

INTERPROFESSIONAL EDUCATION IN HEALTH SCIENCES EDUCATION: A
NARRATIVE REVIEW

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Abstract

Health outcome of a patient depends on synergistic work of professionals from different disciplines for instance, nurses, doctors, physiotherapists and nutritionists. Effective collaboration among these professionals is pivotal for early recovery and discharge from the hospital and better health outcomes with less complications. This approach to care must be inculcated among the students of the health science disciplines during their undergraduate programs. The medical educators must introduce certain teaching learning approaches so that this cooperation can be instilled in the students. One such approach is Inter-professional education (IPE) which is gaining prominence in medical education. It fosters holistic approach to patient care, promotes effective communication and encourages teamwork. This review article aims to explore the significance of interdisciplinary placements of health science students, emphasizing its importance in improving patient outcomes. It also intends to highlight the challenges in implementation of such programs and propose solutions for those challenges.

INTRODUCTION

The patient care is becoming complex with the newly emerging and rapidly evolving diseases, and advent of new technologies in health care. Patient with certain diseases have complex integrated care needs including specialized nutritional, rehabilitation, medical, and nursing care. Such complex needs require a collaborative and holistic approach to care, based on effective communication, teamwork and mutual trust for a better health outcome. The Institute of Medicine Committee on Quality Care also endorsed that only Inter-professional team can address such complex issues^{1,2}. Therefore, healthcare is gradually moving towards collaborative practice which is a team-based approach to address complex patient needs but developing countries like Pakistan have not been able to integrate IPE in health care education curriculum. The Interprofessional Collaborative Practice model improves health outcomes (communicable and non-communicable diseases), enhances patient safety, reduces mortality rates, and helps respond to epidemics effectively³⁻⁷. This collaborative practice can be instilled in the graduates of health sciences irrespective of their profession, through Interprofessional Education (IPE). Interprofessional education occurs when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes³. Inter-professional education is pivotal to prepare a "collaborative practice-ready" healthcare workforce³.

This review article intended to highlight the significance of inter-professional education in health science, examine the challenges encountered in its implementation and briefly identify models of IPEs implemented internationally.

INCLUSION CRITERIA

- Research studies pertaining to only undergraduate education

- Research reports written in English
- Only peer reviewed Journal Articles will be included

EXCLUSION CRITERIA

- Researches related to graduate education or continuous medical/nursing education
- Researches in other languages
- Gray literature books and other literature will be excluded

METHODS AND RESULTS

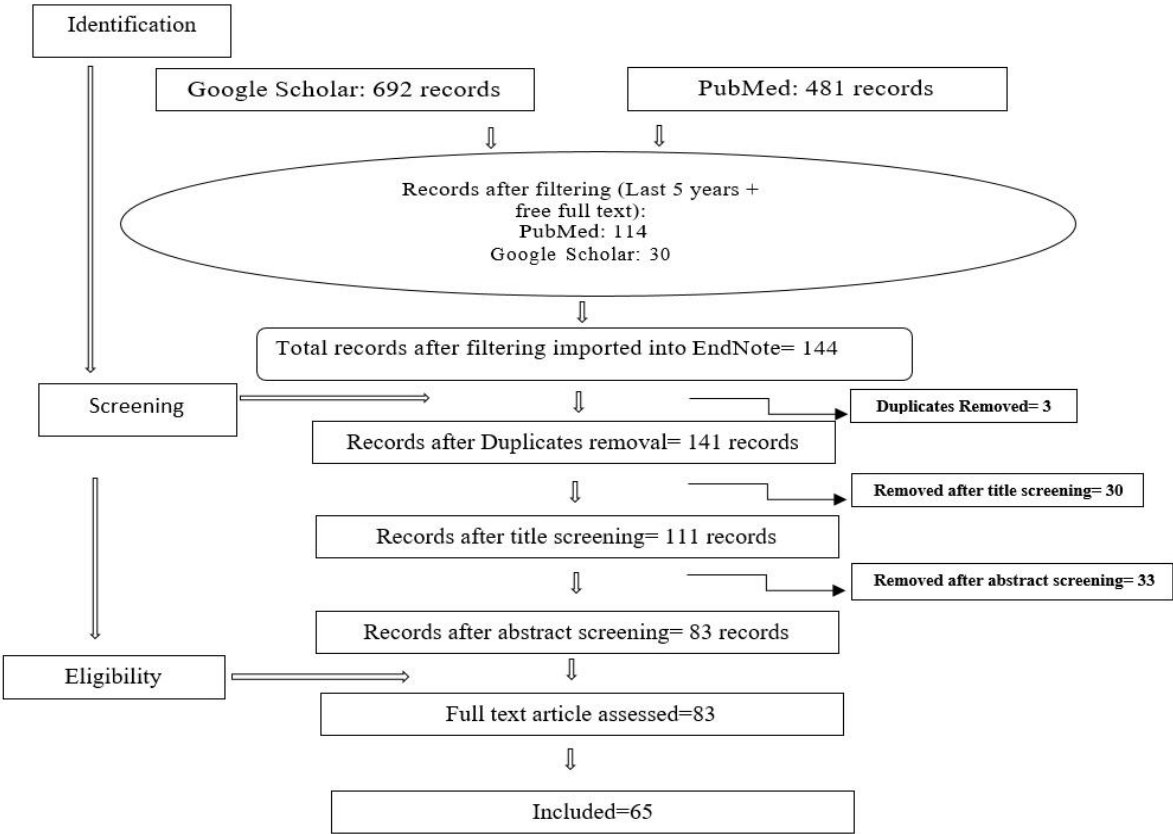
A comprehensive literature search was conducted using PubMed to identify studies related to interdisciplinary learning, interprofessional education, and collaborative learning within the context of nursing and its intersection with medicine, rehabilitation, or dentistry. The search strategy employed the following Boolean combination: ("interdisciplinary learning" [Title/Abstract] OR "interprofessional education"[Title/Abstract] OR "collaborative learning"[Title/Abstract]) AND (nursing [Title/Abstract] AND (medicine [Title/Abstract] OR rehabilitation [Title/Abstract] OR dentistry [Title/Abstract])). This initial search yielded 481 results. To enhance the relevance and currency of the results, a filter restricting publications to the past five years was applied, reducing the number of articles to 201. Further refinement using the "Free full text" filter narrowed the pool to 114 articles, all of which were imported into EndNote for screening.

In parallel, a literature search was also conducted using Google Scholar to complement the PubMed findings. The search terms included: "Interprofessional Education" OR "Interdisciplinary Placement" OR "Collaborative Learning" OR "Interdisciplinary Learning" AND "Nursing" OR "Nursing Education" AND "Medicine" OR "Rehabilitation" OR "Rehabilitation Education" OR "Dentistry" OR "Dental Education."

This search yielded 692 results, which were filtered to the last five years, resulting in 382 articles. After screening titles for relevance, 30 articles were selected and imported into EndNote.

In total, 144 articles from both databases were imported into EndNote. Three duplicate articles were removed. An initial title screening led to the exclusion of 30 articles, leaving 111 for abstract review. Based on the relevance to the study objectives, an additional 25 articles were excluded during this phase, resulting in 86 articles selected for full-text review. These articles were then thoroughly read and assessed for inclusion in the final analysis against the inclusion and exclusion criteria. Based on the inclusion and exclusion criteria 67 articles were included in the review.

Figure A. Prisma Flow Chart



Thirty of the studies were quantitative cross-sectional surveys, one was qualitative research study, nine were mixed method studies, seven were interventional, three were scoping review and two of the studies were systematic reviews.

TABLE 1: *FREQUENCY OF STUDY DESIGNS*

Study Design	Frequency
Cross-sectional (quantitative survey)	31
Qualitative (interviews, focus groups)	4
Mixed-methods	9
Interventional/Experimental	7
Scoping Review	3
Systematic Review	2
Total	67

This review synthesizes current literature across themes which include IPE across professions, conceptual explanation, readiness and attitude toward IPE, Implementation strategies, measured outcomes.

IPE across Professions

The inclusion of interprofessional Education (IPE) varies across healthcare disciplines. It has been predominantly been utilized in nursing, pharmacy, and medicine however, dental education lags behind due to curricular constraints and lack of institutional support (Khabeer & Faridi, 2024; Novosel et al., 2020). A couple of research studies highlighted that positive outcomes with successful integration of dental students into simulation based IPEs (Kilroy et al., 2025; Jiang et al., 2024).

Conceptual Explanations of IPE

Interprofessional Education is grounded in theories of collaboration, social learning, and shared professional identity. Ganotice et al. (2022, 2023, and 2024) explored psychosocial drivers such as intrinsic motivation, team cohesion, and emotional safety. These factors mediate engagement and collaborative outcomes, emphasizing the need for psychologically safe and inclusive learning environments.

Readiness and Attitude toward IPE

A number of studies reported positive attitudes toward IPE among healthcare students. Quantitative studies using the Readiness for Interprofessional Learning Scale (RIPLS) reveal strong receptiveness, particularly among nursing students compared to peers in medicine and other disciplines (Aladwani et al., 2025; Alharbi et al., 2024). IPE workshops improved readiness for interprofessional learning in all students, but dental students showed lower readiness than medical and nursing students (Numasawa et al., 2021). In China, An et al. (2024) reported that academic self-efficacy significantly correlated with readiness, suggesting the influence of perceived competence on interprofessional engagement. It is more likely that disciplinary identity and cultural background significantly shape IPE perceptions. Medical students often report lower readiness than nursing students (Aladwani et al., 2025), potentially due to differences in professional socialization. The perceptions of students towards IPE are influenced by field of study, academic year, gender, and participation in multidisciplinary courses (Bendowska & Baum, 2023).These differences highlight the need for culturally sensitive, discipline-aware IPE design. In Korea, Song and Nam (2022) revealed that both nursing and medical students recognized the importance of interprofessional education in clinical settings and expressed a desire to improve their teamwork skills. High-fidelity simulation

improved healthcare students' readiness for interprofessional learning and teamwork (Southall & MacDonald, 2021). Medical students' positive attitudes toward interprofessional education are significantly associated with certain learning styles, such as abstract conceptualization and active experimentation, and influenced by factors like gender, age, and study stress (Zhang et al., 2024).

Implementation Strategies

Simulation was found to be the predominant strategy to implement IPE in the literature. IPE has been implemented in the contexts including stroke care (MacKenzie et al., 2024) and advance care planning (Millstein et al., 2020, 2022) and these researches reported its consistent effectiveness. Moreover, Innovative tools like Virtual Reality Simulation (Qiao et al., 2021), virtual patients (Tran et al., 2020), and game based IPE initiatives (Wong et al., 2022) were found to enhance engagement and learning outcomes. Additionally IPE through workshops (Kezar et al., 2025) and interuniversity collaborations (Kricheldorf et al., 2022) were also found effective and they also provide potentially scalable models of integration. Using shared patient documentation helped interprofessional student groups develop a more comprehensive understanding of patient care and enhanced collaboration in clinical practice (Gudmundsen et al., 2020). A rural interprofessional education program in South Africa enhanced medical students' preparedness for family medicine through collaboration with nursing and rehabilitation peers and immersion in nurse-led primary care (Hagemeister, 2024). The systematic review by Quek et al. (2024) found that educational escape rooms are engaging tools that enhance healthcare students' cognitive, psychomotor, and teamwork skills, though more rigorous studies are needed to confirm their effectiveness compared to traditional methods. An interactive online interprofessional education session using standardized

patients effectively enhanced students' confidence and communication skills in collaborative opioid pain management (Remsberg et al., 2023). Widmer et al. (2020) found that a bottom-up, interprofessional approach involving community participation and cultural sensitivity is essential for effective rural health initiatives in the Santal community in West Bengal in India.

There is an increasing effort to integrate interprofessional education into healthcare curricula. Versluis et al., 2025 utilized Educational Design Research (EDR) models to accommodate contextual factors like patient safety and workflow. Moreover, Co-design approaches promote learner engagement and local relevance (Wilson et al., 2024). However, variability in implementation and evaluation tools remains a concern (Sultan et al., 2022; Sukhera et al., 2022).

Outcomes of IPE

There a number of empirical studies consistently reporting that IPE enhances key skills such as communication, teamwork, empathy, and role clarity. For instance according to Fenzi et al., 2024 and by Jiang et al., 2024 simulation-based IPE interventions have proven effective in developing collaboration and self-efficacy of the students. Similarly, Keshmiri and Barghi (2021) and Hood et al. (2022) highlighted that community-based IPE promotes positive attitudes and team work abilities on ground. According to Bendowska and Baum, (2023) polish students the benefits of IPE include patient safety, improved quality of care, and better communication among healthcare professionals. A four-day interprofessional simulation course in New Zealand served as a transformative space that disrupted traditional professional silos and fostered the development of interprofessional identity among healthcare students (Cooper-loelu & Jowsey, 2022). Student pharmacists gained valuable collaborative skills from mostly informal

interprofessional education during placements, indicating a need for more structured IPE (Depasquale et al., 2025). Student facilitators in interprofessional education experienced increased confidence, improved communication skills, and a deeper understanding of collaborative practice despite challenges in role identity and group dynamics (He et al., 2024). Interprofessional simulation interventions, especially those involving medical emergencies and diverse health professions, improve medical students' attitudes toward teamwork and collaboration, with formal team training enhancing these outcomes (Langton et al., 2021). The interprofessional simulation-based education program significantly improved medical and nursing students' clinical skills, teamwork, and understanding of professional roles in obstetrics and gynecology, with some benefits lasting up to 8 months post-training (Ogunyemi et al., 2020).

The resuscitation-based simulation activity effectively enhanced interprofessional teamwork, communication, and clinical skills among medical, nursing, and pharmacy students, with participants rating the experience as valuable and impactful (Pillow et al., 2020). Integrating interprofessional education into primary care settings enhances students' interprofessional competencies, if supported by faculty engagement and adequate resources are provided (Prado et al., 2022). The scoping review by Qiao et al. (2021) found that immersive virtual reality simulations enhance interprofessional collaboration, communication, and role understanding among healthcare students. The study revealed high baseline attitudes toward interprofessional collaboration, with a statistically significant improvement in the 'patient centeredness' domain post-course, while other domains such as team roles, community centeredness, diversity, and ethics showed non-significant declines (Sakr et al., 2022). Simulated interprofessional education significantly enhances nursing students' critical thinking, teamwork, and

interprofessional collaboration skills compared to traditional simulation methods (Zhou et al., 2022). Interprofessional simulation significantly improves collaborative competencies among healthcare students, though further research is needed to assess long-term effects on specific competency factors (Marion-Martins & Pinho, 2020).

Barriers to Implementation

Although there is an enthusiasm in the health care discipline about IPE there are also a number of barriers that makes its implementation a challenge. These barriers include lack of logistic support, scheduling, insufficient faculty training, and lack of organizational support (Chávez-Valenzuela et al., 2024; Makeen et al., 2023). Although Virtual modalities offer flexibility, contextual factors such as technology access and quality of facilitation affect the outcomes of IPE (Dedzoe et al., 2023). These systemic challenges require contextually tailored strategies so that IPE can be implemented effectively and successfully. Undergraduate health sciences students in France reported high satisfaction with interprofessional training but noted scheduling difficulties across disciplines (Gaillet et al., 2024). Interprofessional education in Brazilian health courses faces challenges like regional disparities, uniprofessional curricula, and limited longitudinal studies despite growing national networks (Soares et al., 2024).

Global Perspectives

A number of systematic and scoping reviews provide global perspectives on IPE and they highlight a need for standardization. Dixon et al. (2024) and Joshi et al. (2022) evaluated IPE outcomes across settings, while Inzunza et al. (2020) and Montenegro (2020) mapped global initiatives, identifying gaps in consistency. Frameworks like the SIFT program (van Diggele et al., 2022) and ISPE (Van Hooser et al., 2024) demonstrate structured efforts to embed IPE into curricula. Colonnello et al., (2023) emphasized the

need to harmonize IPE curricula and develop theory-based programs with standardized evaluations to support student mobility and improve interprofessional education across Europe. Interprofessional education in nursing and medical students globally fosters professional competencies but lacks early curricular integration, highlighting a need for more research on its implementation to improve patient-centered care (Macías Inzunza et al., 2020).

Considerations for IPE Development

IPE is most effective when adapted to specific learning environments and learner needs. Realist reviews (Krystallidou et al., 2021) and qualitative studies (Montano et al., 2022) stress the importance of interactional and structural facilitators such as communities of practice and socio-material influences (Törnqvist et al., 2023). Implicit bias and perception differences remain underexplored, requiring more equity-focused approaches (Sukhera et al., 2022).

IPE requires a thoughtful design and development to make it an effective approach. According to Aladwani et al. (2024) student prefer face-to-face, interactive formats instead of virtual designs. Borchers et al. (2021) and Clauser et al. (2020) qualitatively studied IPE and revealed that formats like interprofessional palliative care and simulation-based learning enhance understanding of roles and collaborative competencies. Nowadays, innovative IPE approaches like educational escape rooms and VR-based simulations are gaining attractions (Schmuhl et al., 2023 & Neher et al., 2024).

CONCLUSION

The literature strongly supports interprofessional education (IPE) as an effective approach to foster collaborative learning and enhance teamwork in healthcare practice. Its value is evident in the consistently positive learner attitudes, diverse instructional

strategies, and significant improvements in knowledge and clinical skills. Nonetheless, challenges such as entrenched professional silos, variability in implementation, and lack of standardization hinder its widespread adoption and effectiveness in healthcare education.

To fully realize IPE's potential, future research should emphasize theoretical alignment, equity-focused strategies, and long-term impact evaluations. IPE plays a critical role in preparing health science students to function effectively in team-based healthcare environments. While implementation barriers exist, the benefits clearly outweigh the challenges. By embedding IPE into curricula, investing in faculty development, and proactively addressing implementation hurdles, higher education institutions can deliver transformative learning experiences. These efforts will better equip students to provide high-quality, patient-centered care and respond adeptly to the evolving demands of healthcare. Ultimately, IPE empowers future healthcare professionals with the essential skills, knowledge, and attitudes needed to navigate and address complex healthcare challenges.

CONFLICT OF INTEREST

Authors declared no conflict of interest.

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None to declare.

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