

The role of interprofessional education (IPE) for medical students in pharmacology subject

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ABSTRACT

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Interprofessional education (IPE) is a learning method that allows the clinical clerkship to study together, exchange knowledge, and develop the skill that is needed in interprofessional collaborative work practice. This article analyzed the elements within IPE including background, operational definition, goals and benefits, implementation, as well as competency in IPE. Furthermore, the role of IPE for medical students especially in pharmacology subject was discussed. In summary, interprofessional collaboration (IPC) is needed to answer the high demand and complexity of patient problems in minimizing medication errors due to low IPC. The IPE is an early step towards realizing IPC where each profession can understand each other's roles and responsibilities to achieve comprehensive patient health.

ABSTRAK

Interprofessional education (IPE) adalah metode pembelajaran yang memungkinkan kepaniteraan klinis belajar bersama, bertukar pengetahuan, dan mengembangkan keterampilan yang dibutuhkan dalam praktik kerja kolaboratif *interprofessional*. Artikel ini menganalisis elemen-elemen IPE yang meliputi latar belakang, definisi operasional, tujuan dan manfaat, implementasi, serta kompetensi dalam IPE. Selanjutnya, peran IPE bagi mahasiswa kedokteran khususnya dalam mata kuliah farmakologi juga didiskusikan. Dapat disimpulkan, *interprofessional collaboration* (IPC) diperlukan untuk menjawab tingginya permintaan dan kompleksitas masalah pasien dalam meminimalkan kesalahan pengobatan akibat rendahnya IPC. *Interprofessional education* merupakan langkah awal mewujudkan IPC tempat setiap profesi dapat saling memahami peran dan tanggung jawabnya untuk mencapai kesehatan pasien yang komprehensif.

INTRODUCTION

Pharmacology is one of a vital subject for medical students who want to be a medical practitioner. Understanding of pharmacology principal is a crucial role in the therapy management regarding the safe and effective use of medicines. Moreover, issues in health care are getting complex lately, including drug therapy problems and can be a challenge to the healthcare provider. The right medical management services

which involve multiple profession will give the high value for the patient. In the case of drug therapy problem, the coordination and collaboration between health professional and pharmaceutical care practice will be required to prevent, identify, and resolve the problem.^{1,2} Therefore, introducing and implementing collaboration among health professional early in pharmacology subject can improve the attitude and further medical management services.

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According to the recommendation from the World Health Organization (WHO), to give satisfactory health services to patients, it requires effective collaboration among health professionals. Good collaboration among health professionals, commonly called interprofessional collaboration (IPC). All kinds of collaborations in IPC should be oriented to patients. For instance, giving health services and education to patients; promoting self-care correctly and self-management properly, and considering the cost-effectiveness of the therapy which would be given to the patient to elevate patients' wellbeing comprehensively.³ Interprofessional collaboration is believed could integrate and enhance the effectivity of each role of the health professionals in giving health services to patients.⁴

Communication, coordination, and collaboration may become an issue in IPC, since the health professionals, similar to other professionals, have their educational background and different habit. Internal conflict in this multi professional's health cluster may cause medical errors that endanger patients.² Data showed that medication error is the third leading causes death in America with the mortality rate reached for 400,000 cases annually.⁵

The causes of all the issues are the poor of collaboration among health workers in giving health services to the patients that eventually causing the lateness and errors in performing patient's treatment management. This can be categorized as harmful and indirectly has ruled out the patient's right to get proper and optimal health services.⁶

The practice of IPC is still not maximized at present due to the stakeholders involved do not understand and do not accustomed to collaborating their roles and responsibilities when providing services to patients. An alternative solution to overcoming this issue is by introducing the collaboration among health professionals as early as possible, particularly when they were in undergraduate as well as clinical

clerkship phase.⁷ Interprofessional education (IPE) program may become the bridge in facing the gap among health professionals. Interprofessional education can also be a key basis in creating high quality, safety, and patient-oriented health services since IPE can introduce the needed things that health professionals should know to give the best health services to patients.⁸

This article analyzed the elements within IPE included the background, the operational definition, the goals and benefits, the implementation, as well as the competency in IPE. Furthermore, the role of IPE for medical students in pharmacology subject is also discussed.

DISCUSSION

Definition of IPE

Interprofessional education, which previously is called "multi-disciplinary care" and "interdisciplinary care", lately has various definitions.³ Illingworth *et al.*⁹ claimed that IPE is an education which accentuates the mutual interactions among individuals who work in the health care providers, in the health education, which validated or not by a legal entity, or it can be validated independently by each individual.⁹ Meanwhile, Pojskic *et al.*¹⁰ and Ilmanita *et al.*¹¹ clarify that IPE is a collaboration among health professionals which started since they were in the formal health education. According to WHO (2010), IPE means two or more students from various disciplines are learning together to achieve effective collaboration in practice. The goal is preparing the best collaboration among health professionals in the future.⁴ Similar to WHO, Centre for the Advancement of Interprofessional Education (CAIE) (2013) added that IPE is a learning method where two or more students study in a group, knowing each profession to enhance their skill in teamwork and improving the quality of care.¹² Another definition of IPE from Hakiman *et al.*¹³ IPE is a form of education, training, and learning for two or more health and social students

who are performing interactive learning. Thus, IPE can be explained as an interactive learning process among health professional students in the formal education phase which oriented to the safety and patient wellbeing to improve the capability of collaborative work practice and quality of health care.

Objectives and advantages of IPE

The goal of IPE is to introduce many kinds of collaborations among health professionals as early as possible. This kind of learning system is expected can produce a competent and professional health worker that can perform according to their role properly as well as working in an interdisciplinary team. The ability to work in a team and the ability to collaborate in a health professional team should be mentioned explicitly as one of the skills that should be known by health professionals graduate.⁷ Health professionals who have those characters (able working in a team and collaborate with various health professional backgrounds) may encourage the implementation of IPC so that it can be more maximum. Eventually, the final goal from all of this health education process is to improve the quality of health services.² The effectiveness of IPC implementation will affect the patient's management more effective and efficient. Hopefully, the morbidity and mortality decrease and patient's quality of life may increase.¹⁴

There are several benefits from IPE which have been reviewed through theoretical and implementation. Generally, the advantages of IPE are a form of early education to the health students to get used to working with other health professionals collaboratively on a team basis.⁵ The first benefit is enhancing the understanding of health professional candidates regarding their role and competencies among health professional. This is imperative as it may minimize the overlapping of the role and misinterpretation of each health professional's task.¹⁰ Additionally, the domination of one health professional

can be reduced as each health worker has already known their role and function.¹⁵ Secondly, IPE would foster mutual respect among health professionals. This is a matter as it may reduce the egoistic which arises and can damage the team performance.¹⁶ Thirdly, the benefit obtained from IPE is that the relationship among health professionals when they deliver health services to the community is more effective as they understand and appreciate each other. This good relationship can happen as they already habituated when in college to work in a team, exchange ideas, cooperate, and complement each other to deliver the best health services to the patient. Each health professionals have known their competency and role so that it can minimize conflict within the team.⁹ Fourthly, IPE can accommodate the growth of health science more optimal. It is known that health and medical science is dynamic, health information and updates are almost in every minute. Therefore, it requires health professionals who are easy to adapt to giving health services. The characteristic of a health professional who is educated through the IPE system have already accustomed to adaptation; thus it is effortless for them to receive the fast-changing knowledge in health.^{4,17}

The important of IPE to medical students in pharmacology subject

Barr *et al.*¹² stated that at least two-third of health higher education institutions in England used IPE in their education system.⁷ Those institutions clarified that the implementation of IPE is important to the health professionals' candidate. Considering the need for IPE and its massive benefit, the application of IPE, therefore, need to be implemented as early as possible when the health professionals candidate (including medical students were still in the education phase).⁷

Habituation to collaborate, cooperate, as well as understanding each role and responsibility as a medical doctor and pharmacist through IPE is

crucial. Performing pharmacotherapy to patients entailed a collaboration of the role between doctor and pharmacist.¹⁷ It should be understood that the variety of drug therapy, as well as the comorbidity in a patient, may cause complexity in the treatment management. A multi-comorbid patient often found a polypharmacy phenomenon as there were several patient's complaints that have to be treated and to be eradicated the causes. It is sometimes challenging for a single clinician to direct safely multiple medications, she/he need multifaceted and teamwork approach.¹⁴

Meanwhile, when the collaboration between clinicians and pharmacists is not adequate, it can lead to medication errors due to the communication is not conveyed well.¹⁰ Institute of Medicine (IOM) found that the number of medication errors in America is relatively high that is 44,000 cases from a total of 98,000 patients. It should be known that medical errors can result in disability and even mortality. Thus, this should be considered as a warning sign that a failure in pharmacotherapy process could lead to deadly effect.¹⁹

An error in health services may happen in any element involved, including the pharmacotherapy process. For instance, a clinician may choose irrational regimen therapy or a mistake in prescribing (it can be the dose, patient identity, drug name, etc.). While an error from a pharmacist can be any mistake in preparing the drug.²⁰ If there is effective collaboration or teamwork, they will not hesitate to communicate the error they found. Benawan *et al.*¹⁹ in their study found that the causes of medical errors in the prescribing phase can be a working distraction such as phone ringing, a heavy workload, poor communication between clinician and patient, and also unclear prescription.¹⁹ Those errors are actually can be prevented if the communication and relationship among health professionals are working properly. A study from Sarasmita showed that 100% of subjects agree to the implementation of IPE to pharmacy students as it may reduce the

medication errors in the hospital.²⁰

The implementation of IPE amongst medical and pharmacy students

There should be a commitment among health professional group from the beginning in the education phase to foster a great health professional teamwork to the student so that IPE implementation would be utmost. This is the early step of IPC establishment which oriented to the improvement of patient wellbeing comprehensively.¹⁷ Therefore, IPE should be inserted to the health education curriculum, including medical and pharmacy.⁷

Medical and pharmacy are two different majors, yet both are in the same academic cluster. Thus, the value and knowledge development are quite similar. However, it should be noticed that those two have unlike work practice scope as well as the cultural organization. Hence, a collaborative approach between physicians and pharmacists in delivering health services is a complex task for some individuals. A simple task could become complex as the superior-inferiority relationship which often felt among professionals emerge. In addition, it should be considered that some terminology, organizational culture, work algorithm, as well as work pressure may vary among health professionals, and these will eventually affect professionals' performance in teamwork.¹⁵ Apparently, there is a different viewpoint regarding each clinicians' role, in this case between physician and pharmacist. A physician assumes that a pharmacist's role is limited to the area of preparing and delivering the medicine to the patient from the doctor's prescription. Meanwhile, a pharmacist has a different viewpoint that they too should be involved in deciding the rationale drug for a patient.¹⁰ Another challenge of IPE implementation is that not all health cluster students are from the same organization. A different institution may have different organization culture which has been rooted in years so that it could burden students in learning

integrated as teamwork in IPE.¹⁶

The interprofessional education implementation requires cooperation from all stakeholders involved. Those are a policymaker, education institutions, lecturers, also the students. Further, coordination among professionals (lecturers) is needed to shape the proper curriculum, comprehensive learning module, and facilities to meet what IPE needs.¹⁷ Various IPE activities that have been applied in some colleges are merging classes, simulation, community-based initiatives, exchange-based learning, problem-based learning, Interprofessional practice-based learning, observation-based learning, and e-learning. All of those activities accentuated the interaction among interdisciplinary students to solve the simulation case as a team.¹⁷

Interprofessional education competency for medical students

Conducting IPE in the health cluster

higher education will affect the quality of the students. Thus, the expected competent graduates as required in IPC will be produced. There are five crucial competencies that have to be attached to the health professionals in team-based collaborative work practices. Those are understanding of the capacity and role of self; trust and self-believed in working; able to solve the problem well; accepting the differentiation; and having a leadership skill.¹⁴ Additionally, other values that should be owned by the IPE students are understanding their role, responsibility, and other professional's competency, working by patient-oriented, and there should be an interdependent relationship with other health professions.¹⁶ Further, according to ACCP, IPE graduates competency is divided into four categories which comprise knowledge competency, skill competency, behavior competency, and cooperation competency as shown in TABLE 1.²¹

TABLE 1 IPE Competency According to ACCP.²¹

IPE Competency	Competency Details
Knowledge competency	The strategy of coordination and association Dividing the task model or situation assessment Habituation of teamwork Knowledge for team mission Responsibility for the specific task
Skill competency	Monitoring each role in a team Flexibility/ adaptation skill Supportive behaviour Leadership in a team Problem-solving Feedback Information distribution
Behavior competency	Moral of team-oriented Collective efficacy Visi distribution
Cooperation competency	Cohesion team Trust to each other Togetherness orientation The importance of cooperation

CONCLUSION

The high demand and complexity of the patients' problem required IPC in delivering health services. The poor working practices collaboration among health professionals may result in medication errors that endanger patients. To rectify IPC, fostering and habituating all the competencies needed should be conducted. Therefore, IPE is the essential step to the actualization of good IPC.

For a medical student, IPE is an important program, particularly in pharmacology subjects, as they have to learn how to build cooperation with pharmacy students. The benefit of IPE for a medical student in a pharmacy field is that they will learn and habituate with the pharmacist candidate. Moreover, they will also learn to understand each professionals' role, responsibility, and competencies either their profession or other health professionals. Finally, the pharmacotherapy given to the patient can be correct, rationale, and oriented to patient wellbeing comprehensively.

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REFERENCES

1. Toman KP, Probandari AN, Randita ABT. *Interprofessional education (IPE): luaran masyarakat terhadap pelayanan kesehatan dalam praktik kolaborasi di Fakultas Kedokteran Universitas Sebelas Maret*. Nexus Pendidikan Kedokteran dan Kesehatan 2016; 5(2):140-5.
2. Reeves S. *Porque precisamos da educação interprofissional para um cuidado efetivo e seguro*. Interface (Botucatu) 2016; 20(56):185-96. <https://doi.org/10.1590/1807-57622014.0092>
3. Nester, J. The importance of interprofessional practice and education in the era of accountable care. *N C Med J* 2016;77(2):128-32. <https://doi.org/10.18043/ncm.77.2.128>
4. Health Professions Networks Nursing & Midwifery Human Resources for Health. *Framework for action on interprofessional education & collaborative practice*. Geneva: World Health Organization 2010; 1-64.
5. Goolsarran N, Hamo CE, Lane S, Frawley S, Lu WH. Effectiveness of an interprofessional patient safety team-based learning simulation experience on healthcare professional trainees. *BMC Med Educ* 2018; 18(1):192. <https://doi.org/10.1186/s12909-018-1301-4>
6. Balqis N, Dewi E. *Perbedaan persepsi mahasiswa kesehatan terhadap interprofessional education (IPE)*. [Skripsi]. Surakarta: Universitas Muhammadiyah Surakarta, 2018.
7. Patel N, Begum S, Kayyali R. *Interprofessional education (IPE) and pharmacy in the UK. A study on IPE activities across different schools of pharmacy*. *Pharmacy (Basel)* 2016; 4(4):28. <https://doi.org/10.3390/pharmacy4040028>
8. Wilhaus J, Palaganas J, Manos J, Anderson JD, Cooper A, Jeffries P, *et al*. *Interprofessional Education and Healthcare Simulation Symposium. Interprofessional Education and Healthcare Simulation Symposium*; 2013.
9. Illingworth P, Chelvanayagam S. Benefits of interprofessional education in health care. *Br J Nurs* 2007; 16(2):121-4. <https://doi.org/10.12968/bjon.2007.16.2.22773>
10. Pojskic N, MacKeigan L, Boon H, Ellison P, Breslin C. *Ontario family physician readiness to collaborate*

- with community pharmacists on drug therapy management: lessons for pharmacists. *Can Pharm J* 2009; 142(4): 184-9.
<https://doi.org/10.3821/1913-701X-142.4.184>
11. Ilmanita D & Rokhman MR. Peran *interprofessional education* terhadap persepsi keterlibatan apoteker dalam kolaborasi antar profesi. *Jurnal Manajemen dan Pelayanan Farmasi* 2014; 4(3):166-74.
 12. Barr H, Coyle J. Introducing interprofessional education. In: Loftus S, Gerzina T, Higgs J, Smith M, Duffy E. (eds). *Educating health professionals. Practice, Education, Work and Society*. Rotterdam: Sense Publishers, 2013.
https://doi.org/10.1007/978-94-6209-353-9_16
 13. Hakiman AP, Dewi SP, Sayusman C, Wahyudi K. Persepsi mahasiswa profesi kesehatan Universitas Padjadjaran terhadap *interprofessionalism education*. *JSK* 2018; 1(4): 206-13.
 14. Bosch B, Mansell H. Interprofessional collaboration in health care: Lessons to be learned from competitive sports. *Can Pharm J (Ott)* 2015; 148(4):176-9.
<https://doi.org/10.1177/1715163515588106>
 15. Thomas J, Kumar K, Chur-Hansen A. What does learning together mean for pharmacy and medicine students: is it really about from and with? *MedEdPublish* 2018; 1-10.
<https://doi.org/10.15694/mep.2018.0000110.1>
 16. Illingworth P, Chelvanayagam S. The benefits of interprofessional education 10 years on. *Br J Nurs* 2017; 26(14):813-8.
<https://doi.org/10.12968/bjon.2017.26.14.813>
 17. Yusuf S. Pengembangan model *interprofessional education* (IPE) di Fakultas Ilmu Kesehatan UIN Alauddin Makasar. [Skripsi]. Makasar: Fakultas Ilmu Kesehatan UIN Alauddin Makasar, 2015.
 18. Criddle D & Rigby D. Collaboration between doctors and pharmacists in the community. *Aust Prescr* 2011; 34:191-3.
<https://doi.org/10.18773/austprescr.2011.023>
 19. Benawan S, Citraningtyas G, Wiyono WI. Faktor penyebab *medication error* pada pelayanan kefarmasian rawat inap Bangsal Anak RSUD Tobelo. *Pharmacon* 2019; 8(1): 159-67.
 20. Sarasmita MA. 2015. Pembelajaran interprofesi kesehatan antara dokter, apoteker, dan perawat dalam memecahkan masalah terapi obat pada laporan kasus untuk meningkatkan keamanan pasien: pilot studi pada mahasiswa apoteker. *Prosiding Seminar Nasional Current Challenges in Drug Use and Development* 2015, 28 November 2015. Jember: Universitas Negeri Jember-Ikatan Apoteker Indonesia Cabang Jember, 2015.
 21. Page RL, Hume AL, Trujillo JM, Leader WG, Vardeny O, Neuhauser MM, et al. Interprofessional education: principles and application. a framework for clinical pharmacy. *Pharmacotherapy* 2012; 29(7):145e-64e.
<https://doi.org/10.1592/phco.29.7.879>