

Perceptions and Readiness of Health Profession Students in Interprofessional Education at Universitas Airlangga Hospital in the Indonesian Context: A Mixed-Methods Study

Abstract

Aims: This study aims to analyze the perceptions and readiness of health profession students regarding interprofessional education within the Indonesian context.

Methods: This study employed a concurrent mixed-methods design involving 190 health profession students from three study programs (medicine, nursing, and pharmacy) at Universitas Airlangga Hospital. Quantitative data were collected using the Readiness for Interprofessional Learning Scale (RIPLS) validated instrument and analyzed using statistical tests in SPSS. Meanwhile, qualitative data were obtained through in-depth (one-on-one) interviews and analyzed thematically.

Findings: There was a significant increase in students' RIPLS scores before and after participating in IPE activities ($p < 0.05$), indicating enhanced readiness for interprofessional learning. Thematic analysis revealed four main themes: (1) IPE is seen as an engaging and beneficial activity; (2) IPE broadens cross-professional perspectives; (3) each profession brings a unique point of view; and (4) cultural values such as *sungkan* (reluctance), *gotong royong* (mutual cooperation), and professional stereotypes influence interactions in IPE activities.

Conclusion: Health profession students demonstrated positive attitudes toward IPE; however, cultural and psychosocial dynamics remain a challenge. This study emphasizes the need for a culturally contextualized IPE approach and a clear articulation of the roles and contributions of each profession within healthcare teams.

Keywords: interprofessional education, RIPLS, collaboration, health profession students, Indonesian culture, mixed-methods

ONLINE

Introduction

Health professionals are individuals who dedicate themselves to healthcare services and acquire competencies through formal health education, some of which require legal authorization to practice [1]. They consist of multiple disciplines, including physicians, dentists, nurses, pharmacists, public health professionals, nutritionists, physical therapists, and medical technicians. In modern healthcare systems, collaboration among these diverse professionals is critical to delivering high-quality and patient-centered care [1].

Patient satisfaction is widely recognized as a key indicator of healthcare quality. High levels of satisfaction reflect not only the technical competence of care but also influence loyalty, adherence to treatment, and the reputation of healthcare institutions [2]. One determinant of patient satisfaction is the quality of interprofessional collaboration. Effective teamwork among physicians, nurses, and allied health professionals is characterized by clear communication, coordination, mutual respect, and shared responsibility [3]. Conversely, poor communication and inadequate coordination often result in delayed services, miscommunication, and increased risk of medical errors, ultimately lowering patient satisfaction and potentially leading to legal disputes [4].

Several studies highlight the consequences of poor teamwork in healthcare. Zadvinkins et al. demonstrated that inadequate interaction, communication, and teamwork are associated with patient safety incidents [5]. Effective interprofessional collaboration is therefore essential to improving service quality and reducing risks to patient safety. However, such collaboration does not arise spontaneously; it requires structured development and often faces challenges such as ineffective communication, lack of trust, hierarchical barriers, and undervaluing the roles of other professionals [6].

To address these challenges, the World Health Organization (WHO) has promoted Interprofessional Education (IPE) as a strategy to prepare health professionals for collaborative practice [7]. IPE is defined as a process in which students from different health-related backgrounds learn together during their education, with the goal of fostering collaboration in delivering promotive, preventive, curative, rehabilitative, and other healthcare services [8]. Evidence suggests that students exposed to IPE are more likely to develop collaborative attitudes and skills, becoming effective team members in clinical practice [9].

Despite its potential benefits, the implementation of IPE in higher education remains limited. Many university-based IPE programs are discipline-specific, restricting students' opportunities to acquire the competencies required for interprofessional teamwork in complex healthcare systems [10]. Attitudes toward IPE play a crucial role in determining its success. Assessment of student attitudes has been emphasized as a central component of IPE research, given that attitudes often constitute the greatest barrier to effective interprofessional collaboration [11, 12, 13].

The Readiness for Interprofessional Learning Scale (RIPLS), developed by Parsell and Bligh, has become a widely used and validated instrument for evaluating students' attitudes toward IPE [11,14]. Numerous studies applying RIPLS have shown positive outcomes. For example, Alruwaili et al. reported that students in medicine, nursing, physical therapy, and pharmacy expressed positive attitudes toward interprofessional collaboration, with nutrition students in Riyadh achieving high RIPLS scores [15]. Sumiyoshi et al. found significant improvements in teamwork and collaboration following IPE interventions [16]. Similarly, Darlow et al. and Herring et al. observed that IPE enhanced students' readiness and confidence to collaborate, while Coster et al. reported high readiness scores across multiple health disciplines [17, 18]. On the other hand, inadequate IPE experiences reduce readiness for teamwork, highlighting the importance of structured interprofessional learning opportunities [19].

Perceptions of IPE are equally important. Perception reflects how individuals interpret and construct their understanding of experiences [20, 21]. Understanding student perceptions helps identify educational needs and informs the design of effective IPE programs [22]. Yune et al. found that nursing students in South Korea reported stronger perceptions of IPE's importance and effectiveness compared to medical students, with interprofessional communication identified as the greatest need [22]. In Indonesia, Syahrizal et al. reported that over half of medical, dentistry, nursing, pharmacy, and psychology students held positive perceptions of IPE, although most medical students remained negative toward it [23].

While IPE has been widely studied in Western countries [24, 25], research in Asia remains limited [26]. Yet, healthcare challenges in Asia, particularly Indonesia, are highly complex and require interprofessional collaboration. Importantly, cultural contexts significantly shape the implementation of IPE. Indonesian society is characterized by strong collectivism, hierarchical structures, and emphasis on social harmony [27, 28]. These cultural features influence interprofessional collaboration in both positive and negative ways.

On the positive side, collectivist values encourage teamwork, mutual cooperation, and solidarity, aligning with the principles of IPE and interprofessional collaboration [29]. Respect for others and prioritization of group interests provide a strong basis for effective teamwork. However, the hierarchical culture and large power distance create challenges. Physicians are often regarded as the most authoritative professionals, while others such as nurses or pharmacists are seen as subordinate. This imbalance hinders equal communication, trust, and collaboration within healthcare teams [30, 31]. In addition, cultural norms such as reluctance to challenge authority or express disagreement reduce open discussion and collaborative decision-making [32, 33].

Material and Methods

Context

In Indonesia, professional health education programs are divided into two levels: pre-clinical education and clinical or professional education. Although Interprofessional Education (IPE) is formally included in the curriculum, its implementation has not been fully realized by most universities across the country. At Universitas Airlangga, IPE is incorporated as a joint course during the first year of education and is reimplemented during the final semester of the pre-clinical phase through a community-based service program (*Kuliah Kerja Nyata* or KKN). However, this implementation does not solely focus on students from health professions but also includes those from non-health programs [34].

Universitas Airlangga Hospital serves as the primary teaching hospital for health profession students at Universitas Airlangga. At this hospital, IPE activities have been conducted regularly on a monthly basis, involving a diverse group of interprofessional students from various institutions, including medical students (co-assistants), nursing students, midwifery students, pharmacy students, and vocational students, among others. These IPE activities have been ongoing since 2017 [34]. However, no formal research has yet been conducted to evaluate these activities, particularly in relation to the Indonesian cultural context. Accordingly, this study conducted a survey to examine the perceptions and readiness of health profession students regarding IPE.

Research Design and Procedure

We employed a concurrent mixed-methods design, combining quantitative and qualitative approaches. The research procedure was carried out in several stages. First, recruitment was conducted by inviting health profession students from the medical, nursing, and pharmacy programs who were undergoing their professional training at Universitas Airlangga Hospital and were scheduled to participate in interprofessional education (IPE) sessions. Students who agreed to participate and provided informed consent were included in the study.

The quantitative component consisted of a cross-sectional survey using the validated Indonesian version of the Readiness for Interprofessional Learning Scale (RIPLS). During the IPE activities, participants completed the Indonesian version of the RIPLS questionnaire before the start of the program (pre-test) and again after the completion of the program (post-test). The questionnaires were distributed online using Google Forms, and only fully completed responses were included for analysis.

In parallel, a subset of participants who had previously engaged in IPE activities at Universitas Airlangga Hospital was purposively selected for the qualitative component. These participants underwent semi-structured personal interviews, which were conducted either face-to-face or via online platforms depending on participants' availability. Interviews explored students' experiences, perceptions, and cultural considerations regarding interprofessional education. Each interview was audio-recorded with consent and subsequently transcribed verbatim for analysis.

Both quantitative and qualitative data were collected concurrently but analyzed separately. The findings were then integrated during the interpretation stage to provide a comprehensive understanding of students' readiness, perceptions, and cultural influences toward IPE.

Quantitative Data Collection: RIPLS Questionnaires

Quantitative data were collected during IPE activities conducted in August, September, and October 2024 at Universitas Airlangga Hospital. The RIPLS questionnaires were administered online (via Google Forms) before and after the IPE sessions. Only fully completed responses from participants who attended the IPE activities were included in the analysis.

Readiness for IPE was assessed using the Indonesian version of the Readiness for Interprofessional Learning Scale (RIPLS), translated and validated by Tyastuti et al. [11]. This version comprises 16 items across three subscales: Teamwork and Collaboration, Negative Professional Identity, and Positive Professional Identity. Responses are measured on a 5-point Likert scale: Strongly Agree, Agree, Uncertain, Disagree, and Strongly Disagree. The scale includes both favorable and unfavorable items [11].

Tyastuti et al. tested the validity and reliability of this instrument using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The instrument was considered valid with factor loadings above 0.5, and it demonstrated acceptable reliability with a Cronbach's alpha of 0.69 [11].

Qualitative Data Collection: Personal Interviews

Qualitative data were collected using a semi-structured interview approach. This technique was chosen to explore participants' experiences and perspectives in depth, while allowing flexibility for follow-up questions based on the flow of the conversation. Interviews were conducted in October and November 2024 with health profession students (medicine, nursing, and pharmacy) who were undergoing their clinical training at Universitas Airlangga Hospital and had previously participated in IPE activities at the hospital. A total of nine participants were purposively selected for the interview sessions, consisting of three medical students, three nursing students, and three pharmacy students.

An interview guide was prepared in advance to serve as the primary reference, but interviewers adapted and expanded upon questions depending on participants' responses during the session. Interviews were conducted on a one-on-one basis between the researcher and each participant. Interviews were held either face-to-face or online via Zoom, depending on participant availability and context. During each session, both audio and video were recorded, and manual notes were taken to ensure accuracy and data validity. The interview guide included the following questions:

1. Description of their experience with IPE
2. Their reactions and feelings during interprofessional collaboration
3. Cultural aspects of Indonesia and their influence on interprofessional collaboration
4. Suggestions for future implementation of IPE

Analysis

Quantitative data were analyzed using IBM SPSS Statistics version 25.0. Comparative tests were conducted to examine differences in RIPLS scores before and after the IPE intervention using the Wilcoxon Signed Ranks Test.

Qualitative data were analyzed using a thematic analysis approach. The process began with the transcription of interviews, in which the audio recordings were manually transcribed into written text by the researchers. The transcripts represented a complete and verbatim account of participants' responses, without omission or modification of their statements. Following transcription, manual coding was performed by the researchers. Each relevant segment of data was assigned a specific code, which was subsequently grouped into categories to identify overarching themes related to the research focus.

Results

Quantitative Results

The implementation of the IPE program was conducted from August to October 2024. During each session, the RIPLS questionnaire was distributed to participants both before and after the IPE activities. A total of 190 participants completed the questionnaire in full, consisting of 65 medical students (co-assistants), 63 nursing students, and 62 pharmacy students.

A total of 142 participants were female (74.7%), approximately three times the number of male participants.

Table 1. Participant Characteristics

Characteristics	Total	Percentage
Gender		
Male	48	25.3%
Female	142	74.7%
Profession		
Medical students	65	34.2%
Nursing students	63	33.2%
Pharmacy students	62	32.6%
Age		
22 yo	76	40%
23 yo	73	38.4%
24 yo	41	21.6%

Statistical analysis using the Wilcoxon Signed Ranks Test showed that RIPLS scores for all participants differed significantly in the total RIPLS score as well as in each of the RIPLS categories. The mean total RIPLS score of all participants increased from 56.78 (6.77) to 59.05 (6.72). In the group of medical students (co-assistants), the Wilcoxon Signed Ranks Test indicated a significant difference ($p < 0.001$) in the total RIPLS score and across all individual RIPLS categories. In the group of nursing students, the Wilcoxon Signed Ranks Test revealed a significant difference ($p = 0.036$) only in Category 2 (Negative Professional Identity), but not in the other categories or the total RIPLS score. In the group of pharmacy students, the Wilcoxon Signed Ranks Test showed significant differences ($p < 0.05$) in Category 1 (Teamwork and Collaboration), Category 3 (Positive Professional Identity), and the total RIPLS score.

Table 2. Comparative evaluation before and after IPE of all participants

RIPLS Scale		All participants				p-value
		n= 190				
		Before		After		
		Mean	SD	Mean	SD	
Category 1: Teamwork and Collaboration		33.12	3.79	33.75	3.74	0.002*
Category 2: Negative Professional Identity	Professional	9.45	3.88	10.55	4.21	<0.001*
Category 3: Positive Professional Identity	Professional	14.2	1.87	14.74	1.87	<0.001*
Total RIPLS		56.78	6.77	59.05	6.72	<0.001*
Note: *p < 0.05 indicates a statistically significant difference						

Table 3. Comparative evaluation before and after IPE of all participants by each profession

RIPLS Scale	Medical students				p-value	Nursing students				p-value	Pharmacy students				p-value
	n= 65					n= 63					n= 62				
	Before		After			Before		After			Before		After		
	Mean	SD	Mean	SD		Mean	SD	Mean	SD		Mean	SD	Mean	SD	
Category 1: Teamwork and Collaboration	33.2	4.00	34.04	3.42	0.003*	33.06	3.69	32.76	4.36	0.762	33.11	3.72	34.45	3.19	0.002*
Category 2: Negative Professional Identity	9.35	4.03	10.98	4.07	<0.001*	8.09	3.82	9.17	4.30	0.036*	10.93	3.28	11.50	3.95	0.123
Category 3: Positive Professional Identity	14.26	1.93	14.93	1.73	0.001*	14.11	1.88	14.36	1.96	0.243	14.25	1.81	14.93	1.87	0.005*
Total RIPLS	56.81	6.77	59.96	6.41	<0.001*	55.26	6.29	56.30	6.58	0.145	58.30	7.01	60.88	6.36	0.004*

Note:
*p < 0.05 indicates a statistically significant difference

Qualitative Results

Qualitative data were obtained through personal (one-on-one) interviews with participants who had previously taken part in IPE activities. Thematic analysis revealed five main themes:

1. Experiences with IPE
Participants reported positive experiences after participating in IPE. They perceived IPE activities as engaging and beneficial.

“...The activity was definitely very interesting. We came from various backgrounds—although most participants at that time were from the medical faculty. I joined the surgical rotation, I believe. There were also participants from psychiatry...”
(Nursing student)

“...Participating in the IPE activity was very interesting. At the beginning, before discussing the clinical cases, we were first taught about communication techniques. We learned about advanced methods and how to interact with patients' families. After that communication training, we moved on to the medical aspects of the case...”
(Pharmacy student)

2. Interesting Aspects of IPE
Participants identified several interesting elements based on their feelings and experiences during IPE. One commonly mentioned benefit was gaining broader knowledge and new insights.

“...It really opened up my perspective, like, oh it turns out that working involves coordination with many people. Through IPE, I learned how to communicate with colleagues and other healthcare professionals to avoid miscommunication...”
(Medical student – sub-theme: gaining insight and knowledge)

“...I gained new perspectives—not just from pharmacy but also from various other professions. I realized that no single profession is dominant; all of them play important roles in managing a patient. Every profession significantly contributes to patient care...”
(Pharmacy student – sub-theme: gaining insight and knowledge)

Participants also noted that each health profession brings its own perspectives regarding patient care, which enables interprofessional collaboration and fosters constructive communication between disciplines.

“...After participating in IPE, I became more open-minded. I realized that other professions may have knowledge or perspectives that we might not consider. I remember there was a case involving a pregnant woman who had various medical histories, including hepatitis. The general practitioner had one approach, the midwife had another, and the pharmacist offered different considerations. This really showed me that healthcare is a team effort and that synergy is essential to providing the best care...”
(Medical student – sub-theme: each profession offers a unique perspective)

“...I gained new knowledge, ma'am—things I didn't know before because in pharmacy we usually don't get exposure to how other professionals see patient conditions. But through IPE, I now understand the perspectives of colleagues from other disciplines...”
(Pharmacy student – sub-theme: each profession offers a unique perspective)

3. Indonesian Cultural Context in IPE

Participants who had taken part in IPE shared their individual perspectives on how Indonesian cultural values were reflected in IPE activities. These cultural elements emerged from participants' analysis of their IPE experiences in relation to the cultural norms they were familiar with. Based on thematic analysis, three key Indonesian cultural contexts were identified:

a) *Sungkan* (Reluctance or Hesitation)

Several participants noted that the cultural norm of *sungkan*—a sense of hesitation or reluctance—is deeply embedded in Indonesian society, which affects how healthcare professionals express their opinions.

“...There's still this culture of mutual hesitation, doctor. Like, I hesitate to say something—he's already a senior doctor, and I'm just a co-assistant. That's the usual mentality. There's this reluctance to speak up, even though what we're thinking might actually be useful in discussion. In the end, we hold it back because of that hesitation...”
(Medical student – sub-theme: *sungkan* culture)

“...Culturally speaking, maybe because most of us are Javanese, we tend to avoid confrontation. This 'reluctance' can have both positive and negative effects. In collaboration, we need good communication, right? Things need to be expressed clearly. But when people feel too reluctant to speak, it might hinder the delivery of important information, even if the relationships seem more harmonious on the surface...”
(Medical student – sub-theme: *sungkan* culture)

b) Perceived Superiority of Doctors

Another cultural theme that emerged was the perception that doctors are more senior or superior, which creates hesitation among other professionals when expressing opinions.

“...When discussing with professionals from other fields, it's usually they who hesitate more. They see doctors as more superior and feel reluctant to speak during discussions. But doctors are not necessarily more expert—for example, nurses may be more skilled in IV insertion, and we can all learn from each other...”
(Medical student – sub-theme: doctors perceived as more senior)

“...Society tends to perceive doctors as having a higher status than nurses. But that's not always the case. Even if a doctor is junior and the nurse is more experienced, they differ in terms of hours of practice and expertise. I think this perception should be eliminated—or at least balanced—because all healthcare professionals are equal in importance. If even one role is not fulfilled, then patient care becomes suboptimal...”
(Medical student – sub-theme: doctors perceived as more senior)

c) *Gotong Royong* (Mutual Cooperation)

Gotong royong—a deeply rooted Indonesian value of mutual cooperation—was also identified by participants as a cultural element present in IPE activities.

“...In my opinion, the cultural aspect seen in IPE is cooperation and discussion. We, Indonesians, have this value of *gotong royong*...”
(Pharmacy student – sub-theme: mutual cooperation)

“...In managing a patient's issue, the cultural element of *gotong royong*—or mutual cooperation—is evident. Each profession helps the others; no single role works alone...”
(Pharmacy student – sub-theme: mutual cooperation)

4. Lessons Learned from IPE

Participants reported two key sub-themes related to what they learned from IPE: **mutual respect and broadening perspectives.**

“...In IPE, collaboration means respecting each other—respecting the disciplines of others. Just because we come from different fields doesn't mean one is superior to the other. We don't look down on other professions, and vice versa. The result is that we strive to expand our knowledge, improve our health services—all with one goal: the patient and their care.”
(Nursing student – sub-theme: mutual respect)

“...It's more about mutual respect. So when we express our opinions or respond to others, it feels more like a family dynamic. It makes it easier to speak up, and when we give feedback, we don't feel superior to others...”
(Nursing student – sub-theme: mutual respect)

“...After I participated in IPE, my perspective broadened. I realized that there are things other professions may understand better than I do...”
(Medical student – sub-theme: broadening perspectives)

“...In my opinion, IPE activities really help broaden our perspectives, especially by working with colleagues from other professions—like doctors, nurses, and specialists...”
(Pharmacy student – sub-theme: broadening perspectives)

5. Suggestions and Implementation Plans

Participants shared several suggestions that could serve as valuable input for improving IPE activities at Universitas Airlangga Hospital.

“In my opinion, the group size shouldn't be too large. Smaller groups would be better. I've experienced it myself—when the group is large, people tend to leave it to others to talk, and it becomes less effective. If possible, make it five or six per group. That way, more people will be active, and you'll get a wider range of opinions. Also, if possible, please provide some refreshments during

presentations, because the sessions are quite long.”
(*Medical student – sub-theme: group size too large*)

“I think the group size is too big, and having only one facilitator is not enough...”
(*Pharmacy student – sub-theme: group size too large*)

Several participants also emphasized that IPE activities should be conducted on a regular basis, as they provide numerous benefits to health professional education.

“Activities like this one should be held regularly. It would be better if we had this kind of session planned more consistently in the future.”
(*Pharmacy student – sub-theme: should be done routinely*)

Most participants reported that after participating in IPE, they felt more confident in applying what they had learned in real healthcare settings.

“Yes, doctor, I think my plan moving forward is to communicate better with other health professionals—nurses, senior doctors, midwives, and pharmacists. By building strong communication, we can work together and collaborate more effectively, all with the shared goal of providing the best care for patients.”
(*Medical student – sub-theme: confidence in application*)

“Yes, we have to be ready. We meet patients every day—especially in my case, since I’ve already been working. We have to be prepared to implement everything we’ve learned.”
(*Nursing student – sub-theme: confidence in application*)

Discussion

The difference in RIPLS scores—representing health profession students' readiness—before and after participating in IPE at Universitas Airlangga Hospital showed a statistically significant improvement across all RIPLS categories and in the overall score ($p < 0.05$), with an increase in the median total score. This finding aligns with the study by Sumiyoshi et al., which reported a significant increase in total RIPLS scores among all health profession student participants ($p < 0.001$) [34]. Their research suggests that interprofessional collaboration can enhance student readiness for cross-professional practice [8]. A similar increase in RIPLS total scores ($p < 0.001$) was reported by Numasawa et al. in a study involving dental, medical, and nursing students [36].

The current study also found a significant difference in total RIPLS scores among medical students (co-assistants) ($p < 0.05$), indicating improved readiness for interprofessional learning following participation in IPE. This result is consistent with the findings of Sumiyoshi et al. who also found significant differences in medical students' RIPLS scores before and after IPE interventions ($p < 0.001$) [35]. Their study demonstrated that participation in collaborative learning activities effectively increased awareness and positive attitudes toward interprofessional collaboration among medical students.

Reeves et al. stated that team-based learning experiences in clinical settings enable students to develop essential collaborative skills, including mutual trust, care coordination, and conflict resolution [19]. During the clinical education phase—such as the internship period for medical students—learners are in a transitional stage from student to practitioner. At this stage, they are generally more receptive to practical and contextual learning experiences, including interprofessional interactions [17]. This makes interprofessional education interventions particularly relevant, as they can enhance collaborative readiness before students fully enter the professional workforce.

However, this study found no statistically significant difference in the total RIPLS scores among nursing students before and after IPE. This finding is particularly interesting as it contrasts with previous studies suggesting that nursing students, including those in professional education programs, typically report high RIPLS scores and improved readiness following IPE. For instance, Tamura et al. in Japan reported that nursing students scored significantly higher on RIPLS compared

to medical and dental students. This finding highlights the strong readiness of nursing students for interprofessional education, possibly due to their earlier and more frequent exposure to clinical practice and experience in team-based healthcare delivery [37].

Similar findings were reported by Mellor et al. who found that nursing students demonstrated high enthusiasm for interprofessional education and showed a deeper understanding of the importance of interprofessional teamwork [38].

However, not all studies fully support the assumption that nursing students consistently exhibit high RIPLS scores. Lairamore et al. reported that not all professional groups showed significant changes in RIPLS scores following interprofessional education, including nursing students. Factors such as limited real-world practice experience, non-contextual intervention design, or an underdeveloped understanding of other professional roles may influence overall RIPLS outcomes [39].

Accordingly, the absence of a significant difference in RIPLS scores among nursing interns in this study may be attributed to several factors, including a less interactive interprofessional education design, passive participation, or limited exposure to actual collaborative clinical practice. These findings highlight the importance of strengthening the implementation of interprofessional education, particularly for students at the professional level.

In contrast, this study did find a significant improvement in the total RIPLS scores among pharmacy students both before and after participating in IPE. This suggests that pharmacy students experienced enhanced readiness for interprofessional learning and collaborative practice following IPE participation. El-Zubeir et al. similarly reported that pharmacy students demonstrated high readiness to engage in shared learning with students from other health professions [40].

Another study by Bridges et al. supports these findings, noting that pharmacy students showed positive attitudinal changes toward IPE after participating in collaborative training, contributing to an increase in RIPLS scores [41]. In practice, pharmacists frequently collaborate with other professionals, such as doctors and nurses, particularly in ensuring the safe and effective prescription and administration of medications [39].

After participating in IPE, health profession students generally experienced positive shifts in their perspectives toward interprofessional collaboration. They reported feeling more prepared to work in teams and had a greater understanding of the importance of interprofessional communication and coordination [19]. The opportunity to learn alongside peers from different professional backgrounds expanded their awareness of the roles and responsibilities of other professions. In Indonesia, IPE programs that have been implemented show similar outcomes. Students expressed enthusiasm, stating that this type of learning experience felt distinct from their usual educational activities [42].

These positive experiences and outcomes highlight that beyond fostering readiness for collaboration, IPE also offers unique and engaging aspects that make the learning process more meaningful for students. Participants described the most engaging aspects of IPE as those that stimulated personal feelings of curiosity and value. One of the key takeaways was the perception that IPE expanded their knowledge and understanding. A systematic review by Lapkin et al. noted that one of the most appreciated aspects of IPE among students was the opportunity to participate in clinical simulations or interprofessional case discussions [10]. These experiences provide real-world practice in collaborative problem-solving, which students might not typically encounter outside of fieldwork or clinical placements.

While these engaging aspects of IPE highlight its potential to enrich student learning through collaborative experiences, the effectiveness of such programs can be influenced by cultural factors, particularly within the Indonesian context. Several participants noted that *sungkan* is deeply ingrained in Indonesian society, influencing the behavior of health professionals in expressing their opinions. In the Indonesian cultural context, *sungkan* refers to a sense of reluctance or discomfort that discourages individuals from speaking up, especially in front of those considered older, more senior, or of higher status. This cultural norm is part of a broader social ethic that values respect,

social harmony, and hierarchical order [43]. *Sungkan* is rooted in collectivist cultures, where maintaining good relationships and avoiding conflict are considered more important than expressing personal opinions openly [44].

The positive impact of *sungkan* on interprofessional collaboration includes encouraging mutual respect, particularly toward more senior professions, enhancing harmony, and reducing overt conflict within interprofessional teams. However, its negative effects include the inhibition of open communication—particularly among “junior” professions such as students or nurses in relation to doctors—which can limit critical discussion and collective decision-making that are essential to interprofessional collaboration. It may also hinder cross-disciplinary learning, as students might feel reluctant to ask questions or correct team members [45].

A recurring theme among participants was the perception that doctors are seen as more senior and therefore more knowledgeable, which can lead to feelings of hesitation among other professions. Hierarchical professional cultures continue to pose challenges, with certain professions—such as medicine—often dominating others [46]. This dominance can obstruct equal dialogue in interprofessional learning processes. The WHO [7] emphasized that collaborative and egalitarian interprofessional practice is more effective in improving clinical outcomes and patient safety. Therefore, shifting from hierarchical to collaborative workplace cultures is a key focus in the development of IPE programs.

Gotong royong, or mutual cooperation, is a fundamental cultural value in Indonesia. Some participants perceived that this value was evident in IPE activities. In the Indonesian cultural context, values such as *gotong royong*, consensus-building (*musyawarah*), and familial relationships support the creation of a collaborative learning environment in IPE. The strong collectivist nature of Indonesian society provides a social foundation for developing harmonious teamwork [43].

The positive influence of this cultural value on interprofessional collaboration includes fostering a strong foundation for teamwork in interprofessional settings, encouraging shared responsibility for learning and service outcomes, and strengthening solidarity and trust among team members from diverse professional backgrounds. However, in certain contexts, the spirit of *gotong royong* can be misinterpreted as collective work without structure or clearly defined roles. This may reduce the effectiveness of interprofessional teams and obscure individual accountability, thus undermining the development of individual professionalism within teams.

Participants identified two main learning outcomes from their IPE experiences: mutual respect and expanded perspectives. Students reported that IPE provided significant insight, particularly in understanding the roles, functions, and contributions of each profession in healthcare services. They also developed communication skills, team leadership, empathy, and collective problem-solving abilities [47]. IPE helped students realize that patient safety does not rely solely on individual expertise, but on the team’s ability to work synergistically [11].

Participants offered several suggestions to improve IPE, including concerns about group sizes being too large. According to the WHO [7], effective IPE should encourage students to work in small interprofessional teams to discuss real case studies, allowing them to learn *with*, *from*, and *about* one another [7]. Small-group discussion formats are widely recommended in IPE because they enable all participants to contribute actively. The ideal group size in interprofessional teams ranges from 4 to 6 members, with at least two to three different healthcare professions represented [48, 7].

Participants also suggested that IPE should be conducted regularly due to its significant benefits for health professional education. Many students recommended integrating IPE more extensively into the curriculum, rather than offering it as an optional or supplemental activity. Active learning strategies such as simulation, role-play, and real-case discussions were also encouraged [49].

This study found a positive correlation between students’ positive perceptions of interprofessional education and their readiness to participate in such learning. In other words, students who held favorable views about the importance of interprofessional collaboration tended to be more prepared

to engage in collaborative clinical environments. This finding aligns with the foundational theory of interprofessional education, which highlights the importance of understanding roles and responsibilities as a core competency [7].

Research by Reeves et al. also supports this correlation, showing that positive attitudes toward interprofessional learning significantly enhance students' readiness for teamwork, reinforcing the findings of this study [19].

In Indonesia, cultural values such as *gotong royong* (mutual cooperation) and *musyawarah* (deliberation) play a crucial role in shaping collective attitudes and collaboration [43]. These cultural norms are presumed to strengthen the link between perception and readiness, as they encourage students to prioritize harmony and cooperation in the workplace.

Conclusion

IPE interventions significantly improved RIPLS scores, particularly among medical students, while nursing and pharmacy students showed mixed outcomes. Qualitative findings revealed positive learning experiences, valuable aspects of IPE, and the influence of Indonesian cultural factors such as *sungkan*, hierarchy, and *gotong royong*. Overall, IPE enhanced students' interprofessional understanding, communication, and confidence in applying collaborative values in future practice.

Ethics approval and consent to participate

Ethical Permission:

This study has been approved by the Ethics Committee of Universitas Airlangga Hospital with approval number: 209/KEP/2024, dated August 29, 2024.

Confidentiality of research participants will be strictly maintained. Interview recordings and transcripts will be securely stored by the researcher. The reporting system will not include participants' names but will use a coding system known only to the researcher.

Consent for publication

All participants had received informed consent and signed the concern for publication

Competing interests

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