

# Interprofessional Education in Healthcare: Benefits, Challenges, and Impacts on Drug Management and Patient Care

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## ABSTRACT

Interprofessional education (IPE) is an integral component of healthcare training that encourages close working relationships among different healthcare professionals. Driven by its curriculum goal of integrating students from diverse fields like medicine, pharmacy, nursing and allied health to emphasize the development of key competencies for participation in teams and medication management, this approach brings students from all these fields together. IPE exposes students to common learning experiences which help students learn about their roles and responsibilities in patient care. Research indicates that collaborative learning environments not only serve to increase the knowledge that participants have of drug therapy but also aid in improving patient outcomes by decreasing medication errors as well as promoting patient-centric care. The IPE's impact on collaborative practice was discussed, with specific attention to the role played by medical education on medication management and patient outcomes.

### Keywords:

*Interprofessional Education, Pharmacology Education, Pharmacy Education, Medication Management and Patient Outcomes*

## INTRODUCTION

Healthcare in modern times requires interdisciplinary collaboration to address the complexities of patient care. Medication management, especially, requires the participation of multidisciplinary healthcare professionals, such as physicians, pharmacists, nurses and therapists. However, traditional models of healthcare training do not effectively facilitate collaboration. Interprofessional education (IPE) is designed to overcome this gap by bringing together students from different disciplines to learn and work together (Sadikan and Ariffin 2024). Differs from the hidden curriculum that can subtly reinforce hierarchy and competition (Das et al. 2024) but IPE promotes teamwork among the healthcare professions. Healthcare students from various disciplines can learn to work together through shared learning, to develop mutual respect, communication skills and teamwork competencies which are all of great value as they experience collaborative practice (Singar et al. 2024).

Pharmacology or pharmacy education is an integral part of IPE because it ensures that health professionals can work together in making drug-related decisions and handling medications properly (Grimes and Guinan 2023). Medication errors, poor patient outcomes, and general inefficiencies in healthcare delivery are caused by a lack of collaboration and miscommunication between healthcare

providers. Interprofessional teaching of pharmacy and pharmacology prepares students to face these challenges. The current review discusses how the IPE was used to enhance student's capacity for collaboration in drug management and discusses its implications for patient care.

## LITERATURE SEARCH

A Google Scholar literature search between 2010 and 2024 was conducted to identify studies which focused on IPE in the study of drugs, collaborative practice and medication management. Key terms such as 'interprofessional education', 'pharmacology education', 'pharmacy education', 'medication management' and 'patient outcomes' with filters applied to English articles were used. This means studies on IPE frameworks, pharmacology and pharmacy curricula, teamwork outcomes and their effect on patient care were given priority. For additional sources, reference lists of selected articles were further explored. Articles that reported qualitative or quantitative outcomes of IPE, particularly those assessing the role of pharmacology and pharmacy education in improving clinical collaboration were included, while non-peer-reviewed and unrelated studies were excluded.

## THE ROLE OF IPE IN ENHANCING COLLABORATION

IPE focuses on developing teamwork and communication among healthcare students and is intended to prepare them for interprofessional practice. Bunditanukul et al. (2024) studied the advantages of incorporating pharmacy education into interprofessional simulations. Pharmacy, nursing and medical students in their study took part in virtual emergency department scenarios during the COVID-19 pandemic. Students worked together to solve complex medical emergencies, including interactions between drugs or dosage issues using these simulations. Participants found that the collaborative environment enabled them to build up confidence in communicating with peers from other disciplines, in particular in high-pressure situations where quick decisions had to be made.

It was also found that students have a more solid understanding of other students' roles in patient care (Shoair et al. 2023). For example, students were taught how their drug expertise might complement the clinical assessments that physicians and nurses made. The other way around medical and nursing students realize the significance of consulting pharmacists in making drug-related decisions. This encourages open communication, and shared responsibility in patient care and is essential for building effective healthcare teams because of mutual respect and understanding (Weller et al. 2014).

Similarly, MacKenzie et al. (2024) assessed the efficiency of interprofessional training in stroke care settings. The study involved pharmacy, nursing, and occupational therapy pre-licensure students who were partnered to develop medication plans for stroke patients and were assessed on the accuracy of their plans. The students worked together to optimize drug therapy, medication adherence and management of side effects. Results in these findings show that IPE not only increases students' pharmacological knowledge but also builds students' interprofessional collaborative capacity for treatment planning of complex patients.

## IMPACT OF IPE ON MEDICATION MANAGEMENT

Medication therapy management (MTM) is one of the major goals of interprofessional education (Schussel et al. 2019). The systematic review of patients' medications involved in MTM involves a review of the drug regimen to see that the medications are effective and safe (Viswanathan et al. 2015). However, effective management of MTM requires other healthcare providers in addition to the pharmacists. By working together to monitor and adjust medications, healthcare providers can

determine possible drug interactions, modify dosages, and monitor patient adherence to prescription schedules.

Schuster et al. (2024) evaluated the effects of a pharmacology-based deprescribing initiative carried out by pharmacists in primary care. Interdisciplinary teams did medication reviews to identify and stop unnecessary prescriptions for the program. It was found that collaborative deprescribing efforts were associated with reduced polypharmacy and reduced adverse drug reactions. Pharmacists, especially, stepped forward to take on leadership in the medication review process, showing the value of their MTM experience. The findings in this study reinforce that interprofessional pharmacology education prepares students to actively participate in collaborative medication management and to actively initiate measures to improve patient outcomes.

This was further evidence of the benefits of IPE in primary care settings (Weppner et al. 2024). In their study, they looked at Veterans Affairs (VA) centres where different students from pharmacy, nursing and medicine worked together on patient care for over a decade. IPE trained teams to better develop care plans and better patient adherence to pharmacological regimens. Working together seemed to help the students get a grasp of patients' needs as a whole and to work together to achieve the best results for patients.

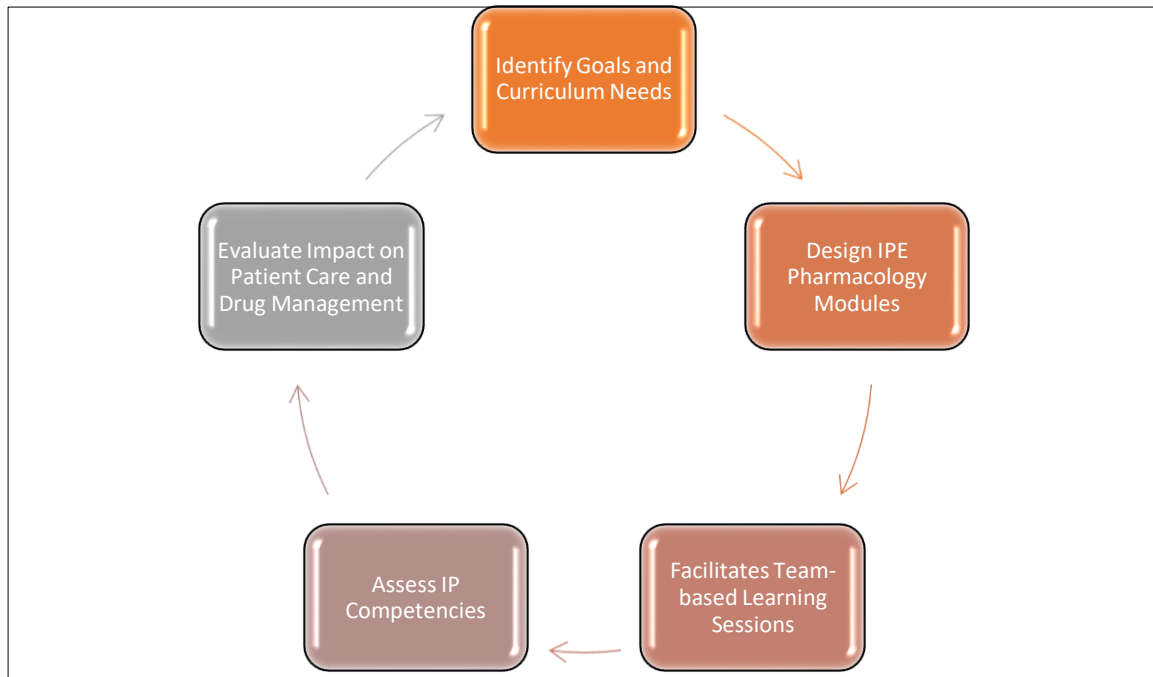
These demonstrate the need for IPE to teach collaborative drug management to students. Students who receive training in team-based management of medications are more prepared to deal with the intricacies of complex patient care. This collaborative approach reduces the risk of medication errors, improves treatment outcomes, and enhances the overall quality of care.

## **LEADERSHIP AND COMMUNICATION SKILLS THROUGH IPE**

Intense workloads and isolation are common causes of burnout in medical training (Sadikan 2024a); hence IPE is needed to create a supportive team and share responsibility and resilience with peers in other healthcare fields. In addition to improving students' pharmacological knowledge, IPE is an important means to allow for the development of communication and leadership skills. Collaborative practice especially in medication management is key to communication, and even a minor misunderstanding can have life-threatening adverse effects. Studies suggest students who engage in interprofessional learning activities have a greater confidence in communicating their expertise to other healthcare providers.

Swain et al. (2024) investigated the effects of interprofessional education on the leadership skill development of Doctor of Pharmacy (PharmD) students. Their research found that students participating in interdisciplinary projects were more likely to assume a leadership role in MTM settings. The students found the collaborative nature of the environment led them to voice their opinions, advocate for patients, and direct their peers in making sound drug-related decisions. This leadership development is particularly critical because doctors and pharmacists are frequently seen as leaders in clinical practice.

The role of communication in IPE was also emphasized (Van Hooser et al. 2024). This study focused on pre-licensure students in pharmacy, nursing, and physical therapy programs who were engaged in interprofessional activity. Students reported that working in interdisciplinary teams helped them develop responsibility for achieving patient outcomes and improved their communication skills. These findings indicate that interprofessional education not only enhances students' ability to collaborate but also prepares students to be leadership-ready for clinical practice. Figure 1 illustrates the processes of IPE implementation in pharmacology and drug studies.



**Figure 1:** Implementing IPE in Pharmacology

## SCOPE AND IMPACT OF ARTIFICIAL INTELLIGENCE IN IPE

Applying AI to IPE training is a feasible direction because artificial intelligence (AI) can contribute positively to the efficiency of the training process and the effectiveness of the results obtained. Through the delivery of artificial intelligence simulations and virtual patients, as well as interactive decision-support templates, healthcare students gain an improved approach to collaborative work environments (Alowais et al. 2023). These technologies also enhance individual learning, evaluation of the competencies of interprofessional students and foster the growth of critical thinking in medication management. Furthermore, the solutions given by AI analytics can allow educators to define weaknesses in their teams, thus corresponding improvements in the IPE curricula can be made. The application of AI in IPE can help overcome logistical difficulties by implementing flexible, scalable and accessible solutions to unify the educational model of different faculties.

## CONSIDERATIONS

The benefits of IPE are well-known but implementing such programs has its challenges. The integration of interprofessional activities into existing curricula is one of the main challenges. Interprofessional learning activities are often not feasible in educational programs for medicine, pharmacy, nursing, and allied health, all of which have different schedules and academic requirements. Not only the methods of teaching and expectations of faculty must be aligned, but faculty from various disciplines must also be aligned to provide students with a consistent learning experience. Electronic e-pads can be one of its potential solutions in health education as they facilitate IPE by enabling real-time information sharing and collaborative decision-making, enhancing teamwork and communication across healthcare disciplines (Sadikan 2024b).

A further challenge is the construction of appropriate assessment tools for interprofessional competencies. IPE requires new ways to evaluate teamwork, communication, and leadership skills, and

traditional assessments tend only to focus on individual performance. Institutions can invest in developing standardised assessment tools that accurately measure students' readiness for collaborative practice. IPE in pharmacology and pharmacy are also influenced by resource limitations. One important component of IPE is simulation-based learning activities and these represent a large investment in technology, human resources, and infrastructure. High-quality interprofessional learning experiences may not be possible in institutions where resources are lacking. However, the long-term benefits of IPE make it a worthwhile investment despite these challenges. By doing so institutions are better poised to prepare students to meet the needs for working collaboratively in the practice of healthcare. If these challenges can be overcome, interprofessional pharmacology education will remain a key part of healthcare education.

## CONCLUSION

Preparing healthcare students for collaborative practice is a key role in which IPE has an integral role. Learning pharmacology in interprofessional settings helps students gain the knowledge, skills and attitudes to work competently as a member of the healthcare team. Collaborative pharmacology education research demonstrates it improves medication management, decreases the risk of medication errors, and improves patient outcomes. It also creates an opportunity for communication and skill in leadership and gives students the ability to be active in the management of drug therapy. With the shift in healthcare taking place, the need for IPE will only increase. Interprofessional programs must continue to be invested by institutions, also developing new strategies to overcome the obstacles of implementation. IPE prepares students for collaborative practice resulting in safer, more effective, and patient-centred delivery of healthcare.

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## REFERENCES

- Alowais, S.A., Alghamdi, S.S., Alsuhebany, N., Alqahtani, T., Alshaya, A.I., Almohareb, S.N., Aldairem, A., Alrashed, M., Bin Saleh, K., Badreldin, H.A. and Al Yami, M.S., 2023. Revolutionizing healthcare: the role of artificial intelligence in clinical practice. *BMC Medical Education*, 23(1), p.689.
- Bunditanukul, K., Narajeenron, K., Worasilchai, N., Saepow, S., Nontakityothin, N. and Ritsamdang, J. (2024) 'Evaluating Pharmacy Students' Teamwork Attitudes in Virtual COVID-19 Emergency Department Simulations: A Pilot Study', *American Journal of Pharmaceutical Education*, 88(7), 100716.
- Das, S., Sadikan, M. Z. and Oo, K. T. (2024) 'The Perspective of Hidden Curriculum in The Field of Medical Education', *International Journal of Transformative Health Professions Education*, 2(1), 109-115.
- Grimes, T. and Guinan, E. (2023) 'Interprofessional education focused on medication safety: A systematic review', *Journal of Interprofessional Care*, 37(1), 131-149.

MacKenzie, D., Sibbald, K., Sponagle, K., Hickey, E., Creaser, G., Hebert, K., Gubitz, G., Mishra, A., Nicholson, M. and Sarty, G. E. (2024) 'Developing pre-licensure interprofessional and stroke care competencies through skills-based simulations', *Journal of Interprofessional Care*, 38(5), 864-874.

Sadikan, M. Z. (2024a) 'Addressing Burnout in Medical Students and Residents: Strategies for Sustainable Well-being', *International Journal of Transformative Health Professions Education*, 2(1), 78-83.

Sadikan, M. Z. (2024b) 'Transformative Medical Education: The Role of E-Pads in Revolutionizing Examinations Processes in Medical School', *International Journal of Transformative Health Professions Education*, 2(1), 3-20.

Sadikan, M. Z. and Ariffin, I. A. (2024) 'Breaking Barriers, Building Bridges: A Review of Interprofessional Collaboration in Medical Education', *International Journal of Transformative Health Professions Education*, 2(1), 21-36.

Schussel, K. E., Forbes, S., Taylor, A. M. and Cooley, J. H. (2019) 'Implementation of an interprofessional medication therapy management experience', *American Journal of Pharmaceutical Education*, 83(3), 6584.

Schuster, B. G., Faisal, S. and L. Gagnon, C. (2024) 'A new curricular framework for an interprofessional approach to deprescribing: Why and how pharmacists should lead the way', *Canadian Pharmacists Journal/Revue des Pharmaciens du Canada*, 157(3), 101-103.

Shoair, O. A., Smith, W. J., Abdel Aziz, M. H., Veronin, M. A., Glavy, J. S. and Pirtle, S. J. (2023) 'Pharmacy students' perceptions and attitudes toward face-to-face vs. virtual team-based learning (TBL) in the didactic curriculum: a mixed-methods study', *Medical Education Online*, 28(1), 2226851.

Singar, S. A., Hairi, H. A., Sadikan, M. Z. and Sadikan, S. F. N. (2024) 'Elevating Healthcare: The Integration of Modern Nutrition Science into Medical Education', *International Journal of Transformative Health Professions Education*, 2(1), 37-52.

Swain, D., Gonyeau, M. J., Orr-Skirvin, J. A. and Bronich, T. (2024) 'A Focus on Interprofessional Education Planning within a Doctor of Pharmacy Curriculum', *American Journal of Pharmaceutical Education*, 88(9).

Van Hooser, J., Harden, R. M., Vail, M., Friedrichsen, S., Lieberz, D., Mattson, S. and Onello, E. (2024) 'The Interprofessional Standardized Patient Experience: An Effective Interprofessional Education Activity for Prelicensure Health Professional Students', *MedEdPORTAL*, 20, 11410.

Viswanathan, M., Kahwati, L. C., Golin, C. E., Blalock, S. J., Coker-Schwimmer, E., Posey, R. and Lohr, K. N. (2015) 'Medication therapy management interventions in outpatient settings: a systematic review and meta-analysis', *JAMA Internal Medicine*, 175(1), 76-87.

Weller, J., Boyd, M. and Cumin, D. (2014) 'Teams, tribes and patient safety: overcoming barriers to effective teamwork in healthcare', *Postgraduate Medical Journal*, 90(1061), 149-154.

Weppner, W. G., Singh, M. K., Wipf, J. E., Shunk, R., Woodard, L. and Brienza, R. (2024) 'Culture change and lessons learned from ten years in the VA centers of excellence in primary care education', *BMC Medical Education*, 24(1), 457.