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ORIGINAL RESEARCH

READINESS FOR INTERPROFESSIONAL EDUCATION: PERSPECTIVE FROM MEDICAL AND NURSING STUDENTS

Vivien Puspitasari[1], Ni Gusti Ayu Eka[2*], Marisa Junianti Manik[2], Mona Marlina[1], Neneng Suryadinata[1], Grace Solely Houghty[2]
[1]Medical, Faculty of Medicine, Universitas Pelita Harapan, Tangerang, INDONESIA
[2]Nursing, Faculty of Nursing, Universitas Pelita Harapan, Tangerang, INDONESIA

ABSTRACT

Background: Interprofessional education (IPE) is argued as an educational strategy for promoting communication and collaboration amongst prospective healthcare professionals. The benefits of IPE have culminated in improved patient care leading to enhanced satisfaction for patients and healthcare practitioners. Therefore, further exploration is needed to assess the readiness for IPE through healthcare students' perspectives, specifically medical and nursing students. This study aimed to assess medical and nursing students' readiness for IPE and the effect of gender on their readiness.

Methods: A quantitative study design using the Readiness for Interprofessional Learning Scale (RIPLS) was employed on 150 medical students and 150 nursing students. Data was analyzed using descriptive and Mann Whitney statistical analyses.

Results: The readiness of IPE score was statistically significant different between medical and nursing students (p-value <0.0001), with nursing students (Median 4.34) found to have higher readiness or indicate more positive attitudes towards IPE compared to medical students (Median 3.73). Students are found to have positive attitude or readiness towards IPE. This study also revealed that no significant difference in IPE readiness based on different genders (p value 0.087).

Conclusion: It is essential to engage students in preparing the implementation of IPE for health sciences courses. Further workshops for IPE can be a strategic step to enhance readiness of the students.

Keywords: Interprofessional education, nursing students, medical students

PRACTICE POINTS

- Students have a positive attitude or readiness towards interprofessional education.
- Readiness for interprofessional education differ significantly between medical and nursing students.
- Gender has no effect on students' readiness for interprofessional education.
- Involving students in the process of developing interprofessional education for health sciences courses is critical.

*corresponding author, contact: gusti.eka@uph.edu

INTRODUCTION

The healthcare system, comprised of various healthcare professions, needs adequate interdisciplinary communication and collaboration. A well-coordinated healthcare team will better support services to generate better clinical outcomes.[1] Unfortunately, this is not the norm, as recent studies suggest poor communication and collaboration between members of the healthcare team remain challenging[2]. Examples of poor communication and collaboration among healthcare professionals include lack of critical information, misinterpretation of information, unclear orders either over the telephone or notes, and overlooked changes in patients' status.[2] One of the reasons that have been identified as being a major contributor to this situation is the lack of collaborative approach in the professional education and training curriculum.

To address these issues, the World Health Organization (WHO) advocates for the implementation of Interprofessional Education (IPE) into health education curricula,[3] as it has been identified as a strategy for providing healthcare students with an interactive learning environment. Students are therefore better prepared to collaborate and work inter-professionally within the clinical practice. Positive outcomes attributed to IPE include reduced clinical errors, improved medical and clinical knowledge of practitioners, and enhanced interest in patient care, thereby promoting student development and attitude toward patient care.[4,5] These benefits have culminated in improved patient care leading to enhanced satisfaction for patients and healthcare practitioners.[4,5]

SIPE is defined as "when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes" (p.7).[3] It is also known as an effective way of teaching healthcare students about the roles and responsibilities of professions other than their own, transforming students' attitudes toward other health professions and in doing so promote collaborative partnerships.[6,7] Other advantageous outcomes associated with IPE include the satisfaction of stakeholders involved, enabling positive conflict management, and minimizing tension across healthcare professions.[8–10] Having more than one profession learning together has also been found to be cost effective,[2,6,11] especially in the classroom and clinical settings.

To date, no single instrument has been adopted as the gold standard for implementing and evaluating IPE.[12] However, a systematic review provides recommendations for managing challenges, which can be applied to developing countries such as Indonesia,[5,8] subsequently leading to successful implementation of IPE by several Indonesian universities.[2,13]

Several universities in Indonesia have utilized IPE to understand its impact within the country's healthcare education context. A study on IPE by North Sumatera University, Indonesia, indicated an increase in the level of teamwork among students after implementing this learning model.[13] The study further demonstrated a relationship between improving skills of leadership, team organization, situation monitoring, group support, communication, and IPE learning ($p<0.05$). Similarly, a second study at Universitas Islam Sultan Agung, a private university, examined their students' readiness for IPE in preparation for developing the institution's IPE curriculum.[2] Students in this study perceived IPE as an enjoyable experience and appreciated the opportunity to improve their leadership skills with other professions, improve collaboration and communication skills, and address role ambiguities among differing professions.[2]

Despite the many advantages of IPE, it is a model that can be challenging to implement. A systematic review on 40 articles listed evidence on a number challenges and recommendations for implementing IPE.[5] Some of the most common challenges and barriers are curriculum issues, lack of commitment from leadership, scarcity of resources, ingrained stereotypes, diverse student characteristics, misconceptions on IPE, the teaching process, lack of enthusiasm, lack of understanding on professional terminologies, and lack of accreditation body.[5] The authors further suggest that these challenges should be considered when planning the implementation of IPE and provide useful recommendations for the context of developing countries such as Indonesia.

These suggestions include training and re-training on IPE knowledge and skills, engaging students, faculty members and healthcare professionals in the planning process, obtaining leader's commitment, using Problem Based Learning (PBL) to stimulate learning, supporting enthusiasm by giving credits and incentives for participants, utilizing web-based learning, and integrating IPE into the existing curriculum. The use of digital learning platforms is further supported by another systematic review which recommends using social media to facilitate the implementation of IPE.[14]

Despite being recommended as a superior learning environment, the implementation of IPE into healthcare curricula have presented advocates and curriculum planners with challenges. IPE is a resource-intensive strategy, yet there is a lack of commitment and motivation among faculty and students, further complicated by variations on knowledge in the student body. Although these barriers are not uncommon, implementing IPE within the Indonesian context poses additional challenges. One unique challenge is the deep-seated culture of social hierarchy between doctors and other health professionals.[2] Doctors are seen as occupying the highest position within the hierarchy of healthcare system whilst others are subordinate. As a result, students from other professions such as nursing and midwifery, are reluctant to be involved in IPE. Additionally, gender equality in education sector remains a concern in Indonesia.[15] Though Lestari et al. (2016) concluded that there is no significant gender difference in IPE readiness, it is critical to re-evaluate the effect of gender on students' readiness for IPE.[2] As a previous study suggested that gender issues should be addressed in all healthcare programs, either through IPE or the general curriculum.[16]

One of the tools commonly used to assess attitude toward IPE among students, is the Readiness for Interprofessional Learning Scale (RIPLS).[17] This scale consists of three subscales, namely Teamwork and Collaboration (TC), Roles and Responsibility (RR), Professional Identity (PI) with a total 19 items. Several previous studies of IPE readiness in Indonesia, including Semarang and Jakarta, have used the RIPLS tool.[2,18] In Semarang, a study

was conducted that utilized RIPLS to collect data from students of medicine, nursing, dentistry, and midwifery.[2] Additionally, a previous study in Jakarta limited data collection to medical students in their second, third, and fourth years.[18]

Moreover, Lestari and colleagues argued that little research has been conducted on students' attitudes toward IPE in an Asian context.[2] Thus, this current study added an IPE study conducted in an Asian setting, at a religious-based private university where all nursing students received scholarships and lived on-campus in dormitories.

This study aimed to assess medical and nursing students' readiness for IPE and the effect of gender on their readiness.

METHODS

This study applied a quantitative research design.[19] This study used a purposive sampling method to recruit faculty and students from the faculties of medicine and nursing. However, this paper will focus exclusively on student data. A total of 201 third-year medical students and 415 third-year nursing students were included in this study. The target sample for this study was 133 medical students and 203 nursing students, using the Slovin formula. Due to the purposes of the study, the researcher determined that 150 students from each faculty would be recruited. A total of 150 medical students and 150 nursing students were recruited, all of whom were current third-year students in their final year of the pre-clinic portion of their studies.

This study used Readiness for Interprofessional Learning Scale (RIPLS).[2,17] Additionally, personal information of respondent such as gender was also collected. The RIPLS had been translated and tested for its validity and reliability in the preliminary study at Universitas Pelita Harapan (Cronbach Alpha 0.242-0.886) and at Universitas Islam Sultan Agung (Cronbach Alpha 0.92- 0.944).[2] A total 19 items of RIPLS measure the respondent's level of agreement to each statement using a 5-point Likert scale ranging from 1= strongly disagree, 2= disagree, 3= undecided, 4=agree and 5= strongly agree.[20] Higher scores of the readiness score denotes a more positive attitude towards IPE.

The survey was administered through a web-based data collection software, Survey Monkey, by distributing the link to recruited samples. Data analysis was performed using SPSS IBM version 26 by applying descriptive analysis to generate a frequency distribution. This was followed by a Kolmogorov-Smirnov test determined that the data was not normally distributed. Subsequently, a Mann-Whitney U test analysis was applied to compare IPE readiness between medical and nursing students.[21] Ethics approval was granted from Mochtar Riady Institute for Nanotechnology (MRIN) Ethics Committee (No. 003/MRIN-EC/ECL/III/2020).

RESULTS AND DISCUSSION

The findings of this study emphasize pre-clinical medical and nursing students' readiness for IPE, as demonstrated in Tables 1-3. The findings will be discussed in terms of respondent characteristics, students' readiness for interprofessional learning, and students' RIPLS score by profession.

Characteristics of the Respondents

Male and female students in medical and nursing school had a similar ratio of 3:7, as shown in Table 1. This ratio is comparable to one found in Semarang,[2] but only for medical students; for nursing students, the ratio was 4:6. Few respondents indicated that they had prior exposure to IPE and completed the RIPLS questionnaire (Table 1). This report may have a beneficial effect on their perceptions of IPE readiness. In other words, students who have prior exposure to IPE may be more prepared to implement it.[2]

Table 1. Respondent Characteristics

	Medical Students		Nursing Students	
	N	%	N	%
Gender				
Male	43	28.7	33	22
Female	107	71.3	117	78
Have completed the RIPLS questionnaire before				
Yes	5	3.3	8	5.3
No	145	96.7	142	94.7
Prior experience with IPE				
Yes	10	6.7	30	20
No	140	93.3	120	80

The Readiness of Students for Interprofessional Learning

Table 2 further breaks down the IPE readiness based on gender, prior completion of the RIPLS questionnaire, and prior experience with IPE. Most of the comparisons using Mann Whitney U tests show no statistically significant differences (p> 0.05). For example, there was no significant difference in readiness between male and female students. This finding suggests no significant difference in IPE readiness based on different genders, which is consistent with findings from a study based on students of four different health professions (medicine, nursing, dentistry, midwifery) with total of 428 students in Semarang, Indonesia.[2]

Zeeni et al. also discovered no relationship between gender and IPE readiness subscales of Team and Collaboration (p value 0.25) prior to the IPE step in a longitudinal study at a Middle Eastern University.[22] However, Zeeni's study discovered a marginally significant gender difference in professional identity comprehension (p = 0.050), with male students reporting lower scores than female students. Additionally, when gender differences between professions were examined, Zeeni's study discovered that only nursing students demonstrated a significant gender effect, with male nursing students scoring significantly lower on Professional Identity than female nursing students.[22] This could be because nursing is viewed as a traditionally female-dominated profession in which men in nursing frequently express feelings of isolation and marginalization within their own profession.[23]

The longitudinal study by Zeeni et al. also reported that males, females, and participants from all professions scored higher after completing the IPE steps. However, no significant differences in scores on any of the three subscales were observed between students of different genders or professions who completed the five IPE steps.[22]

Table 2 reports the Team and Collaboration subscale (p value 0.007) and total RIPLS (p value 0.028) scores were significant differences between students who had and had not previously completed the RIPLS questionnaire. The findings demonstrate that most

Table 2. The Readiness of Students' Interprofessional Learning Score

	Median	U Test	Median	U Test	Median	U Test	Median	U Test
Gender								
Male	4.56	U=9086 z=0.894	4	U=9524 z=1.554	4	U=9255.5 z=1.148	3.87	U=9501.5 z=1.514
Female	4.67	p=0.371 r=0.052	4	p=0.120 r=0.090	4	p=0.251 r=0.066	4.03	p=0.130 r=0.087
Have completed the RIPLS questionnaire before								
Yes	4.11	U=1888 z=0.075	3.71	U=2105 z=0.786	3	U=2379.5 z=1.696	3.67	U=2324.5 z=1.501
No	4.67	p=0.940 r=0.004	4	p=0.432 r=0.045	3.33	p=0.090 r=0.098	4.01	p=0.133 r=0.087
Prior experience with IPE								
Yes	4.83	U=3834.5 z=-2.720	4.43	U=3835.5 z=-2.681	3.67	U=4762.5 z=-0.864	4.27	U=4074.5 z=4074.5
No	4.56	p=0.007* r=-0.157	4	p=0.007* r=-0.155	3.33	p=0.387 r=-0.050	3.96	p=0.028* r=-0.127

*Statistically significant based on the Mann-Whitney U test

students with prior experience of IPE are more likely to report higher readiness for IPE than those without prior experience. This finding indicates that while students may initially be resistant to IPE, after some exposure, they will begin to embrace the curriculum.[22]

Students' RIPLS Score

Table 3 demonstrates the IPE scores based on profession and demonstrates a statistically significant difference in IPE readiness between medical and nursing students (p-value <0.0001). Nursing students score higher on the readiness scale than medical students. This study is supported by a previous study that there is a statistically significant difference in overall IPE readiness between medical and nursing students.[2] Not only between medical and nursing students, but also two other healthcare professions such as midwifery and dentistry.

This study also reveals that nursing students report higher readiness (Median 4.34) and more positive attitude towards IPE compared to medical students (Median 3.73), similar to findings from a systematic review using sixty-five eligible articles concluded that medical students' attitude toward IPE was lower than those of nursing students.[24] In contrast, a study in Semarang, Indonesia, reports higher readiness scores from medical students compared to other professions such as students of nursing, midwifery, and dentistry.[2] The authors further explain their students' situation, stating that while nursing and midwifery students had some field experience in hospitals and public health centers, medical and dental students did not. This lack of experience may have shaped their perceptions of distinct roles. On the other hand, the current finding's students were in a different situation, as nursing students were exposed to clinical settings while medical students were not. At the same time, one might assume that medical students' lack of exposure to clinical practice allowed them to retain their idealistic outlook.[2] Additional qualitative research into readiness for or attitude toward IPE will be necessary to gain a better understanding of the context in which IPE will be implemented.

In addition to the total score of RIPLS, table 3 also breaks down the scores according to three sub-scale in the RIPLS, which include Teamwork and Collaboration, Professional Identity, and Role Responsibility. Additionally, the findings indicate that there were significant differences in the three subscales between medical and nursing students (p 0.0001), with nursing students scoring higher. These

Table 3. RIPLS Scale Score based on Students' Profession

	Teamwork & collaboration		Professional identity		Role & responsibility		Total RIPLS score	
	Median	U Test	Median	U Test	Median	U Test	Median	U Test
Students								
Medical	4.22	U=18001.5	3.86	U=17651	3	U=16792.5	3.73	U=18701.5
		z=9.144		z=8.551		z=7.445		z=9.920
Nursing	5	p=<0.0001*	4.57	p=<0.0001*	3.67	p=<0.0001*	4.34	p=<0.0001*
		r=0.527		r=0.493		r=0.429		r=0.573

*Statistically significant based on the Mann-Whitney U test

findings contradicted those of a study conducted in the Indonesian city of Semarang.[2] According to the authors, medical students scored higher on readiness than nursing students, as well as midwifery and dentistry students.

Higher readiness was reported for Teamwork-Collaboration and Professional Identity, but lower for Role-Responsibility, all of which are consistent with findings from Lestari and colleagues.[2] The findings of this study indicate that the students examined had an overall positive perception of their readiness for teamwork and collaboration in interprofessional learning. Similar to a Malaysian study comparing medical students' readiness between public and private universities, it is reported that students, regardless of their year level, demonstrated a favorable attitude toward teamwork and collaboration.[25] The majority also recognized the value of collaborating with other healthcare professionals in their line of work, based on the results of the Teamwork and Collaboration subscale. These results indicate that students are receptive to the concept of group learning. Additionally, the positive Professional Identity subscale demonstrates that students value IPE and group learning, especially with students from other healthcare programs.[25]

In comparison to the other scales, students scored lower on the Roles and Responsibilities scale. A comparison study of medical, midwifery, and psychology students in Padang, Indonesia concluded that students have the least understanding of other professions.[26] Chandra and colleagues further argued that due to a lack of interprofessional interaction and communication between students, students have

a limited understanding of other professions' roles and responsibilities.[26] Additionally, role clarification is a competency that professionals must develop to ensure that their own role is well understood by the rest of the health care team.[27] These findings necessitate further discussion between faculty members representing both professions to define the roles and responsibilities expected of each in IPE.

The limitation of this study is that it collected data from a single point in time at a single university, which should be considered when generalizing its findings. Additionally, the participants were third-year students, with nursing students having clinical experience since their first year and medical students having no experience. The findings, however, will be particularly beneficial for the university's IPE team as they collaborate on the development of the IPE curriculum. IPE can be organized around pre-existing skill modules such as communication and leadership. IPE development is necessary in light of current health trends, demand, and challenges, according to a phenomenological study conducted at the Faculty of Medicine in Jakarta, Indonesia.[18]

CONCLUSION

Although there is a significant difference in readiness for interprofessional education between medical and nursing students, both professions report a positive attitude toward or willingness to participate in interprofessional education. This initial condition will pave the way for improved collaboration to begin in their academic careers. A course on collaboration between students from various healthcare professions should be developed.

Engaging students in the process of developing and implementing IPEs is also crucial, particularly in core health sciences courses.

RECOMMENDATION

Students' involvement in the process of developing interprofessional education for health sciences courses is essential. Thus, interprofessional workshops can be an effective strategy for increasing students' readiness. Additionally, because of the lack of readiness for interprofessional education implementation, an early stage of academic exposure to interprofessional education embedded in medical curriculum is critical. Future research is proposed to use qualitative methods to better understand student attitudes toward interprofessional education.

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COMPETING INTEREST

The authors declare that there are no competing interests related to the study.

AUTHORS' CONTRIBUTION

YVivien Puspitasari – developing research proposal, collecting data, and publication manuscript

Ni Gusti Ayu Eka – developing research proposal, collecting data, data analysis, and publication manuscript

Marisa Junianti Manik – developing research proposal, collecting data and publication manuscript

Mona Marlina – developing research proposal, collecting data and publication manuscript

Neneng Suryadinata – developing research proposal, collecting data and publication manuscript

Grace Solely Houghty – developing research proposal, collecting data and publication manuscript

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