

Interprofessional education applied in first-year and third-year health students: cross-sectional study

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ABSTRACT

Health professions work together to provide the best service in health care facilities by collaborating with patients, families, worker and the community. Interprofessional education (IPE) were practice of collaboration between two or more students from different health profession programs. The purpose of study was to compare IPE results from first and third year batches. The two batches included 345 first-year students and 460 third-year students, from three different health disciplines, including medicine, pharmacy, and public health. These students met for four weeks to increase interprofessional collaboration, improve communication skills, foster respect and increase knowledge of the various roles each discipline, especially case management, conflict management and team work. Before IPE program, the students were given pre-questionnaire to assess their prior understanding of IPE. Each group of first-year students presented the outcomes of their discussions in the fourth week, while the third-year students created a poster about the subject and presented it in the second week. The students complete the program and post-questionnaire after their presentation. The International Collaborative Competencies Attainment Survey served the development the IPE questionnaire (ICCAS). The result of pre-IPE domains' score revealed substantial disparities in the team work domain, with third-year students score was lower than the first students, whereas first-year students had the highest score in the most of IPE categories, unless collaboration and conflict management ($p>0.05$). The post-IPE domains' score showed significant differences in all of the domains. Most of the IPE domains had higher score in first year students, excluding communication and team work.

Keywords: interprofessional education; health students; international collaborative competencies attainment survey; cross-sectional study

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INTRODUCTION

The modern healthcare delivery model relies on interprofessional collaboration (IPC) to improve patient outcomes. Given the growing diversity and medical complexity of the population and the limited healthcare funds, there is an implied expectation that health care students will be prepared for and capable of successful teamwork upon graduation (Price et al., 2021). According to the World Health Organization (WHO), Interprofessional education (IPE) occurs when students from two or more professions learn about, from and with one another (Buring et al., 2009). Interprofessional education (IPE) is defined as a practice of collaboration between two or more students from different health profession programs in which the students study with and about, and learn from, each other. IPE is an educational method that trains students to perform in terms of good communication and teamwork which will be useful for the implementation of interprofessional collaboration (IPC) at health-care facilities (Syahrizal et al., 2020). In many countries, IPE has been mandated in curricula of health care disciplines (DeMatteo & Reeves, 2013). One of the objectives of IPE is to train the future health practitioners to do the collaboration in healthcare delivery (Lockeman et al., 2017).

In healthcare delivery, one health professionals must be work with any healthcare professionals, when numerous healthcare professionals with various backgrounds strive to give the best care possible across locations by collaborating with patients, their families, jobs, and communities (Jones et al., 2020). So that, the students must recognize the work-based values, norms, beliefs, knowledge, skills and roles of other healthcare disciplines (Khalili et al., 2013). Collaboration among health professionals improves mutual understanding of duties, lessens fragmentation issues in the delivery of healthcare, and enables all team members to contribute to their full potential (Lackie et al., 2020). This situations must be designed during the learning process with the pedagogic orientation (Bloomfield et al., 2021).

The previous study mentioned that the first year students in health science presented the higher levels of confidence in communication, collaboration, decision-making, group collaboration skills and conflict management (Lee et al., 2018). They need more attention in the team work. This result could be used to design the IPE curricula during their learning process (Huebner et al., 2021). The objective of this study is to define the IPE exposures in first and third year students in three different health disciplines, including medicine, pharmacy, and public health, respectively.

MATERIALS AND METHOD

Materials

The IPE questionnaire was adapted from the International Collaborative Competencies Attainment Survey (ICCAS). This questionnaire was designed to assess the change of interprofessional-related competencies in healthcare students before and after the IPE programs. Scores on the ICCAS are reliable and predict meaningful outcomes with regard to attitudes toward interprofessional competency attainment base on study from Five hundred and eighty-four students and clinicians in Canada and New Zealand (Archibald et al., 2014).

Methods

Cross-sectional study was conducted among the first-year and third-year students from three different health disciplines including pharmacy, public health, and medicine, at Universitas Ahmad Dahlan, Yogyakarta, Indonesia. The IPE program was commenced by giving the pre-questionnaire adapted from ICCAS to define the students' knowledge about IPE before the IPE program started. The general lecture was provided by the coordinator of IPE program. The short lectures about were given by the lecturers from pharmacy, public health and medicine faculties for all participated students. The topics of lecture were 1. Overview Interprofesional Education (IPE), 2. Conflict management and team empowerment, 3. Professional roles and responsibilities of doctors, pharmacists, and public health. In the next two weeks, the coordinator of IPE program divided the students into small group which consisted of the students from three different health disciplines. Each group was consisted by 8 to 10

students and had a particular topic to be discussed. The ratio of the number of students between professions is not proportional depending on the number of students in the faculty.

In the fourth week, each group from the first-year students presented the results of their discussion and the third-year students made a poster about the topic and presented they posters in the second week. After having done the presentation, the students finished the IPE program, and they filled in the post-questionnaire adapted from ICCAS.

Data Analysis

Data was not normally distributed. Mann-Whitney Test (2 independent sampel) analysis were performed to compare the results between Pre-Post IPE domains' score in first-year and third-year students. The significant differences were obtained if p value score ($p < 0.05$).

RESULT AND DISCUSSION

The characteristics of the students were listed in Table 1. Female students predominated among all of the batches. The highest number of students among first-year and third- year students was from the Pharmacy.

Table 1. Students' characteristics

Characteristics	First-year students (n (%))	Third-year students (n (%))
Number of students		
Pharmacy	152 (44)	190 (41.3)
Public Health	147 (42.6)	220 (47.8)
Medical	46 (13.3)	50 (10.9)
Sex		
Male	48 (14.9)	62 (13.5)
Female	297 (86.1)	398 (86.5)

Table 2 presented the differences of IPE domains between first-year and third-year students before participating in IPE activities. The significant differences were found in the team work domain, with the lower score in third-year students. Most of the IPE domains had higher score in first year students, unless collaboration and conflict management ($p > 0.05$).

Table 2. Pre-IPE domains' score in first-year and third-year students

Domains	First-year students Mean (SD)	Third-year students Mean (SD)	P value
communication	5.812 (1.045)	5.798 (0.953)	0.483
Collaboration	5.957 (1.054)	5.969 (1.013)	0.997
Role and responsibility	5.690 (1.011)	5.655 (1.010)	0.559
Case management	5.621 (1.037)	5.600 (1.019)	0.680
Conflict management	5.952 (1.065)	6.020 (1.020)	0.404
Team work	6.138 (1.070)	5.896 (0.977)	0.000*

*significant difference

Table 3 showed the differences of IPE domains between first-year students and third-year students after IPE activities. The significant differences can be seen in the all domains. Most of the IPE domains had higher score in first year students, unless collaboration and conflict management.

Figure 1 presented the scores of IPE domains from before IPE activities for the first and third year of students. Only some domains had significant differences in pharmacy and public health students, before IPE activities. Those domains were team work, case management, and communication. There were no significant changes observed among medical students.

Table 3. Post-IPE domains' score in first-year and third-year students

Domain	First-year students	Third-year students	P value
	Mean (SD)	Mean (SD)	
Communication	6.104 (0.950)	6.106 (0.891)	0.002*
Collaboration	6.123 (0.967)	6.095 (1.007)	0.008*
Role and Responsibility	5.980 (1.020)	6.010 (0.941)	0.020*
Case management	5.855 (1.062)	5.809 (1.026)	0.001*
Conflict Management	6.220 (0.979)	6.172 (0.957)	0.001*
Team work	6.239 (1.010)	5.999 (1.001)	0.000*

*significant differences

Team work	6.07 *	5.92	6.17 *	5.79	6.30	6.28
Conflict management	5.83	6.07	6.02	5.88	6.14	6.43
Case management	5.44	5.62	5.69 *	5.48	6.00	6.03
Role and responsibility	5.54	5.68	5.76	5.52	5.96	6.15
Collaboration	5.82	5.95	6.05	5.90	6.10	6.35
Communication	5.63	5.82	5.93 *	5.70	6.06	6.15
	Year 1	Year 3	Year 1	Year 3	Year 1	Year 3
	Pharmacy		Public Health		Medical	

* : Significant differences

Figure 1. The differences of pre IPE domains' scores between the first and the third students in faculties of pharmacy, public health and medicine

Figure 2 presented the scores of IPE domains in three different health disciplines, including medicine, pharmacy, and public health, respectively after IPE activities for the first-year and third-year students. All of the domains in faculty of medical had significant differences between the two years, with the lower score in year 3. The lower scores were observed in the domains of faculty of pharmacy and public health which had significant differences.

Patient outcomes are improved by inter professional teamwork and communication in healthcare (Lee et al., 2018). Our study revealed that the first year of students showed the improvement in all IPE domains over three faculties, after the IPE activities. Only in the third year of students in pharmacy and public health had improvement, after the IPE activities. IPE which is started in the third year, mostly presented the lower domains score after the IPE activities, than the first students. Also, the baseline domains scores of the third students in pharmacy and public health were not satisfied compared to the baseline scores of the first-year students. IPE which is provided to the first year of students has many challenges, because the new students are still in the process of adaptation and understanding about the body of knowledge of their faculty.

Our result of study is also similar to the previous study, that mentioned that the pharmacy and nursing students showed the good improvement in IPE, but not for the medical students (Bloomfield et al., 2021; Yu et al., 2020). The first year of medical students shows the higher baseline scores of IPE domains than the students in faculties of pharmacy and public health. This finding is also similar to the previous study (Burford & Rosenthal-Stott, 2017; DeMatteo & Reeves, 2013). This could be caused by the professional identity of the medical students has been well developed before the university entry

Interprofessional education applied ... (Perwitasari et al.,)

(Ahmad et al., 2013) considering other circumstances, such as the fact that first-year medical students engage in clinical practice (Yu et al., 2020). Clinical experience practice offers observations, collaboration, and positive and negative role modelling for doctors, nurses, and other pertinent allied health practitioners (Palmer & Stilp, 2017), prolonged exposure to circumstances that call for cooperation with various professional groups could change how students see inter professional learning (Keshtkaran et al., 2014). The relationship between clinical practice experience and self-competency in cross-professional settings can be understood in the same framework. The previous study also mentioned the self-stereotyping that appeared in the medical students (Burford & Rosenthal-Stott, 2017). We did not define the stereotypes of the IPE, both in auto- and hetero-stereotype, because the instrument does not include that domain.

Team work	6.20 *	6.10	6.21 *	5.92	6.47 *	5.92
Conflict management	6.11	6.21	6.26 *	6.14	6.45 *	6.14
Case management	5.84	5.86	5.77	5.74	6.18 *	5.90
Role and responsibility	5.92	6.07	5.93	5.96	6.32 *	5.99
Collaboration	6.06	6.19	6.15	6.05	6.24 *	5.96
Communication	6.04	6.14	6.13 *	6.07	6.24 *	6.13
	Year 1	Year 3	Year 1	Year 3	Year 1	Year 3
	Pharmacy		Public Health		Medical	

* : Significant differences

Figure 2. The differences of post IPE domains' scores between the first and the third students in faculties of pharmacy, public health and medicine

Our result of study is also similar to the previous study, that mentioned that the pharmacy and nursing students showed the good improvement in IPE, but not for the medical students (Bloomfield et al., 2021; Yu et al., 2020). The first year of medical students shows the higher baseline scores of IPE domains than the students in faculties of pharmacy and public health. This finding is also similar to the previous study (Burford & Rosenthal-Stott, 2017; DeMatteo & Reeves, 2013). This could be caused by the professional identity of the medical students has been well developed before the university entry (Ahmad et al., 2013) considering other circumstances, such as the fact that first-year medical students engage in clinical practice (Yu et al., 2020). Clinical experience practice offers observations, collaboration, and positive and negative role modelling for doctors, nurses, and other pertinent allied health practitioners (Palmer & Stilp, 2017), prolonged exposure to circumstances that call for cooperation with various professional groups could change how students see inter professional learning (Keshtkaran et al., 2014). The relationship between clinical practice experience and self-competency in cross-professional settings can be understood in the same framework. The previous study also mentioned the self-stereotyping that appeared in the medical students (Burford & Rosenthal-Stott, 2017). We did not define the stereotypes of the IPE, both in auto- and hetero-stereotype, because the instrument does not include that domain.

The medical students also did not show the score improvement after the IPE workshop. This results also in line with the previous study (Bloomfield et al., 2021), and could be caused by the different schedule of faculties during the IPE workshop. The medical students used block systems during the

learning process, and the other two faculties still used the traditional way, which was fourteen meetings in 6 months for the learning process.

The third year of pharmacy students showed the team work domain as the improved compared to the baseline. Building relationships, comprehending one another's jobs, levels of knowledge, and sorts of information, as well as communicating effectively, were all viewed as positive aspects that would enhance patient care and job satisfaction (Imafuku et al., 2018). And the third year of public health students had communication and role and responsibility as the improved domain. With these results, we suggest that the lecturers must give more opportunities to the students for learn and interact each other.

Many interprofessional frameworks place a strong emphasis on communication, which serves as the fundamental mechanism for collaboration (Asmara et al., 2021). Inadequate patient outcomes and potential injury are intimately related to poor information transfer (Carney et al., 2019). Both formal and informal forms of communication—such as meetings and sharing of patient records—take place on both an individual and group level (emails, passing comments). Organizations can encourage the use of instruments like ISBAR, which is a clinical handover design utilizing "Introduction, Situation, Background, Assessment, Recommendation.", and practices can help with efficient workplace communication, especially with patient handover. Individuals can negotiate attaining consensus and get over disagreements by communicating effectively (Van Diggele et al., 2020). It is helpful to modify the language and terminology used to suit the target audience and team members. In order to approach circumstances from various viewpoints, questioning should also be modified. The result of this study in line with the previous research which mentioned that communication is the key determinants for collaborative practice (Gellis et al., 2019).

Our study had limitation in that we did not measure the stereotype of the students in each faculty. However, as we know, this is the first study conducted in Indonesia, regarding to the IPE activities as the intervention in the two different years of the students over the three faculties.

CONCLUSION

Our study suggested that the IPE activities must be started from the first year, because the first-year students still have the positive perspective about IPE, due to the professional identity before the university entry. Starting the IPE from the third year of study, will be distracted by other learning activities which is getting advanced.

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