Firdausa S et al., JPKI, 2022;11(3): 260-271
doi: 10.22146/jpki.69550

ORIGINAL RESEARCH

JPKI

THE READINESS FOR INTERPROFESSIONAL EDUCATION IMPLEMENTATION DURING COVID-19 PANDEMIC IN INDONESIA: A DESCRIPTIVE STUDY

Sarah Firdausa[1,2], Rachmah Rachmah[1,3], Azizah Vonna[1,4], Teuku Renaldi[1,2], Noraliyatun Jannah[3], Masra Lena Siregar[2], Sri Wahyuni[5], Dedy Syahrizal[1,2*]

[1]Research Center for Collaboration in Health Science, Universitas Syiah Kuala, Banda Aceh – INDONESIA
[2]Faculty of Medicine, Universitas Syiah Kuala, Banda Aceh – INDONESIA
[3]Faculty of Nursing, Universitas Syiah Kuala, Banda Aceh – INDONESIA
[4]Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Universitas Syiah Kuala, Banda Aceh – INDONESIA
[5]Meuraxa Hospital, Banda Aceh – INDONESIA

Submitted: 04 Oct 2021, Final Revision from Authors: 15 Mar 2022, Accepted: 04 Apr 2022

ABSTRACT

Background: The importance of the interprofessional education (IPE) program has been depicted through various forms of the IPE curriculum. The COVID-19 pandemic has forced a change in the implementation of IPE; this has caused the method of implementing IPE to change online. This study aims to assess the readiness of three different healthcare professions for implementing IPE using the Readiness for Interprofessional Learning Scale (RIPLS).

Methods: The RIPLS survey was completed by 108 medical students, 40 pharmacy students, and 30 nursing students at Universitas Syiah Kuala, Indonesia. The survey was done after the students carried out the online IPE intervention, which was held during the COVID-19 pandemic. They also completed open-ended questions reflecting their attitude towards and experience from the online IPE implementation.

Results: There was no significant difference regarding student readiness for interprofessional learning among the three academic disciplines. Generally, as many as 57.9% of students showed a positive perception of IPE. Separate analysis for each study program showed that all of them were in the high range of scores for positive perception. Pharmacy students have the highest positive perception of IPE (60%), while medical and nursing students' scores were 54.6% and 53.3%, respectively. Qualitative interviews revealed that: 1) the scheduling of IPE implementation was not suitable for the students, 2) the online communication between professions was not as effective as expected challenging, and 3) there was a growing awareness to respect other professions.

Conclusion: It can be concluded that conducting the IPE program during the COVID-19 pandemic experienced many obstacles, especially communication. However, it still maintains the main objective of IPE, which is to respect other professions.

Keywords: Interprofessional Education (IPE), Readiness for Interprofessional Education (RIPLS), health profession programs, student positive perception

*corresponding author, contact: dedysyahrizal@unsyiah.ac.id

JPKI

PRACTICE POINTS

- The readiness of Inter-Professional Education (IPE) implementation can be assessed by RIPLS questionnaire
- It is possible to implement the IPE program during a pandemic with some challenges
- The implementation of IPE in pre-clinical students is useful for increasing awareness of the benefits of IPE

INTRODUCTION

The progress towards a better quality of care in the delivery of patient-centered health services is closely linked with the involvement of all professionals for good collaboration. This is in accordance with the statement of Syahrizal et al.[1] that interprofessional collaboration is an integral part of patient-centered care. Apart from improving the quality of care, interprofessional teamwork also has many benefits, including reducing medical errors, increasing professional knowledge and skills as well as patient satisfaction and care.[2] World Health Organization (WHO) has noted trends in teamwork around the world. This is considered by WHO because, in the next few decades, the development of healthcare will increase towards better quality. Team-based healthcare is known to be more efficient in its implementation due to the variety of types and skills that support the team's performance.[3]

The ability to communicate and collaborate with other professionals is a competency that any healthcare team should have. As a team of healthcare professionals, it is also expected to overcome all challenges in the field, including cases of the COVID-19 pandemic in almost all world countries that are currently happening. However, human resources in the health sector are still experiencing various internal crises, such as lack of health personnel, maldistribution, and teamwork problems. This is consistent with the statement of Frenk et al.,[4] regarding various crises in the complex health sector, including incompatibility of competencies with population needs, bad teams, and weak leadership. This will affect the suboptimal care provided by the patient-centered healthcare team.[10]

To increase interprofessional collaboration and optimization of care, the healthcare professional education curriculum has designed an instructional strategy through interprofessional education (IPE) for students in the health sector. Interprofessional education (IPE) is essential in improving collaboration and the quality of care.[5] The importance of the IPE program has been depicted through the implementation of various forms of IPE curriculum in current higher education institutions since it was first released by the World Health Organization in 1988.[3] IPE activities is aimed to cultivate collaboration awareness between healthcare professionals.[6] The definition of IPE according to WHO in 2020 is an experience that occurs when students from two or more professions learn about, from, and with one another.[7]

The impact of COVID-19 has changed many things in our lives, including the way we live, study, and work. In the education field, online and remote learning are among the alternatives that are becoming the new normal way.8 In addition, the education system from a large-scale curriculum has also changed into an online learning environment after the emergence of the COVID-19 outbreak, which has influenced interprofessional education programs.[9] Distance learning during the COVID-19 pandemic requires medical education institutions to restructure IPE learning concepts and seek new strategies for implementing collaborative teaching and learning processes. One of the implementations of IPE learning during the COVID-19 pandemic is through virtual simulation utilizing the telemedicine service system.[10]

This approach is applied in several medical education institutions in the world, such as the University of Wisconsin-Madison and Indiana University in the United States.[10] In addition, a change in the approach to IPE learning from practice-based learning to virtually accommodated simulated practice has also begun, as practiced at the University of Toronto, Canada.[10] Although several medical education institutions in the world have started or have been looking for strategies to reconceptualize the implementation of IPE during the COVID-19 pandemic, many educational institutions have postponed or even canceled IPE learning due to online learning being considered ineffective and has less impact on the achievement of the final results. What is expected from applying the IPE learning model and the focus on the achievement of student's competence is feared not being achieved during the pandemic. This is made a top priority compared to the application of IPE learning during the COVID-19 pandemic.[10]

During the COVID-19 pandemic, IPE learning began to be implemented through online learning by applying several learning methods such as case studies, virtual simulations, webinars organized by health practitioners, and reflections on the readiness of teamwork in providing health services.[9] In addition, integrating the current COVID-19 pandemic situation with IPE online learning also helps healthcare students learn to appreciate the role of each health worker in solving the global health crisis that is occurring and opens students' awareness and understanding of the concept of IPE learning which was previously difficult to teach such as teamwork skills, leadership, and preparedness to collaborate in emergencies.[9] IPE learning during the COVID-19 pandemic period provides equal opportunities for healthcare students to contribute actively and provide wider opportunities and time to prepare for their self-understanding regarding situations that occur before sharing them with other professional students in the learning process.[9]

On the other hand, learning IPE online during the COVID-19 pandemic is a challenge for IPE teaching staff or facilitators in seeking and encouraging students to be actively involved in learning and be able to express their opinions regarding the given case. Furthermore, facilitators must be able to make guidelines and regulations related to IPE learning and be able to formulate appropriate learning strategies to be implemented.[9] This study was conducted in a hybrid learning environment, where students learn through a combination of offline and online activities. This study aims to assess the readiness of three different healthcare students for implementing IPE using the Readiness for Interprofessional Learning Scale in the time of the COVID-19 pandemic.

METHODS

This study was an exploratory-descriptive study conducted from December 2020 to January 2021. The students from three different healthcare professions who took part in IPE on Geriatric Program during the COVID-19 pandemic were asked to fill out the Readiness for Interprofessional Learning Scale (RIPLS) questionnaire based on their experience on the program. After finishing a mini project about geriatric assessment, the questionnaire was distributed to the students. The project was attended by students doing different subjects in 3 health profession study programs, namely Adulthood and Geriatric subject in Faculty of Medicine, Geriatric Nursing subject in Faculty of Nursing and Pharmaceutical Care subject in Department of Pharmacy, Universitas Syiah Kuala, Indonesia. The RIPLS survey was completed by 108 medical students, 40 pharmacy students, and 30 nursing students at Universitas Syiah Kuala, Indonesia. Students completed 19 questions in the RIPLS survey and three open-ended questions regarding IPE implementation during pandemics through electronic survey media. Demographic questions include study program, gender, and year of birth. In addition, students also answered the questions regarding the constraints and effects of the IPE program that have been completed.

The Readiness for Interprofessional Learning Scale (RIPLS) was used to compare readiness between students from various healthcare programs. This study aims to see students' readiness in three different healthcare study programs: Medicine, Pharmacy,

and Nursing. This scale was first developed by Parcell and Bligh, aiming to assess students' attitudes and perceptions of IPE learning. The questions on this scale amounted to 19 items with four subscales, namely "teamwork and collaboration", "negative professional identity" (means that students have negative statements regarding the value of working with other health professional students), "positive professional identity" (means that students agreed to shared learning experiences with other health care students to improve communication, problem-solving, and team skills), and "roles and responsibilities" using a five-point Likert scale. The points range from 1 for "strongly disagree" and 5 for "strongly agree".[11] The four subscales used include 1) Teamwork and Collaboration (items 1-9, total possible point 45); 2) Negative professional identity (ID) (items 10-12, total possible point 15); 3) Positive professional ID (items 13-16, total possible point 20); 4) Roles and Responsibilities (items 17-19, total possible point 15).[12]

The "teamwork and collaboration" subscale was used to evaluate attitudes that focused on the effects of studying with other professions, communication problems, trust, respect, and professional boundaries. Students who score high are categorized as understanding the importance of this quality. Furthermore, students with high scores on the "negative professional identity" subscale were categorized as not appreciating cooperative learning with other professions. Meanwhile, the high score on the subscale "positive professional identity" describes the ability of students to participate in learning with other professions, improve communication, problem-solving, and team skills in the category of being able to appreciate the values of learning along with other professions. Furthermore, the "roles and responsibilities" subscale relates to the student's own role and the joint roles of other health professions. A high score on this subscale is categorized as students having unclear perceptions, distorted roles of themselves or others.[12] The mean scores for each statement regarding IPE perception were analyzed by one-way Anova.

The students also completed open-ended questions at the end of the questionnaire, in which, the result reflected their attitude towards and experience from the online IPE implementation. The questions asked about the time of the IPE program, the communication among professions, and the awareness to respect other professions. The thematic analysis approach with the triangulation method was implemented to analyze the qualitative data.

This study has obtained ethical clearance from the institutional ethics commission of Research Ethics, Faculty of Medicine, Universitas Syiah Kuala, and dr. Zainoel Abidin District General Hospital with No. 083/EA/FK-RSUDZA/2020.

RESULTS AND DISCUSSION

This study collected data from 178 students, consisting of 108 medical students, 40 pharmacy students, and 40 nursing students. There were more female students than male students (85.4% and 14.6%). The respondents' ages ranged from 19 to 24 years old, with the most dominant age being 20 years old (36.5%). In accordance with the proportion of students in the three health profession study programs, medical students occupied the largest proportion of this study (60.7%), followed by the pharmacy (22.5%) and nursing students (16.9%).

Student Perceptions Regarding IPE

The result of student perceptions about IPE questions gave a score of 56 as the lowest score, 95 as the highest score, and 84.5 as the median. Thus, we found that 55.6% had a positive general perception of IPE, and 44.4% had a generally negative perception of IPE. Furthermore, after exploring students' perceptions separately for each study program, it was evident that these three professions were in the high range. Pharmacy students have the highest proportion of positive perception of IPE, as much as 60%, followed by medical and nursing students, 54.6% and 53.3%, respectively (Table 1). This result was in accordance with the previous study by Groessl and Vandenhouten (2019) in the United States and Huebner, Tang (2020) in Canada, which revealed high total RIPLS scores for all healthcare students. It implied that most students were ready to implement the IPE program and eager to participate in this collaboration education method.

Table 1. Student's Perceptions of IPE

Study Program	Medicine	Pharmacy	Nursing
	Score		
Minimum	56	63	64
Maximum	95	95	94
Median	84,00	86,00	85,00
	Student's Perception n(%)		
Positive	59 (54.6)	24 (60)	16 (53.3)
Negative	49 (45.4)	16 (40)	14 (46.7)

After exploring separately for IPE competencies, it was found that most students had positive perceptions of each IPE competency, namely Teamwork and Collaboration (median score was 42 out of 45), Negative Professional Identity (median score was 13 out of 15), Positive Professional Identity (median score was 19 out of 20) and Roles and Responsibility (median score was 11 out of 15) (Table 2).

Table 2. Student's Perceptions for Each Competency of IPE

IPE Competencies	Score			Student's Perception (n(%))	
	Minimum	Maximum	Median	Positive	Negative
Teamwork & Collaboration	27	45	42	98 (55.1%)	80 (44.9%)
Negative Professional ID	3	15	13	114 (64%)	64 (36%)
Positive Professional ID	11	20	19	105 (59%)	73 (41%)
Roles & Responsibilities	6	15	11	100 (56.2%)	78 (43.8%)

As identified from the general perceptual scores for each program study, exploration of the perceived competency identity scores for IPE competencies has a higher number of positive perceptions compared to negative (Table 3). When compared between the four IPE competencies, nursing students have the most positive perceptions about teamwork and collaboration (63.3%), followed by the pharmacy (60%), and medical (50.9%). Domain Roles and Responsibilities have the lowest student's positive perception among all domains in all student groups, ranging from 56.7% (nursing) to 52.8% (medic).

Table 3. Student's Perceptions of Four Competencies of IPE

IPE Competencies	Student's Perceptions (%)					
	Medical		Pharmacy		Nursing	
	+ve	-ve	+ve	-ve	+ve	-ve
Teamwork & Collaboration	50.9	49.1	60	40	63.3	36.7
Negative Professional ID	63.9	36.1	65	35	63.3	36.7
Positive Professional ID	63	37	55	45	50	50
Roles & Responsibilities	52.8	47.2	65	35	56.7	43.3

The perceptual scores of the three professional program students showed positive results on each question (Table 4). The p-value was not significant for all questions among three professional students. However, among all the questions, there were four questions with a lower average score, specifically

question numbers 12, 17, and 18. It suggested that most of the health professional programs disagreed regarding 1) Solving health problems will be more effective only if done by health students from their faculty/study program, 2) Uncertainty of their professional role, and 3) Feel the obligation to acquire more knowledge and skills than other students in their study program.

Table 4. Mean Scores for Each of the Statements Regarding IPE Perception

No	Statement	Medical n=108	Pharmacy n=40	Nursing n=30	*p-value*
		Mean±SD	Mean±SD	Mean±SD	
Teamwork & Collaboration					
1.	Learning with other students/professionals will make me a more effective member of a health and social care team	4.56±0.63	4.40±0.67	4.67±0.48	0.18
2.	Patients would ultimately benefit if healthcare and social care students/ professionals worked together	4.79±0.49	4.83±0.39	4.87±0.35	0.67
3.	Shared learning with other health and social care students/professionals will increase my ability to understand clinical problems.	4.56±0.67	4.48±0.68	4.67±0.55	0.48
4.	Communication skills should be learned with other health and social care students/ professionals	4.56±0.58	4.63±0.63	4.57±0.77	0.87
5.	Team-working skills are vital for all health and social care students/professionals to learn	4.73±0.54	4.78±0.48	4.80±0.41	0.77
6.	Shared learning will help me to understand my own professional limitations	4.56±0.65	4.53±0.82	4.57±0.63	0.96
7.	Shared learning will help me think positively about other health and social care professionals	4.69±0.59	4.55±0.64	4.63±0.49	0.46
8.	Learning together between health students from different study programs is not important	4.07±1.39	4.38±1.01	4.23±1.36	0.63
9.	For small group learning to work, students need to respect and trust each other	4.72±0.53	4.75±0.44	4.77±0.43	0.89
Negative Professional ID					
10.	It is not necessary for undergraduate postgraduate health and social care students/ professionals to learn together	4.09±1.31	4.30±1.04	4.13±1.33	0.67
11.	I don't want to waste time learning with other health and social care students/ professionals	3.88±1.50	4.05±1.20	4.13±1.43	0.44
12.	Clinical problem solving can only be learned effectively with students/ professionals from my own school/ organization	3.75±1.52	3.88±1.44	3.77±1.46	0.90
Positive Professional ID					
13.	Shared learning with other health and social care professionals will help me to communicate better with patients and other professionals	4.68±0.56	4.50±0.68	4.50±0.63	0.17
14.	I would welcome the opportunity to work on small group projects with other health and social care students/professionals.	4.41±0.77	4.33±0.66	4.50±0.57	0.60
15.	Shared learning and practice will help me clarify the nature of patients' or clients' problems	4.62±0.59	4.63±0.54	4.53±0.68	0.87
16.	Shared learning will help me become a better team member	4.63±0.61	4.60±0.59	4.67±0.48	0.76

No	Statement	Medical n=108	Pharmacy n=40	Nursing n=30	*p-value*
		Mean±SD	Mean±SD	Mean±SD	
Roles & Responsibilities					
17.	I am not sure what my professional role will be/is	3.91±1.34	4.18±1.17	3.77±1.36	0.89
18.	I have to acquire much more knowledge and skill than other students/ professionals in my own	2.10±1.20	2.73±1.34	2.23±1.20	0.39
19.	I would welcome the opportunity to share some generic lectures, tutorials, or workshops with other health and social care students/ professionals.	4.43±0.78	4.43±0.64	4.50±0.57	0.25

*The RIPLS questionnaire used in this study was adapted by Latrobe Health Service and the Health & Social Care Interprofessional Network (HSN) and analyzed refer to McFadyen, Webster (2005) & Hertweck, Hawkins (2012)

The thematic analysis approach with the triangulation method was implemented to analyze the qualitative data, encompassing participant observation and unstructured interviews. The results of qualitative interviews about the constraints and effects of the IPE program revealed three striking findings:

1. The scheduling of IPE implementation was not suitable for the students, so they might not focus deeply on the collaborative education program. This IPE program was conducted at the end of the semester as part of a mini-project within the block of Adulthood and Geriatric. Most of the students conveyed this by saying,

   "It is better if the IPE implementation schedule is not close to the time of the exam." Another student said, "It is better if the IPE learning schedule does not coincide with other blocks; students will be more focused."

   We suggest a reschedule of the IPE program to the early phase of the semester so that the students would have a lot of time to think and act appropriately to the project.

2. The communication between professions was less effective as it was conducted wired via social media and software-based conference rooms. It is evident through the statements of several students who said,

   "Communication via online is more likely to find obstacles in understanding each other, and easier to occur miscommunication."

   The communication must be conducted on the internet as the situation of the COVID-19 outbreak; therefore, all the students were connected only via an electronic platform. Undoubtedly, the COVID-19 outbreak has forced educational institutions to switch the learning method from offline to online. Therefore, we cannot promise to have the same or higher quality education, rather than immediately embrace the adoption of online learning.[16]

3. IPE program has evoked a growing awareness to respect other professional healthcare students. Most students, after participating in IPE learning, said,

   "We have become more aware of the scope of work of other professions; this makes us need each other in solving problems."

   Interestingly, the IPE implementation has built an awareness among the students to respect other professions besides their own professions. It was stated in the previous study that that interprofessional education has given a great chance among students to interact with students from other healthcare disciplines in interactive ways, as they reciprocally discuss the problem of the patient in patient-centered-based learning.[13]

The COVID-19 pandemic has impacted many things in life, one of which includes the health education system. Hospital restrictions and an increased focus on COVID-19 services have disrupted the learning process in hospitals. In addition, the COVID-19 pandemic has also halted interactions between healthcare students and patients during learning in clinical settings.[10] This

allows limited or even closed opportunities for collaborative learning between healthcare students, resulting in ineffective collaborative competence amongst students. IPE learning that was halted during the COVID-19 pandemic must be a concern for educational institutions about the impacts it will have in the future. Online IPE learning may affect the less than optimal health services provided by medical personnel in the future to patients.10 To minimize this, educational institutions are forced to brainstorm and discuss to find the right method so that IPE learning in the midst of the COVID-19 pandemic outbreak can still be carried out. This is what causes the method of implementing IPE at Universitas Syiah Kuala to turn online.

Our study found that all three have high positive perceptions of Interprofessional Education (IPE) across all different health professions. Pharmacy ranks first among all three study programs, followed by medicine and nursing. Our results show similarities with previous studies, which found that the pharmacy study program shows a positive perception compared to other health study programs.[1,17,18] The positive perception among students from the three study programs showed the need for better sustainability of the IPE program at Universitas Syiah Kuala; this will be very useful for preparing more effective Interprofessional Collaboration (IPC) in the future. This statement is supported in a previous study which states that IPE is very important to increase the effectiveness of IPC.[1,19] Through IPE, students can develop communication and teamwork skills.[1] IPE has also been shown to improve patient safety, job satisfaction, and a better understanding of professional roles and responsibilities.[20] In addition, the results show that the IPE program is very helpful in increasing awareness of the importance of teamwork and collaboration, communication, and understanding the roles and responsibilities of other healthcare professionals.

As previously identified from the general perception score for each study program, the exploration of the perceived competency identity score for IPE competency had a higher number of positive perceptions compared to negative. When compared between the four IPE competencies, nursing students had the most positive perceptions of teamwork and collaboration, followed by pharmacy and medicine. This shows that each student from a different study program generally has an awareness of the importance of interprofessional teamwork in patient care. Through IPE practice while studying, students perceive they can develop skills, behaviors, and attitudes that support IPC after they graduate and work in hospitals or institutes that involve multi-health professional collaboration. Our results are in line with previous studies that found that all participants also showed positive perceptions of IPE. This study collected nine participants from seven different health disciplines. The result was that each student from different professions had confidence that their profession had information that could help other professions forge better cooperation. This study concludes that IPE has many positive impacts, including that participants can know each other's roles and responsibilities of each profession, helping to improve communication and collaboration between them.[21]

After exploring the IPE competencies separately, it was found that the IPE competency "positive professional ID" showed the highest positive perception value compared to the other three competencies. The majority of participants answered strongly agree on statements number 13 to 16. These results indicate that most students from each health study program already have a positive perception of the importance of improving communication and problem solving, participating in learning, and appreciating the values of learning together with other professions.[12] This result is in line with previous studies that found that participants showed positive perceptions by providing positive feedback about the IPE program through their involvement in discussions with students from other health professions.[22,23] Interactive IPE was found to be more effective at participants' contribution in role-play activities and small-group projects.[24]

On the other hand, the domain "Roles and Responsibilities" have the lowest student's positive perception among all domains in two student groups, medicine, and nursing. This shows that many medical and nursing students still have unclear perceptions of roles and responsibilities,

both roles related to themselves and the roles of other health professions. As a result, medical or nursing students feel dissatisfied with collaborating. The factors that influence this result may be due to speculation about the more dominating profession, inappropriate roles, even being assigned to other professions, or the workload between one profession and another. Based on a previous study, the nurse-doctor relationship that does not dominate, knows each other's limits of power, recognizes and accepts each other's professional roles will foster good interactions and satisfy doctors and nurses at work.[25]

Furthermore, in terms of each statement, the perception scores of the three study program students also showed positive results. This means that most students answered the statement by agreeing or strongly agreeing. However, several statements that had a low average score, namely in numbers 11, 12, 17, and 18, where students answered that they did not agree or strongly disagreed about these statements. Most health study programs disagree about 1) Studying with students from other health professions (medicine, pharmacy, and nursing) is a waste of time, 2) Solving health problems will be more effective only if it is carried out by health students from the faculty/study program, 3) Uncertainty about their professional role, and 4) Feeling obliged to increase their knowledge and skills compared to other students in their study program. This showed that students' perceptions of the IPE learning program were good. The results of this positive perception were closely related to the design of the IPE program by educators. Educators are trying to introduce and instill IPE to students with different study programs that will work in the same scope of health. This requires capable educators who are able to engage and facilitate IPE learning. The success of IPE will positively impact the internal quality of health workers and the services provided. It is very effective in increasing collaboration between health professionals.[26]

The results of qualitative interviews about the constraints and effects of the IPE program revealed three striking findings. 1) The scheduling of IPE implementation was not suitable for the students so that they might not focus deeply on the collaborative education program, 2) The communication between professionals was less effective as it was conducted wired via social media and software-based conference room, and 3) IPE program has evoked a growing awareness to respect other professional healthcare students. Our results are consistent with a study on IPE implementation at Virginia Commonwealth University's Richmond Health and Wellness. This program is implemented through telephone visits.[27] Although implementing IPE through telephone visits has many challenges such as difficulties in obtaining telephone contacts that can be contacted and limited time for virtual visits, institutions believe that this is the best way so that students can still build IPE core competencies such as roles and responsibilities, abilities. teamwork, and the ability to communicate both among prospective health workers and between patients and prospective health workers. During telephone visits, students are divided into small groups of four to five students, and each of them makes regular virtual visits to patients to understand the diversity of health disciplines and the importance of complementarity between health workers. With this learning, educational institutions are able to be involved in real-time in the learning process carried out by students.[27]

The finding of good awareness to respect other professional students was in line with the quantitative result on the "positive professional ID" item, which showed the high positive perception in all different professions. Most students agreed that sharing learning with other health care professionals will help them communicate better with patients and other professionals. This attitude will help students in improving problem solving and communication, and appreciating the values of learning together with other professions.[12]

The implementation of IPE provides great benefits for students, even in the virtual era as in the COVID-19 pandemic nowadays. Apart from enhancing the educational experience, IPE can also increase students' enthusiasm and interest in learning with other disciplines, so that they are better equipped to increase work effectiveness. The other benefits can also illustrate how interprofessional collaboration will be seen in the future. In addition, online IPE learning provides more free time than offline IPE

learning. Students also do not have to travel to implement the learning. Students feel that learning IPE online opens opportunities to be able to study IPE learning materials more deeply.[28] On the other hand, students feel some disadvantages with IPE learning carried out online during the COVID-19 pandemic, such as less interaction between health students during the learning process, technical obstacles that often arise during the learning process, communication problems, and lack of good feedback between students as well as between students and IPE facilitators. However, the COVID-19 pandemic has provided awareness for health students about the importance of teamwork in providing comprehensive health services to patients.

The population in this study were students whose semesters differed between students of the Faculty of Medicine (semester 3), Faculty of Nursing (semester 5), and Pharmacy (semester 7). It can be a limitation of this study because it might affect their readiness for IPE implementation. The more advanced their semester, the more they could be readier for the IPE program or vice versa.

We suggest implementing all the concepts and outcomes of IPE for future research, covering four aspects: communication, cooperation, values, roles/responsibilities. It would be better if the application of IPE is carried out from the first semester, and if it is possible, to have one special course on IPE.

CONCLUSION

From this study, it can also be concluded that health professions program students' perception of IPE is generally positive. It is proven that all three healthcare study programs are in the high range score. Pharmacy students possessed the highest scores among programs, followed by medical and nursing students. It might imply that IPE implementation as a curriculum is ready to be implemented for health professional students in the future and is a great need and urgent for health education providers. Some negative feedback was found due to the limited time allocated for this program; this was due to differences in schedules in each study program. This is one of the challenges to implementing IPE in other institutions. Efforts to overcome these obstacles can be made by implementing the program in the regular curriculum and adjusting the same schedule between health study programs.

RECOMMENDATION

We suggest implementing interprofessional education early since in pre-clinical education level as it is a great need and urgent for health education providers. This program should be included in a regular curriculum and adjust the same schedule between health study programs.

ACKNOWLEDGEMENT

We would like to thank you for students who have participated and all the supervisors from the Faculty of Medicine, Faculty of Nursing, and Department of Pharmacy, Faculty of Mathematics and Natural Sciences, Universitas Syiah Kuala, who have been involved in this IPE program.

COMPETING INTEREST

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

LIST OF ABBREVIATIONS

COVID-19: Coronavirus disease of 2019
IPC: Interprofessional Collaboration
IPE: Interprofessional education
RIPLS: Readiness for Interprofessional Learning Scale
WHO: World Health Organization

AUTHORS' CONTRIBUTION

Sarah Firdausa – developing research proposal, collecting data, and publication manuscript
Rachmah Rachmah – data analysis, and publication manuscript
Azizah Vonna – developing research proposal, and publication manuscript
Teuku Renaldi – data analysis
Noraliyatun Jannah – developing research proposal
Masra Lena Siregar – developing research proposal
Sri Wahyuni – developing research proposal, collecting data and data analysis
Dedy Syahrizal – developing research proposal, data analysis, and publication manuscript

REFERENCES

1. Syahrizal D, Renaldi T, Dianti SW, Jannah N, Rachmah R, Firdausa S, et al. The Differences in Perceptions of Interprofessional Education Among Health Profession Students: The Indonesian Experience. J Multidiscip Healthc. 2020; 13: 403.
2. Acquavita SP, Lewis MA, Aparicio E, Pecukonis E. Student perspectives on interprofessional education and experiences. J Allied Health. 2014; 43(2): 31E-6E.
3. World Health Organization. Learning together to work together for health: report of a WHO Study Group on Multiprofessional Education of Health Personnel: the Team Approach [meeting held in Geneva from 12 to 16 October 1987]: World Health Organization; 1988.
4. Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet. 2010; 376(9756): 1923-58.
5. Bashatah AS, Al-Ahmary KA, Al Arifi M, Asiri YA, AlRuthia Y, Metwally AS, et al. Interprofessional Cooperation: An Interventional Study Among Saudi Healthcare Teaching Staff at King Saud University. J Multidiscip Healthc. 2020; 13: 1537.
6. Ernawati DK, Utami DKI. The impact of interprofessional education to health students' collaborative competencies. IJERE. 2020; 9(3). http: //doi.org/10.11591/ijere.v9i3.20489.
7. World Health Organization. Framework for action on interprofessional education and collaborative practice. World Health Organization; 2010.
8. LeBlanc P. COVID-19 has thrust universities into online learning: How should they adapt? Brookings. 2020.
9. Khalili H. Online interprofessional education during and post the COVID-19 pandemic: a commentary. J Interprof Care. 2020; 34(5): 687-90.
10. Langlois S, Xyrichis A, Daulton BJ, Gilbert J, Lackie K, Lising D, et al. The COVID-19 crisis silver lining: interprofessional education to guide future innovation. J Interprof Care. 2020; 34(5): 587-92.
11. Parsell G, Bligh J. The development of a questionnaire to assess the readiness of health care students for interprofessional learning (RIPLS). Med Educ. 1999; 33(2): 95-100.
12. Hertweck ML, Hawkins SR, Bednarek ML, Goreczny AJ, Schreiber JL, Sterrett SE. Attitudes toward interprofessional education: comparing physician assistant and other health care professions students. Journal of Physician Assistant Education (Physician Assistant Education Association). 2012; 23(2).
13. Groessl JM, Vandenhouten CL. Examining students' attitudes and readiness for interprofessional education and practice. Educ Res Int. 2019; 2019.
14. Huebner S, Tang Q, Moisey L, Shevchuk Y, Mansell H. Establishing a baseline of interprofessional education perceptions in first year health science students. J Interprof Care. 2020: 1-9.
15. McFadyen A, Webster V, Strachan K, Figgins E, Brown H, McKechnie J. The Readiness for Interprofessional Learning Scale: a possible more stable sub-scale model for the original version of RIPLS. J Interprof Care. 2005; 19(6): 595-603.
16. Liguori E, Winkler C. From offline to online: Challenges and opportunities for entrepreneurship education following the COVID-19 pandemic. SAGE Publications Sage CA: Los Angeles, CA; 2020.
17. El-Awaisi A, Saffouh El Hajj M, Joseph S, Diack L. Perspectives of pharmacy students in Qatar toward interprofessional education and collaborative practice: a mixed methods study. J Interprof Care. 2018; 32(6): 674-88.
18. Soriano GP. Readiness of health science students towards interprofessional learning. Int J Nurs Educ. 2019; 11(3): 74-9.

19. Wei H, Corbett RW, Ray J, Wei TL. A culture of caring: the essence of healthcare interprofessional collaboration. J Interprof Care. 2020; 34(3): 324-31.
20. Ebert L, Hoffman K, Levett-Jones T, Gilligan C. "They have no idea of what we do or what we know": Australian graduates' perceptions of working in a health care team. Nurse Educ Pract. 2014; 14(5): 544-50.
21. Lumague M, Morgan A, Mak D, Hanna M, Kwong J, Cameron C, et al. Interprofessional education: the student perspective. J Interprof Care. 2006; 20(3): 246-53.
22. Jung H, Park KH, Min YH, Ji E. The effectiveness of interprofessional education programs for medical, nursing, and pharmacy students. Korean J Med Educ. 2020; 32(2): 131.
23. Zeeni N, Zeenny R, Hasbini-Danawi T, Asmar N, Bassil M, Nasser S, et al. Student perceptions towards interprofessional education: Findings from a longitudinal study based in a Middle Eastern university. J Interprof Care. 2016; 30(2): 165-74.
24. Bridges D, Davidson RA, Soule Odegard P, Maki IV, Tomkowiak J. Interprofessional collaboration: three best practice models of interprofessional education. Med Educ. 2011; 16(1): 6035.
25. Anggarawati T, Sari NW. Kepentingan bersama perawat-dokter dengan kualitas pelayanan keperawatan. Surya Med. 2016; 12(1).
26. Bennett PN, Gum L, Lindeman I, Lawn S, McAllister S, Richards J, et al. Faculty perceptions of interprofessional education. Nurse Educ Today. 2011; 31(6): 571-6.
27. Winship JM, Falls K, Gregory M, Peron EP, Donohoe KL, Sargent L, et al. A case study in rapid adaptation of interprofessional education and remote visits during COVID-19. J Interprof Care. 2020; 34(5): 702-5.
28. Jones TA, Vidal G, Taylor C. Interprofessional education during the COVID-19 pandemic: finding the good in a bad situation. J Interprof Care. 2020; 34(5): 633-46.