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RESEARCH ARTICLE

Perception of online interprofessional education among pharmacy and medical students in tertiary university

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Abstract

Background: The COVID-19 crisis impacted the educational system worldwide, which shifted from face-to-face sessions to online learning modes. However, online delivery should not jeopardise the outcome of students learning from interprofessional education (IPE) and should integrate students from different professional backgrounds closer. **Objective:** To identify the perception of medical and pharmacy students towards online IPE activity at Taylor's University, Malaysia. **Method:** An online cross-sectional questionnaire was distributed to second and fourth-year students from the medical and pharmacy programmes. Students were considered to have a positive perception if their total score was above the median score. **Result:** More than half of the students (53.6%) showed positive perceptions towards the online IPE programme. Medical students had the highest percentage of students (54.9%) showing greater positive perceptions compared to pharmacy students (52.7%). Both health sciences students possessed the highest score on all the SPICE instrument's domains. **Conclusion:** This discovery offers valuable insights into the interprofessional competency of students engaged in online IPE activities at their current academic level. It underscores the imperative of integrating online IPE activities into the curriculum design to equip students with the competence necessary for effective collaboration within an interprofessional team.

Introduction

Interprofessional collaboration (IPC) is crucial for improving patient-centred care and addressing complex health issues (Bosch & Mansell, 2015). Poor communication among healthcare providers contributes to 70% to 80% of failures in health-related services (Syahrizal *et al.*, 2020). The World Health Organization (WHO) highlights the importance of interprofessional education (IPE) in improving global health outcomes and overcoming the global health workforce crisis (WHO, 2010). Pharmacists and physicians play a crucial role in interprofessional collaborative teams due to the complexity of

pharmaceutical plans, increased medication-related morbidity, and healthcare costs.

IPE aims to prepare healthcare professionals to drive constructive discussions and collaborate with other healthcare professionals from different specialities, aiming to improve patient health-related outcomes by reducing medication errors (Zechariah *et al.*, 2019). Health science students should recognise the importance of IPE and develop the necessary competence to engage in collaborative practice in clinical settings. Early introduction of IPE programmes can improve health students' competency in teamwork, knowledge, communication skills, and

knowledge of the discussion topic (Mohammed *et al.*, 2021).

Moreover, IPE fosters positive interaction and improves attitudes towards other professionals (Pouliot *et al.*, 2021). Studies show that introductory IPE sessions in early professional modules maintain students' positive attitudes towards interprofessional learning and enhance their experience working collaboratively with other healthcare professionals. Post-intervention IPE programs can prevent the formation of stereotypes and maintain negative attitudes among healthcare profession students (Manigault *et al.*, 2012). In addition, one compelling example of implementing IPE among pharmacy students was its invaluable role in training programs, such as enhancing their skills in administering immunisation injections and fostering real-time patient simulation experiences (Burmeister *et al.*, 2021; Louizos *et al.*, 2016).

IPE has emerged in Asian countries to strengthen healthcare systems and optimise services (Ahmad *et al.*, 2013). The COVID-19 pandemic has disrupted traditional face-to-face classes, requiring online learning. The key point of online IPE implementation is flexibility between learners and lecturers (Abdelaziz *et al.*, 2021). In Malaysia, the study on the perception of medical and pharmacy students towards IPE is limited. This research study aims to identify their perception of online IPE activity at Taylor's University.

Methods

Design

This was a cross-sectional study using convenient sampling techniques. It was conducted among undergraduate health sciences students in Taylor's Lakeside campus. The study population consisted of Year 2 and Year 4 students from the School of Pharmacy (SOP) and the School of Medical (SOM) who have completed the IPE activity. The sample size (n) calculated using Raosoft software was 149 students.

Study instrument

The questionnaire consists of two parts: (a) sociodemographic profile and (b) Students' Perceptions of Interprofessional Clinical Education (SPICE) instrumentation. The SPICE instrument was used to measure the perception of medical and pharmacy

students who engaged in interprofessional clinical education (Fike *et al.*, 2013). This SPICE instrument was presented on a five-point Likert scale consisting of ten items and three factors dedicated to interprofessional teamwork and team-based practice, roles and responsibilities for collaborative practice and patients' outcomes from collaborative practice.

Data collection

The online questionnaire using Google Forms was distributed to students via WhatsApp and email. Participants were assured that their participation in this questionnaire was completely voluntary. Informed consent was obtained from the participants to be involved in the study. Any incomplete questionnaire was excluded.

Data analysis

Data were analysed using the Statistical Package for Social Scientists (SPSS) version 22 (IBM Corporation, Armonk, NY, USA). The total score was used to yield the median value, which served as the cut-off point to classify the participants into high and low groups based on their level of perception. As the data was collected using an ordinal scale, the median was more appropriate to be used as the measure of central tendency for the data. Students were considered to have a positive perception if their total score was above the median score.

Ethical approval

The study gained approval from Taylor's University Human Ethics Committee with a reference number of HEC 2022/02.

Results

Student demographic details

Table I shows the characteristics of the participants. This study involved 125 students, with a majority of them being female (87.6%) and a majority of them being between 20 and 23 years old. Pharmacy students were the largest group, with 59.2% of respondents. Most students preferred face-to-face sessions over online self-learning, with 66.4% preferring face-to-face sessions.

Table I: Basic characteristics of the students

Characteristics	Variables	Frequency, number, (%)
Gender	Male	38 (30.4)
	Female	87 (69.6)
Age	16-19	0 (0)
	20-23	110 (88)
	24-27	15 (12)
Ethnicity	Malay	3 (2.4)
	Chinese	94 (75.2)
	Indian	20 (16)
	Others	8 (6.4)
Study programme	Medical	51 (40.8)
	Pharmacy	74 (59.2)
Student preference: Physical session or online learning?	Physical session	83 (66.4)
	Online learning	42 (33.6)

Student perception towards interprofessional education

In a total of 125 students, the lowest SPICE instrument score is 30, the maximum score is 50, and 44 is the median number. If the respondent's scores are higher than the median, it indicates that the students have a favourable attitude and a positive perception of online IPE activity. As a result, we discovered that 53.6% of

students had a positive general view of the IPE programme, while 46.4% had a negative general perception of it. Following an investigation, it was discovered that the majority of students from each institution have a favourable opinion of the online IPE, with 54.9% of medical students and 52.9% of pharmacy students, as shown in Table II.

Table II: Student perception towards online interprofessional education activity

Study programme	Scores			Student's perception, number, (%)	
	Minimum	Maximum	Median	Positive	Negative
Medical	30	50	44	28 (54.9)	23 (45.1)
Pharmacy	30	50	44	39 (52.7)	35 (47.3)

Table III displays students' perspectives on several aspects of interprofessional education (IPE). In the subject of "interprofessional teamwork and team-based practice," 50.4% of students had a good view, while 49.6% had a negative perception. Moving on to the "roles/responsibilities for collaborative practice" category, a greater number of students (65.6%) had a good impression, whereas 34.4% had a negative perception. Similarly, in the "patient outcomes from

collaborative practice" category, 62.4% of students had a good view, whereas 37.6% had a negative perception. This breakdown shows that the majority of students had good opinions across all three areas, particularly in terms of roles and responsibilities for collaborative practice. The study emphasises the significance of these factors in affecting students' views towards online IPE.

Table III: Student perception towards each domain of SPICE instrument

Domain	Student's perception, number, (%)	
	Positive	Negative
Interprofessional teamwork and team-based practice	63 (50.4)	62 (49.6)
Roles/responsibilities for collaborative practice	82 (65.6)	43 (34.4)
Patient outcomes from collaborative practice	78 (62.4)	47 (37.6)

Discussion

Our study indicates that despite the flexibility of online education tools, more students still prefer physical sessions over online learning. External distractions from family members and challenges in online courses, such as technical issues, internet issues, digital competence, compatibility, and a lack of motivation, contribute to students' preference for physical learning (Almahasees *et al.*, 2021). Furthermore, poor performance in online classes, lack of direct faculty contact, and low motivation may result in students not fully understanding and achieving curriculum outcomes, potentially affecting their competency as health profession students (Barrot *et al.*, 2021).

Medical students displayed a higher level of positive perception compared to their counterparts in pharmacy. This divergence aligns with the findings of Pai *et al.* (2014), suggesting that variations in curriculum emphasis might be a contributing factor. Notably, medical curricula have traditionally placed a stronger emphasis on fostering teamwork and interdisciplinary training. This emphasis could potentially explain the more favourable perception of IPE observed among medical students. Moreover, the early integration of practical workshops right from the initial year and engagement in clinical clerkships from the third year onwards, as outlined by Keijsers *et al.* (2014), likely plays a role in equipping medical students with essential clinical skills and fostering their positive outlook towards IPE.

Another reported factor contributing to this difference was that medical students tend to have more opportunities for meaningful interactions with various healthcare professionals, including nurses (Dargahi *et al.*, 2012). This increased exposure may lead to a more positive view of IPE among medical students. In contrast, the more confined exposure to pharmacy-related activities during training could result in a less favourable perception among pharmacy students.

From the findings of the study, the "Interprofessional Teamwork and Team-Based" aspects, both medical and pharmacy students exhibited a higher percentage of positive views. This can be attributed to the recognition that when healthcare professionals collaborate and work together, they can effectively combine their specialised expertise (Rosen *et al.*, 2018). Through a collaborative approach, they can pool their expertise, leading to better treatment plans for patients. Moreover, they can exchange information, share ideas, and resolve conflicts, contributing to a smoother and more efficient healthcare team (Waszyk-Nowaczyk *et al.*, 2021).

Within the "roles/responsibilities for collaborative practice" domain, both health sciences students demonstrate their recognition of the interconnections between their fields and the potential of collaborative practice to improve patient outcomes (Bigio *et al.*, 2016). They appreciate the importance of clarifying roles and responsibilities, focusing on patient-centred care and avoiding overlapping tasks. This positive perception highlights the coordinated and synergistic efforts needed for effective interprofessional collaboration in healthcare settings (Rahayu *et al.*, 2021).

Furthermore, both medical and pharmacy students show good perceptions of the impact of collaborative practice on patient outcomes. By involving patients in the decision-making process, healthcare professionals can tailor treatments to individual preferences and needs, fostering a sense of empowerment and engagement (Krist *et al.*, 2017). A study by Urano *et al.* (2020) states that communication and information sharing among healthcare team members reduce the likelihood of medical errors among patients. The synergy achieved through collaboration not only ensures safer patient care but also contributes to more effective and efficient healthcare delivery.

Compared to a previous study, which conducted offline IPE sessions, identified positive students' perceptions and attitudes towards IPE (Zaccomer *et al.*, 2022). Another study done by Yune *et al.* (2020) revealed that pharmacy students showed high levels of competency in offline IPE compared to other health sciences students. This highlights that online IPE yields comparable outcomes to those observed in offline IPE. The findings of this study show that online IPE does not jeopardise students' perceptions, as well as the aim of IPE, which was to break barriers and achieve good teamwork. Therefore, more universities should redesign the curriculum by incorporating IPE activities as a part of the syllabus. However, this study is limited to a small sampling region solely in Taylor's University, Malaysia. Hence, the findings cannot be generalised. Future studies could be made more refined by incorporating more Asian university regions with a large sample size.

Conclusion

In short, the evaluation of online IPE reveals a favourable perception shared among students from various health profession programs. Moreover, this approach appears to enhance student motivation and dedication towards participating in online IPE activities. The study's outcomes not only underscore the positive

reception of online IPE but also emphasise its potential to effectively cultivate interprofessional collaboration within the healthcare domain. This insight highlights the significance of integrating online IPE into the curriculum, paving the way for future healthcare professionals to develop essential collaborative competencies.

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