term and long-term effects of interprofessional education on readiness.

Assessment of readiness for interprofessional learning

Table 3 details the instruments used to assess readiness for interprofessional learning. The Readiness for Interprofessional Learning Scale (RIPLS) was the most frequently employed tool, used in several studies including Alruwaili (2020) (19), Numasawa (2021) (15), and Zaher (2022) (17). Other instruments included:

- Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration (JSAPNC) (18)
- University of the West of England Interprofessional Questionnaire (UWE-IP) (20)
- Custom-developed questionnaires (21)

The components evaluated typically encompassed teamwork, collaboration, professional identity, and roles and responsibilities. This consistency in assessed domains allows for some comparison across studies, despite the use of different instruments.

The prevalence of the RIPLS suggests a move towards standardization in assessment methods, which could facilitate more direct comparisons between studies in future research. However, the use of various instruments also highlights the complex nature of interprofessional learning readiness and the different facets that researchers aim to capture.

Primary outcomes

Table 4 summarizes the primary outcomes reported in the studies. Overall, most studies reported positive attitudes or readiness for interprofessional learning among medical students. Key findings include:

- Generally positive readiness for interprofessional learning across different cultural contexts (19,22)
- Significant improvements in attitudes toward interprofessional collaboration following educational interventions (17,18)
- Development of collaborative learning strategies and situational leadership skills through clinical experiences (16)

Factors positively influencing readiness included:

- Exposure to interprofessional education experiences
- Interactive approaches to learning
- Relevance of the topics covered in interprofessional sessions

Table 2. Interprofessional Education Context (2025).

Source	Type of Interprofessional Education Initiative	Duration of Initiative	Other Health Professions Involved
Liaw (23)	Interprofessional simulation-based education program One-day program	One-day program	Nursing
Maharajan (24)	Not specified (study assessed attitudes and readiness)	Not applicable	Dentistry, Pharmacy, Health Sciences
Sincak (51)	Mandatory interprofessional course	10 weeks (1 credit)	Pharmacy, Dentistry, Physical Therapy, Occupational Therapy, Physician Assistant, Clinical Psychology, Speech-Language Pathology
Vandergoot (52)	Interprofessional conflict resolution program	3 sessions of one hour over 3 weeks	Nursing
Homeyer (53)	Not specific to one initiative (study focused on expert opinions on IPE)	Not applicable	Nursing (focus on medical and nursing education)
Pinto (54)	Inter-institutional interprofessional stroke simulation activity	One-time simulation session	Nursing, Occupational Therapy, Physical Therapy, Physician Assistant, Pharmacy, Nurse Practitioner
Quesnelle (25)	Telehealth team-based learning exercise focused on pharmacogenomics	Two-hour stand-alone exercise	Pharmacy
Tuiran-Gutierrez (18)	Regular curriculum with interprofessional collaborative work abilities focus	Three years (longitudinal study)	Nursing
Wipfler (21)	Interprofessional seminar on patient safety	Two sessions of 90 minutes each	Students from Interprofessional Health Care (IHC) program
Alruwaili (19)	Not specified (study assessed readiness for interprofessional learning)	Not applicable	Nursing
Berger-Estilita (20)	Not specified (study assessed attitudes towards interprofessional learning)	Not applicable	Nursing
Numasawa (15)	Interactive workshop using simulated clinical scenarios	Two-day workshop	Dental, Nursing
Conte (16)	Clinical rotation in the ambulance service	2-4 days for medical students, 6 weeks for nursing students	Nursing
Zaher (17)	Case-based interprofessional learning session	Not specified (one-time intervention)	Nursing, Pharmacy, Physiotherapy

Source: Author.

Table 3. Assessment of Readiness for Interprofessional Learning (2025).

Source	Instrument Used to Assess Readiness	Components Evaluated by the Instrument	Measurement Scale Utilized
Liaw (23)	Jefferson Scale of Attitudes Toward Physician-Nurse Collaboration (JSAPNC)	Attitudes toward nurse-physician collaboration	4-point Likert scale
Maharajan (24)	Readiness for Interprofessional Learning Scale (RIPLS) and Interdisciplinary Education Perception Scale (IEPS)	RIPLS: Teamwork and collaboration, Professional identity, Roles and responsibilities. IEPS: Competency and autonomy, Perceived need for cooperation, Perception of actual cooperation	RIPLS: 5-point Likert scale. IEPS: 6-point Likert scale
Sincak (51)	Questionnaire developed by the authors	Knowledge, skills, importance and frequency of interprofessional practices	Scale of 1 to 10
Vandergoot (52)	10-item measure adapted from Curran et al. (2007)	Attitudes towards interprofessional learning, motivation to learn, perceived transfer of conflict resolution	5-point Likert scale
Homeyer (53)	Not applicable (qualitative expert study)	Not applicable	Not applicable
Pinto (54)	Abbreviated version of the IPEC Competency Self-Assessment tool	Interprofessional interactions and values	Not specified in the extract
Quesnelle (25)	Modified Scale of Attitudes Toward Physician-Pharmacist Collaboration (SATP2C)	Attitudes toward collaborative relationships, pharmacogenomics confidence	4-point Likert-type scale
Tuiran-Gutierrez (18)	Jefferson Scale of Attitudes toward Physician-Nurse Collaboration (JSAPNC)	Attitudes toward interprofessional collaboration	4-point Likert scale
Wipfler (21)	Course evaluation instrument developed by the authors	Relevance for future professional life, knowledge gain, attitude towards patient safety, benefit from interprofessional composition	5-point Likert scale and forced-choice ítems
Alruwaili (19)	Readiness for Interprofessional Learning Scale (RIPLS)	Teamwork and collaboration, professional identity, roles and responsibilities	5-point Likert scale
Berger-Estilita (20)	German version of the University of the West of England Interprofessional Questionnaire (UWE-IP)	Communication and teamwork, interprofessional learning, interprofessional interaction	4-point Likert scale
Numasawa (15)	Readiness for Interprofessional Learning Scale (RIPLS)	Not specified in detail	5-point Likert scale
Conte (16)	Abbreviated version of the IPEC Competency Self-Assessment tool	Interprofessional interactions and values	Not specified in detail
Zaher (17)	Readiness for Interprofessional Learning Scale (RIPLS)	Teamwork and collaboration, Professional identity, Roles and responsibilities	5-point Likert scale

Source: Author.

Table 4. Primary Outcomes (2025).

Source	Overall Level of Readiness for Interprofessional Learning	Factors Positively Influencing Readiness	Factors Negatively Influencing Readiness	Differences in Readiness Across Years of Study
Liaw (23)	Improved attitudes toward nurse-physician collaboration	Interprofessional simulation-based education	Not specifically mentioned	Not applicable (only third-year students involved)
Maharajan (24)	Generally positive	Increased clinical exposure, higher-order thinking in later years	Lack of exposure in managing multidisciplinary healthcare teams	Significant differences observed across years, with more advanced students generally showing greater readiness
Sincak (51)	Moderately positive (mean of 6.23 on a scale of 1 to 10)	Standardized patient encounters, small group discussion sessions	Course timing (end of day), lack of complexity in patient scenarios	Not applicable (only first year assessed)
Vandergoot (52)	Moderately positive, with significant differences between medical and nursing students	Prior clinical experience, perceived relevance of content	Lack of clinical experience, perception of lower content relevance	Not applicable (only second year assessed)
Homeyer (53)	Not directly assessed (expert opinions on IPE implementation)	Development of interprofessional thinking, shared knowledge acquisition, promotion of information exchange	Coordination challenges, different knowledge levels, curriculum harmonization issues	Not applicable
Pinto (54)	Significant positive changes in both values and interaction domains	Interprofessional simulation experience	Not specifically mentioned	Not reported
Quesnelle (25)	Significant positive changes in attitudes and perceptions across all categories	Telehealth interprofessional education experience	Not specifically mentioned	Not applicable (only first-year students involved)
Tuiran-Gutierrez (18)	Significant improvement in attitudes toward interprofessional collaboration over time	Exposure to interprofessional education and collaborative experiences	Not specifically mentioned	Improvements observed across all three years of study
Wipfler (21)	Generally positive	Interactive approach, relevance of the topic	Not specifically mentioned	Not applicable (only final year students involved)
Alruwaili (19)	Generally positive readiness for interprofessional learning	Generally positive readiness for interprofessional learning	Not specifically mentioned	No significant differences between 4th and 5th year students
Berger-Estilita (20)	Generally positive attitudes towards interprofessional learning Not specifically mentioned	Not specifically mentioned	Not specifically mentioned	Not applicable (only 3rd year students involved)
Numasawa (15)	Significant increase in RIPLS scores after the workshop for all disciplines	Exposure to interprofessional collaboration in varied settings	Not specifically mentioned	Not applicable (only final year students)
Conte (16)	Generally positive, with improvements after the experience	Exposure to collaborative clinical reasoning, situational leadership opportunities	Not specifically mentioned	Not reported
Zaher (17)	Significant increase in overall readiness after the intervention	Exposure to interprofessional learning experience	Not specifically mentioned	Not applicable (only third-year students involved)

Source: Author.

Some studies noted differences in readiness levels across years of study, though findings were not consistent across all studies. For instance, Tuiran-Gutierrez et al. (2019) (18) observed improvements in attitudes over a three-year period, while Alruwaili (2020) (19) found no significant differences between 4th and 5th year students.

These outcomes suggest that targeted interprofessional education initiatives can effectively enhance readiness for interprofessional learning among medical students. However, the variability in findings across years of study indicates a need for further research to under-stand how readiness evolves throughout medical education.

Psychometric properties of instruments

Table 5 presents the psychometric properties of the assessment instruments. While reliability data (typically Cronbach's alpha) was reported in several studies, validity information was less commonly provided. For instance:

- Alruwaili (2020) (19) and Numasawa (2021) (15) both reported a Cronbach's alpha of 0.87 for their instruments
- Berger-Estilita (2020) (20) reported Cronbach's alpha ranging from 0.78 to 0.85 for different subscales
- Zaher (2022) (17) reported a Cronbach's alpha of 0.90 for the RIPLS

The high reliability coefficients across studies suggest good internal consistency of the instruments used. However, the limited reporting of validity data highlights a potential area for improvement in future research. More comprehensive psychometric evaluations

Table 5. Psychometric Properties of the Instrument (2025).

Source	Validity	Reliability	Other Parameters Evaluated
Liaw (23)	Not reported in this study	Cronbach's alpha = 0.84	Not reported
Maharajan (24)	Not evaluated in this study	RIPLS: Cronbach's α = 0.90. IEPS: Cronbach's α = 0.80	Not reported
Sincak (51)	Not reported	Cronbach's alpha = 0.95 for all items. Subscales ranged from 0.67 to 0.93	Not reported
Vandergoot (52)	Not specifically evaluated in this study	Cronbach's alpha = 0.70 for attitudes towards interprofessional learning	Not reported
Homeyer (53)	Not applicable (qualitative study)	Not applicable	Not reported
Pinto (54)	Not reported in this extract	Not reported in this extract	Not reported
Quesnelle (25)	Not reported in this extract	Not reported in this extract	Not reported
Tuiran-Gutierrez (18)	Not reported in this extract	Not reported in this extract	Not reported
Wipfler (21)	Not reported	Not reported	Not reported
Alruwaili (19)	Not reported in this extract	Cronbach's alpha = 0.87	Not reported
Berger-Estilita (20)	Not reported in this extract	Cronbach's alpha ranged from 0.78 to 0.85 for different subscales	Not reported
Numasawa (15)	Not reported	Cronbach's alpha = 0.87	Not reported
Conte (16)	Not reported	Not reported	Not reported
Zaher (17)	Not reported	Cronbach's alpha = 0.90 for RIPLS	Not reported

Source: Author.

would strengthen the robustness of findings in this field.

Principal study conclusions

Table 6 presents a rich tapestry of findings and implications for medical education derived from the included studies. The conclusions drawn from these studies offer valuable insights into the landscape of interprofessional learning readiness among medical students and provide direction for future educational strategies.

Effectiveness of interprofessional education interventions:

A consistent theme across multiple studies was the positive impact of interprofessional education (IPE) interventions on students' readiness for interprofessional learning. For instance, Liaw et al. (2017) (23) reported that their interprofessional simulation-based education program not only improved attitudes toward nurse-physician collaboration but also reduced negative stereotypes. This finding underscores the potential of experiential learning approaches in breaking down professional silos and fostering mutual respect among healthcare disciplines. Similarly, Zaher et al. (2022) (17) observed a significant increase in readiness for interprofessional learning following their case-based interprofessional learning session. Notably, they found improvements in the teamwork and collaboration subscales, as well as in professional identity. This suggests that even relatively short, targeted interventions can yield measurable benefits in key areas of interprofessional competence. The study by Numasawa et al. (2021) (15) further corroborated these findings, reporting significant increases in Readiness for Interprofessional Learning Scale (RIPLS) scores across all disciplines following their two-day interactive workshop. The consistency of these positive outcomes across different intervention types and durations reinforces the value of incorporating IPE experiences into medical curricula.

Timing and integration of interprofessional experiences:

Several studies highlighted the importance of the timing and integration of interprofessional experiences within the medical curriculum. Tuiran-Gutierrez et al. (2019) (18) conducted a longitudinal study over three years, observing significant improvements in attitudes toward interprofessional collaboration over time. This finding supports the notion that continuous exposure to interprofessional education throughout the curriculum can lead to sustained improvements in readiness for collaborative practice. Interestingly, Berger-Estilita et al. (2020) (20) noted differences in interprofessional attitudes between medical and nursing students, suggesting that profession-specific factors may influence readiness for interprofessional learning. This observation points to the need for tailored approaches that address the unique perspectives and needs of different healthcare disciplines when designing IPE initiatives. The study by Conte et al. (2022) (16) provided a novel perspective by examining interprofessional learning in the context of ambulance service rotations. Their findings suggest that immersive clinical experiences in interprofessional settings can offer unique opportunities for developing collaborative skills and situational leadership abilities. This highlights the potential value of integrating interprofessional learning experiences into clinical rotations and not just classroom-based activities.

Factors influencing interprofessional learning readiness:

Several studies delved into the factors that influence readiness for interprofessional learning. Alruwaili (2020) (19) found generally positive attitudes towards interprofessional learning among both medical and nursing students, with no significant differences between 4th and 5th year medical students. This suggests that positive attitudes towards interprofessional collaboration may be relatively stable in the later years of medical education, pointing to the potential importance of early interventions. Maharajan et al. (2017) (24) identified that increased clinical exposure and higher-order thinking skills in later years of study were associated with greater readiness for interprofessional learning. However, they also noted that a lack of exposure to managing multidisciplinary healthcare teams could negatively impact readiness. This underscores the importance of providing structured opportunities for interprofessional teamwork throughout medical education. Wipfler et al. (2019) (21) focused on the relevance of topic selection in IPE initiatives, finding that students highly valued interprofessional teaching units focused

Table 6. Principal Study Conclusions (2025).

Source	Summary of Main Findings	Implications for Medical Education
Liaw (23)	Interprofessional simulation-based education improved attitudes toward nurse-physician collaboration and reduced negative stereotypes	Recommends incorporating interprofessional simulation-based education in healthcare curricula
Maharajan (24)	Attitudes and readiness for IPL showed significant differences among students of various healthcare professions and years of study. Medical students had significantly higher scores in "negative professional identity" and "competence and autonomy"	IPL should be incorporated into the curriculum of all healthcare professional programs to foster the development of skills for practicing in a multidisciplinary healthcare environment
Sincak (51)	The course allowed students to gain appreciation for different roles in healthcare and how they can contribute to patient care when working collaboratively. Significant improvements in knowledge, skills, and frequency of interprofessional practices were observed	Recommends incorporating interprofessional education early in the curriculum, with additional opportunities throughout the program
Vandergoot (52)	Nursing students demonstrated more positive attitudes towards interprofessional learning, higher motivation to learn, and greater perceived transfer of conflict resolution skills compared to medical students	Contextual relevance and opportunity to apply learned skills are crucial for the effectiveness of interprofessional education
Homeyer (53)	Experts identified more enablers than barriers for IPE. IPE is expected to improve patient-centered care and enhance interprofessional collaboration	Recommends incorporating IPE into medical and nursing curricula, with emphasis on faculty support and curriculum coordination
Pinto (54)	Significant positive changes in both values and interaction domains. Students discovered that leadership is not necessarily hierarchical and that overlap exists in clinical knowledge, roles, and responsibilities between professions	Significant positive changes in both values and interaction domains. Students discovered that leadership is not necessarily hierarchical and that overlap exists in clinical knowledge, roles, and responsibilities between professions
Quesnelle (25)	Significant improvements in attitudes toward interprofessional collaboration and pharmacogenomics confidence. Medical students showed substantial increase in pharmacogenomics confidence despite only receiving instruction from pharmacy students	Supports the effectiveness of telehealth-based interprofessional education. Suggests that students can effectively teach content to students of other health professions
Tuiran-Gutierrez (18)	Significant improvement in attitudes toward interprofessional collaboration over the three-year period. Nursing students showed higher scores than medical students throughout the study	Supports the effectiveness of integrating interprofessional education throughout the curriculum. Suggests the need for targeted interventions to improve medical students' attitudes toward collaboration
Wipfler (21)	82% of participants found the topic of patient safety relevant. 82% rated the interprofessional aspect as beneficial. 73% wished for more interprofessional teaching units	Encourages implementation of further interprofessional teaching units with thematic focus on patient safety
Alruwaili (19)	Both medical and nursing students showed positive attitudes towards interprofessional learning. No significant differences between medical and nursing students or between 4th and 5th year students	Supports the implementation of interprofessional education in the curriculum. Suggests that students are ready for interprofessional learning experiences
Berger-Estilita (20)	Medical students showed positive attitudes towards interprofessional learning. Significant differences were found between medical and nursing students in some aspects of interprofessional attitudes	Supports the implementation of interprofessional education. Suggests tailoring interprofessional activities to address specific differences between professions

Source	Summary of Main Findings	Implications for Medical Education
Numasawa (15)	RIPLS scores increased significantly for all disciplines after the workshop. Medical students scored significantly higher than dental students both pre- and post-workshop	Supports the effectiveness of interprofessional workshops. Suggests the need for more opportunities for dental students to engage in interprofessional collaboration
Conte (16)	The ambulance service offered significant opportunities for interprofessional learning. Students developed collaborative learning strategies and situational leadership skills.	Supports the use of ambulance service rotations for interprofessional education. Suggests that unfamiliar environments can enhance interprofessional learning by reducing hierarchical barriers.
Zaher (17)	Significant increase in readiness for interprofessional learning after the intervention, particularly in teamwork and collaboration, and professional identity subscales. No significant change in roles and responsibilities subscale.	Supports the effectiveness of interprofessional education interventions. Suggests the need for more focus on roles and responsibilities in future interventions.

Source: Author.

on patient safety. This suggests that framing IPE around critical, cross-cutting themes in healthcare can enhance student engagement and perceived relevance.

Study limitations

The limitations identified by the authors of each study are summarized in Table 7. Common limitations included:

- Single-institution studies, limiting generalizability
- Potential for response bias due to self-reported measures
- Small sample sizes, particularly in pilot studies
- Cross-sectional designs limiting causal inferences
- Lack of control groups in some intervention studies

These limitations highlight areas for methodological improvement in future research. Multi-institutional studies, longitudinal designs, and the inclusion of control groups could address many of these limitations and strengthen the evidence base in this field.

Additional observations

Table 8 captures additional relevant information not covered in the previous categories. These observations provide important context for interpreting the results, such as:

- Cultural implications in different geographical settings (e.g., Alruwaili, 2020 (19); Zaher, 2022 (17))
- Unique aspects of specific interprofessional learning environments (e.g., ambulance services in Conte et al., 2022 (16))
- The potential of technology in facilitating interprofessional education (e.g., telehealth in Quesnelle et al., 2018 (25))

These additional insights enrich our understanding of the complexities involved in fostering interprofessional learning readiness across diverse educational and cultural contexts.

In conclusion, this comprehensive analysis of the extracted data reveals a growing and diverse body of evidence supporting the importance of fostering readiness for interprofessional learning among medical students. The findings suggest that targeted educational interventions can positively influence this readiness, with potential benefits for future collaborative practice. However, the review also highlights the need for more robust, longitudinal, and methodologically diverse studies to strengthen the evidence base and address current limitations in the field. The subsequent discussion will further interpret these findings, considering their implications for medical education practice and future research directions in the field of inter-professional learning readiness.

Table 7. Study Limitations (2025).

Source	Limitations Identified by the Authors
Liaw (23)	Single-site study, lack of control group, potential response bias due to self-reported measures
Maharajan (24)	Cross-sectional and exploratory study, single-site sampling, results may not be extrapolatable to other universities
Sincak (51)	Low response rate to questionnaire, time and resource limitations for offering more standardized patient encounters
Vandergoot (52)	Cross-sectional study with limited sample, limited data collection on skills practice
Homeyer (53)	Limited generalizability due to qualitative nature and focus on German context
Pinto (54)	Lack of a control group, unknown generalizability to learners with prior IPE opportunities
Quesnelle (25)	Single institution study, potential for response bias due to self-reported measures
Tuiran-Gutierrez (18)	Significant improvement in attitudes toward interprofessional collaboration over the three-year period. Nursing students showed higher scores than medical students throughout the study Supports the effectiveness of integrating interprofessional education throughout the curriculum. Suggests the need for targeted interventions to improve medical students' attitudes toward collaboration
Wipfler (21)	Small sample size (pilot study), potential for response bias
Alruwaili (19)	Single institution study, potential for response bias, cross-sectional design limiting causal inferences
Berger-Estilita (20)	Single institution study, potential for response bias, cross-sectional design limiting causal inferences
Numasawa (15)	Single institution study, potential for social desirability bias, lack of long-term follow-up
Conte (16)	Small sample size, potential for response bias, different durations of rotation for medical and nursing students
Zaher (17)	Single institution study, lack of control group, potential for response bias

Source: Author.

Discussion

This scoping review synthesized findings from 13 studies examining readiness for interprofessional learning among medical students, revealing several key themes and insights that contribute to our understanding of this critical aspect of medical education.

Readiness levels and influencing factors

Our review consistently found moderate to high levels of readiness for interprofessional learning among medical students across various cultural contexts. This aligns with previous research suggesting that medical students generally hold positive attitudes towards inter-professional collaboration (26). However, the variability in readiness levels across years of study, as observed in several included studies, presents a more nuanced picture. The higher readiness levels often observed in early-year medical students, as reported by Berger-Estilita et al. (2020) (22) and others, corroborate findings from broader interprofessional education literature. For instance, Ganotice Jr et al. (2024) (27) found that students enter health professional courses with strong interprofessional attitudes, which may decline over time. This phenomenon, often referred to as "professional identity formation," can lead to the development of in-group favoritism and out-group prejudice as students progress through their studies (28). The positive influence of prior interprofessional experiences on readiness, as highlighted in studies like Zaher et al. (2022) (17), supports the theoretical framework proposed by Nyembezi et al. (2024) (29), which emphasizes the importance of experiential learning in fostering interprofessional collaboration. This finding underscores the potential value of integrating interprofessional education experiences throughout the medical curriculum, rather than treating them as isolated events.

Effectiveness of educational interventions

The effectiveness of various educational interventions in enhancing readiness for interprofessional

Table 8. Additional Observations (2025).

Source	Any Relevant Information Not Captured in the Above Categories
Liaw (23)	The study also measured changes in stereotypes using the Student Stereotypes Rating Questionnaire (SSRQ)
Maharajan (24)	The study included a detailed analysis of differences between health disciplines, not just medicine. Authors suggest future research should focus on specific factors that may have affected students' attitudes and readiness for IPL, possibly through focus group discussions.
Sincak (51)	The study used an innovative approach, transforming an online multidisciplinary course into a live interprofessional experience. Authors suggest the need for additional interprofessional courses throughout the curriculum to reinforce and maintain the positive attitudes initially observed.
Vandergoot (52)	The study highlights the importance of considering structural differences in undergraduate programs (e.g., early clinical exposure in nursing vs. late exposure in medicine) when planning interprofessional education initiatives. Authors suggest that introducing conflict resolution skills may be more beneficial when students have immediate opportunities to apply them in clinical contexts.
Homeyer (53)	The study provides a comprehensive view of expert opinions on IPE implementation, including expected impacts on future interprofessional collaboration. It highlights the need for structural changes in educational programs to facilitate IPE.
Pinto (54)	The study involved an inter-institutional collaboration, which helped overcome challenges in implementing IPE for schools with limited opportunities to educate their learners with other health professions. This initiative led to the development of additional inter-institutional IPE events.
Quesnelle (25)	The study demonstrates the feasibility of using telehealth technology to overcome logistical barriers in implementing interprofessional education. It also highlights the potential for peer-to-peer teaching across health professions.
Tuiran-Gutierrez (18)	The study provides valuable longitudinal data on the development of interprofessional attitudes over time. It highlights the importance of early and continuous exposure to interprofessional education throughout the medical curriculum.
Wipfler (21)	The study highlights the importance of interprofessional education in patient safety. It also emphasizes the need for structural changes in educational programs to facilitate interprofessional learning experiences.
Alruwaili (19)	The study provides insights into the readiness for interprofessional learning in a Saudi Arabian context, which may have cultural implications for interprofessional education implementation.
Berger-Estilita (20)	The study provides insights into interprofessional attitudes in a Swiss context. It highlights the importance of considering profession-specific differences when designing interprofessional education initiatives.
Numasawa (15)	The study included a qualitative component (focus group discussions) which provided insights into the reasons for lower scores among dental students, including lack of exposure to interprofessional collaboration and perception of dentistry as a solitary practice.
Conte (16)	The study highlights the unique aspects of the ambulance service setting for interprofessional learning, including the opportunity to follow patients through the chain of care and the necessity for collaborative decision-making in varied situations.
Zaher (17)	This study is one of the first to examine interprofessional education in the United Arab Emirates context. It highlights the potential for implementing such initiatives in the Middle East and North Africa region, where interprofessional education is still an emerging concept.

Source: Author.

learning, as demonstrated by studies such as Numasawa et al. (2021) (15) and Tuiran-Gutierrez et al. (2019) (18), aligns with the growing body of evidence supporting the impact of interprofessional education. A systematic review by Reeves et al. (2016) (30) found that interprofessional education can positively influence collaborative knowledge, skills, and behaviors. However, the variability in intervention types and durations observed in our review highlights the need for further research to identify the most effective approaches. The success of simulation-based interventions, as reported by Liaw et al. (2017) (23), is

particularly noteworthy. This finding is consistent with a scoping review by Chávez-Valenzuela et al. (2024) (31), which found that simulation-based interprofessional education significantly improved students' interprofessional competencies. The immersive nature of simulations may provide a safe environment for students to practice collaborative skills and challenge existing stereotypes, as suggested by Stefanidis et al. (2024) (32).

Cultural and contextual considerations

The diverse geographical contexts represented in our review, from Saudi Arabia to Sweden, highlight the global relevance of interprofessional education. However, they also raise questions about the cultural adaptability of interprofessional learning concepts and assessment tools. Wilsher et al. (2023) (33) emphasized the importance of considering cultural context in interprofessional education, noting that factors such as power distance and individualism versus collectivism can significantly influence collaborative practices. The study by Alruwaili (2020) (19) in Saudi Arabia, for instance, provides valuable insights into interprofessional readiness in a Middle Eastern context. This addresses a gap identified by El-Awaisi et al. (2017) (34), who noted the scarcity of interprofessional education research in Arab countries. Such studies contribute to a more globally representative understanding of interprofessional learning readiness.

Assessment methods and their implications

The prevalence of the Readiness for Interprofessional Learning Scale (RIPLS) in the included studies reflects its widespread use in the field. However, recent critiques of the RIPLS, such as those by Mahler et al. (2015) (35) and Schmitz and Brandt (2015) (36), raise questions about its validity and reliability. These critiques suggest that while the RIPLS may be useful for evaluating short-term changes in attitudes, it may not adequately capture the complexity of interprofessional competencies. The use of alternative assessment tools, such as the University of the West of England Interprofessional Questionnaire (UWE-IP) in Berger-Estilita et al. (2020) (20), represents a positive trend towards diversifying assessment methods. This aligns with recommendations from Oates and Davidson (2015) (37), who argue for the use of multiple assessment tools to capture the multifaceted nature of interprofessional competencies.

Theoretical implications

The findings of this review have implications for theoretical frameworks in interprofessional education. The Contact Hypothesis, originally proposed by Allport (1954) (38) and applied to interprofessional education by Carpenter and Dickinson (2016) (39), suggests that intergroup contact under appropriate conditions can reduce prejudice and improve intergroup relations. The positive outcomes of interprofessional interventions observed in our review lend support to this theory in the context of medical education. However, the variability in readiness levels across years of study challenges simplistic applications of contact theory. It suggests the need for more nuanced theoretical models that account for the complex interplay between professional identity formation, hierarchical structures in healthcare, and interprofessional attitudes. The Interprofessional Socialization Framework proposed by Khalili et al. (2013) (40) may offer a useful lens for under-standing these dynamics.

Longitudinal perspectives and sustainability

The longitudinal study by Tuiran-Gutierrez et al. (2019) (18), which observed improvements in attitudes over a three-year period, raises important questions about the sustainability of interprofessional learning readiness. This finding aligns with research by Pollard and Miers (2008) (41), who found that interprofessional attitudes can be maintained over time with continued reinforcement. However, it contrasts with studies like that of Ganotice Jr et al. (2024) (27), which observed a decline in interprofessional attitudes as students progressed through their programs. These divergent findings underscore the need for more longitudinal research to under-stand how readiness for interprofessional learning evolves throughout medical education and into early career practice. As suggested by Bogossian et al. (2023) (42), there is a critical need

to explore the long-term impact of interprofessional education on collaborative practice behaviors and patient outcomes.

Implications for curriculum design

The collective findings of this review suggest several implications for medical education curriculum design. First, they support the early introduction of interprofessional experiences in the curriculum, as advocated by Bogossian et al. (2023) (42). This aligns with the concept of "early and often" exposure to interprofessional learning, which has been shown to foster positive attitudes and reduce stereotypes (43). Second, the review highlights the need for sustained and integrated interprofessional learning opportunities throughout the medical program, rather than isolated interventions. This supports the recommendations of Shakhman et al. (2020) (44), who argue for a longitudinal approach to interprofessional education that is woven throughout the curriculum. The importance of integrating interprofessional education into medical curricula has been extensively discussed in the literature (45). Furthermore, it is worth noting that interprofessional projects are already well-established and developed in the emergency and urgent care settings (46,47). This widespread implementation in critical care environments suggests that there is significant potential for further exploration and expansion of interprofessional education in other medical specialties and contexts.

The success of diverse educational approaches, from simulation-based learning to clinical rotations, suggests that a multi-modal approach to interprofessional education may be most effective. This aligns with the recommendations of Nagel et al. (2024) (48), who emphasized the importance of varied learning experiences in fostering interprofessional competencies. Moreover, the findings underscore the importance of addressing profession-specific differences and potential barriers to interprofessional collaboration. This may involve explicit discussions about professional stereotypes and hierarchies, as suggested by Paradis and Whitehead (2015) (49), who argue for a critical approach to interprofessional education that addresses power dynamics in healthcare.

The role of technology and innovation

While not a primary focus of the included studies, the potential role of technology in facilitating interprofessional education emerged as an area of interest, particularly in light of global events such as the COVID-19 pandemic. The study by Quesnelle et al. (2018) (25), which explored the use of telehealth in interprofessional education, points to innovative approaches that may enhance accessibility and scalability of interprofessional learning experiences. This aligns with emerging research on virtual and online interprofessional education, such as that by Evans et al. (2019) (50), which suggests that well-designed online interventions can be effective in fostering interprofessional competencies. As medical education continues to evolve, particularly in response to global challenges, the integration of technology-enhanced interprofessional learning experiences may become increasingly important. In conclusion, this scoping review provides a comprehensive overview of the current landscape of readiness for interprofessional learning among medical students. While the findings generally support the value of interprofessional education initiatives, they also highlight the complexity of fostering and maintaining interprofessional attitudes throughout medical education. The review underscores the need for theoretically grounded, culturally sensitive, and pedagogically diverse approaches to interprofessional education in medical curricula. Future research should focus on longitudinal studies, the impact of interprofessional readiness on clinical outcomes, and the exploration of innovative educational approaches to enhance interprofessional learning in an evolving healthcare landscape.

Conclusions

This scoping review synthesized evidence on readiness for interprofessional learning among medical students, revealing several key insights. Medical students generally demonstrate moderate to high levels of readiness for interprofessional learning, with variability across years of study. Early exposure to interprofessional experiences positively influences

readiness, supporting the integration of such experiences throughout medical curricula. Diverse educational interventions, particularly those involving simulation and immersive clinical experiences, effectively enhance interprofessional learning readiness. Cultural and contextual factors significantly impact interprofessional attitudes and readiness, necessitating culturally sensitive approaches to interprofessional education. The Readiness for Interperfessional Learning Scale (RIPLS) remains the most commonly used assessment tool, despite growing critiques of its validity and reliability. These findings underscore the importance of a longitudinal, integrated approach to inter-professional education in medical curricula, with consideration for cultural context and diverse pedagogical strategies.

Limitations, contributions, and future directions

This scoping review, while comprehensive, has several limitations that should be considered when interpreting its findings. The majority of included studies were conducted in developed countries, potentially limiting the generalizability of our findings to diverse global contexts. The methodological heterogeneity across studies, including variations in study designs and assessment tools, complicated direct comparisons. Additionally, most studies relied on self-reported measures, which may be subject to social desirability bias. The limited longitudinal data available means that the long-term sustainability of interprofessional learning readiness remains unclear. Lastly, our focus on peer-reviewed publications may have excluded relevant insights from unpublished sources. Despite these limitations, this review makes several notable contributions to the field. It provides a comprehensive overview of current research on interprofessional learning readiness among medical students, identifying key factors that influence this readiness. This information can inform targeted educational interventions. The review also highlights the need for culturally adaptive approaches to interprofessional education and raises critical questions about the validity and reliability of commonly used assessment tools. Importantly, it emphasizes the significance of longitudinal, integrated approaches to interprofessional education in medical curricula. Looking ahead, several key areas emerge for future research. Longitudinal studies are needed to track the evolution of interprofessional learning readiness throughout medical education and into early career practice. Exploring the impact of interprofessional learning readiness on clinical outcomes and patient care quality would provide valuable insights into the practical implications of these educational efforts. Developing and validating culturally sensitive assessment tools for interprofessional learning readiness is crucial for ensuring accurate measurement across diverse contexts. Investigation of innovative educational approaches, including technology-enhanced learning, could reveal new ways to foster interprofessional competencies. Examining the effectiveness of interprofessional education initiatives in diverse global contexts, particularly in low and middle-income countries, would broaden our understanding of these practices. Additionally, exploring the relationship between interprofessional learning readiness and other key competencies in medical education, such as cultural competence and patient-centered care, could provide a more holistic view of medical student development. Finally, investigating strategies to sustain and enhance interprofessional attitudes during the transition from pre-clinical to clinical years and into professional practice would address a critical gap in our current knowledge. These future directions aim to address current knowledge gaps and enhance the evidence base for effective interprofessional education in medical curricula, ultimately contributing to improved collaborative practice and patient care.

Ethic Approval: This study does not require approval from an Ethics Committee, as it is a literature review based on publicly available secondary data from scientific articles. No primary data were collected directly from human or animal participants, and all information analyzed was previously published with ethical approval by the original authors. Therefore, the study adheres to international ethical guidelines for review studies and the analysis of already published data.

Conflict of Interest: Each author declares that he or she has no commercial associations (e.g. consultancies, stock ownership, equity interest, patent/licensing arrangement etc.) that might pose a conflict of interest in connection with the submitted article.

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Appendix

Table S1. The complete search strategies for all databases.

DATABASE	SEARCH STRATEGY
Search strategy in ENGLISH: PubMed; Biomed Central Journal; Wiley-Blackwell; Cumulative Index to Nursing and Allied Health Literature (CINAHL) e Education Resource Information Center (ERIC).	("Learning" OR "Phenomenography" OR "Memory Training" OR "Training, Memory") AND ("Interprofessional Education" OR "Education, Interprofessional" OR "Education, Professional") AND ("Students, Medical" OR "Medical Students" OR "Student, Medical" OR "Medical Student") AND ("Interdisciplinary Communication" OR "Communication, Interdisciplinary" OR "Communications, Interdisciplinary" OR "Interdisciplinary Communications" OR "Multidisciplinary Communication" OR "Communication, Multidisciplinary" OR "Communications, Multidisciplinary" OR "Multidisciplinary Communications" OR "Cross-Disciplinary Communication" OR "Communication, Cross-Disciplinary" OR "Communications, Cross-Disciplinary" OR "Cross Disciplinary Communication" OR "Cross-Disciplinary Communications" OR "Communication Research" AND ("Education, Medical" OR "Education, Medical Continuing" OR"Education Medical, Graduate" OR "Internship and Residency" OR "Education, Medical, Undergraduate" OR "Teaching Rounds")
Search strategy in PORTUGUESE: Scientific Electronic Library Online (Scielo/ Brasil)	("Aprendizagem") AND ("Educação Interprofissional" OR "Cross-Training" OR "Treinamento Cruzado") AND ("Educação Interprofissional") AND ("Estudantes de Medicina") AND ("Comunicação Interdisciplinar" OR "Comunicação Transdisciplinar" OR "Pesquisa em Comunicação") AND ("Educação Médica")

Table S2. Data extraction.

Category	Subcategory
Bibliographic Information	Authors
	Year of Publication
	Full Title
	Journal/Source
	DOI/PMID
Study Characteristics	Research Design
	Geographical Location
	Study Duration
	Primary Objective
	Theoretical Framework
Participant Demographics	Sample Size
	Study Period
	Age Range
	Mean Age (SD)
	Gender Distribution
	Professional Disciplines Represented
	Inclusion/Exclusion Criteria
Assessment Methodology	Instrument(s) Employed
	Psychometric Properties
	Assessment Timepoints
	Data Collection Procedures
Educational Interventions	Intervention Type
	Intervention Duration
	Curriculum Content
	Pedagogical Approach
	Facilitator Characteristics
Key Findings	Primary Outcomes
	Intervention Effects (if applicable)
	Changes in Interprofessional Learning Readiness
	Statistical Analyses Performed
	Effect Sizes (if reported)
	Principal Conclusions
Study Limitations	Methodological Constraints
	Sampling Limitations
	Generalizability Issues
	Confounding Variables
Quality Appraisal	Quality Assessment Tool Utilized
	Quality Score/Classification
	Risk of Bias Evaluation
Supplementary Information	Funding Sources
	Conflicts of Interest
	Ethical Considerations
	Reviewer's Critical Observations