Original Research Paper

Impact of the COVID-19 Pandemic on Implementing IPE in the Community: Students' Perceptions

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Abstract

Background: Inter-professional Education (IPE) has been implemented widely in the community, especially in developing countries. During the COVID-19 pandemic, IPE implementation shifted by necessity to online learning. Therefore, we must evaluate the implementation with students as resource persons.

Methods: The design of this study was observational with a cross-sectional approach. Study subjects were third-year students in medicine, nursing, and nutrition who completed IPE implementation using online methods by using the students' families as community representatives. An Interdisciplinary Education Perception Scale (IEPS) questionnaire measured the students' perceptions. In addition, we added open-ended questions to identify students' perceptions of the programme.

Results: Three hundred twenty-one (321) out of 470 students returned the questionnaire (68.3% response rate). Most students agreed that the learning objectives of IPE could be attained, and there was no significant difference in those perceptions according to sex, GPA, and study programme. The answer to open-ended questions revealed that the online IPE programme still has usefulness in practising teamwork, communication, and understanding the professional's role. However, several obstacles were identified, such as signalling trouble, limitations on discussion, and the variation of interventions.

Conclusions: Despite the limitation of the online IPE programme with community representatives, it is still relevant and positively perceived by the students with minimal obstacles.

Keywords: Inter-professional Education (IPE), community, COVID-19 pandemic

Introduction

The World Health Organization (WHO) defines inter-professional education (IPE) as "an approach where students from two or more professions learn about, from and with each other" (WHO, 2010).

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IPE includes several elements, such as applying knowledge and skills, collaboration, reflection, communication, respect, and learning experience within an inter-professional team (Mahler *et al*., 2018). Within IPE, students learn how to develop their collaboration ability to mimic inter-professional health teams in the future when they graduate (Bridges *et al*., 2011).

Since 2018, the Faculty of Medicine, Universitas Diponegoro (UNDIP), Central Java Province, Indonesia, has implemented an IPE programme in the community for third-year health professions students. This programme collaborates with a Primary Health Centre near the Faculty. This programme is implemented for

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one semester (a 5-month academic calendar), with students tasked with identifying the health problems of all family members. Families with pregnant women were chosen to be visited by a small group of students from three study programmes (each small group usually consists of 1-2 medical, one nursing, and one nutrition student). Students discuss with the supervisor on how to choose the health problem to be followed up on, conduct a health intervention based on selected health problems identified, and monitor and evaluate the result of the health intervention. At the end programme, a seminar is conducted, and the students report and discuss the impact of their interventions.

During COVID-19, the IPE programme had to continue while adjusting to pandemic conditions. The e-learning model of IPE was developed, and it succeeded in synchronising IPE activities within several universities (Bluteau & Jackson, 2009). There was a report of IPE virtual competition due to the COVID-19. The students clearly stated their preference for an in-person IPE competition over the virtual one (Alrasheed *et al*., 2021).

We transformed almost all undergraduate educational activities into online learning during the pandemic. The IPE programme in UNDIP also changed to online activities. That modification due to the COVID-19 pandemic should be evaluated and analysed to ensure that virtual IPE implementation in the community still attains the learning objectives. In addition, there might be obstacles that happened during the execution, which further reinforces the need for assessment and evaluation of the online implementation.

Several factors, such as gender, age, study programme, grade point average (GPA), learning experiences, and motivation may influence the students' perceptions. Therefore, this study aimed to identify students' perceptions of the IPE virtual learning experience during this pandemic and compare the perceptions based on their characteristics (types of study programme, gender, motivation, and GPA).

Methods

Implementation of IPE programme during COVID-19 Pandemic

Before the pandemic, the families were chosen by the head of the primary health centre, and each small group of students visited one family. However, during the pandemic, families refused to be seen by the students and were reluctant to use the device for virtual communication. Therefore, we decided that each small group virtually visited one family of this group chosen by the member of each small group. The selected family had family members of a variety of ages.

Three small groups with one instructor-guide discussed the health problems identified and chose priority health problems to be given integrated, comprehensive, and holistic intervention. The instructor-guided group discussed how to accomplish the intervention, including obstacles that might happen; and discussed the results of the intervention. There were 234 medical students, 129 nursing students, and 106 nutrition students in this implementation, or 469 students in total. Thus, there were 106 small groups consisting of 1-2 medical and nursing students and one nutrition student.

Preparations

All students were required to attend a briefing class delivered using an online meeting platform. Students were given information about IPE (principles, objectives, and benefits for students' future profession) and its online programme plan. Students listened to the explanation and were able ask questions afterwards. Once there were no more questions, students continued the preparatory activities with the interaction between group members using social media platforms. Each small group had one week to interact with each other and their supervisor to choose the family to be involved in the IPE programme.

Each small group of students' activities:

- First, students virtually visited the family, accompanied by the instructor, and explained

their objectives, and built trust with family members

- Students virtually visited the family once or twice to measure and identify the health problems of all family members
- Students virtually discussed the problems identified and planned the intervention with the team member, then discussed them with the instructor
- Students implemented a virtually integrated health intervention by considering empowering the family member using several methods, such as giving education with PowerPoint and video, leaflet, demonstration of healthy food, etc.
- Students monitored and evaluated the intervention outcome and presented it in a seminar consisting of nine small groups with three instructors.
- Students virtually visited the family to give feedback and expressed their gratitude.
- Finally, the family representative filled in the assessment form for the team member.

Study design

The design of this study was observational with a cross-sectional approach. Study subjects were 3rd-year students from medicine, nursing, and nutrition from the Faculty of Medicine UNDIP who finished IPE implementation using online methods.

Sample size

With the target population of 469 students, a 5% margin error at a 95% confidence interval, and variance of the population (P=50%), we needed at least 285 respondents (Taherdoost, 2017). Thus, 470 questionnaires were distributed to all students using the G-form application to get the minimal sample size.

Data collection

A modified questionnaire of the Interdisciplinary Education Perception Scale (IEPS) with a 6-point Likert scale was used to measure students' perceptions (Luecht, 1990). This tool is widely used to identify students' perceptions of inter-professional education. The modification replaced the words "individuals in my profession" with "I am" in all 18 statements, we reversed several unfavourable statements into positive ones and added a question about students' motivation toward the programme. The modifications did not change the meaning of statements. Therefore, we did not conduct a validity and reliability test for the questionnaire.

Open-ended questions were added to explore the programme's positive and negative aspects, the reasons for students' lack of motivation toward the programme, and obstacles during implementation. The questionnaire was then equipped with an explanation of the study objectives, anonymity, confidentiality, and the importance of voluntary-based participation before the student signed the informed consent form and proceeded to fill in the questionnaires.

Secondary data on students' GPAs were obtained from Academic Sub-Division. The data from the students were collected via an online platform using the Jotforms. All students were given links to online questionnaires via social media platforms such as WhatsApp and Line.

Results

Three hundred twenty-one (321) out of 470 students from three study programmes returned the questionnaires (68.3 % response rate). This sample was slightly higher than the minimum sample size required. Table 1 presents the students' characteristics, and we checked that the composition number of students was still in line with the percentage of students from each study programme.

Table 2 presents students' perceptions toward the IEPS questionnaire about virtual IPE implementation during a COVID-19 pandemic. The highest rate of their perception was "I also need another health profession", with a mean of 5.65 ± 0.41, and the lowest was "I have been well trained" (mean 4.92 ± 0.73).

Table 1: Characteristics of respondents

	Variable	n	%
1.	Study Programme		
	- Medicine	173	53.9%
	- Nursing	75	23.4%
	- Nutrition	73	22.7%
2.	Gender		
	- Male	67	20.9%
	- Female	254	79.1%
3.	GPA		
	- ≥ 3,00 (high)	314	97.8%
	- 2,50-2,99 (moderate)	7	2.2%

Table 2: Students' perceptions toward IPE implementation during COVID-19 pandemic

No	Descriptor	Perceptions						Mean ± SD
		1	2	3	4	5	6	
1.	I am well-trained	50	213	46	8	3	1	4.92 ± 0.73
2.	I can work closely with other professions	102	205	12	2	0	0	5.27 ± 0.556
3.	I can show my professional autonomy	157	157	5	0	0	2	5.45 ± 00636
4.	I respect the work of my profession and other professions	160	156	5	0	0	0	5.48 ± 0.531
5.	I am positive about the purpose of this programme	99	199	19	4	0	0	5.22 ± 0.607
6.	I need to cooperate with other professions	185	134	2	0	0	0	5.57 ± 0.508
7.	I am positive about the expected contribution and achievement of abilities	117	190	14	0	0	0	5.32 ± 0.553
8.	I also need other professions	210	109	2	0	0	0	5.65 ± 0,491
9.	Students from other study programmes respect my profession	147	154	16	4	0	0	5,38 ± 0.64
10	I trust the performance of other professions	148	165	6	2	0	0	5.43 ± 0.57
11	My status is not higher than other professions	149	129	14	9	12	8	5.15 ± 1.16
12	I try to understand the abilities and contributions of other professions	152	165	4	0	0	0	5.46 ± 0.52
13	I'm quite competent	81	203	34	3	0	0	5.13 ± 0,61
14	I am willing to share my information and knowledge of my skills with other professions	180	139	2	0	0	0	5.55 ± 0.51
15	I have a good relationship with other professions	143	167	10	1	0	0	5.41 ± 0.569
16	I respect other professions	202	117	2	0	0	0	5.62 ± 0.49
17	We cooperate well each other	134	158	26	2	7	0	5.31 ± 0.67
18	I am often asked for advice by students from other professions	83	179	48	9	2	0	5.03 ± 0.76

6-point Likert scale: 1: Strongly Agree, 2: Moderately Agree, 3: Somewhat Agree, 4: Somewhat Disagree, 5: Moderately Disagree, 6: Strongly Disagree

In Table 3, we compared students' perceptions based on their characteristics. There was no significant difference in their perception based on the type of study programme, gender, or GPA. Students who are motivated are perceived as significantly higher than students with no reason. However, both students perceived each item are above moderately agreed (mean 5.38 ± 0.27 and 5.16 ± 0.32, respectively).

Table 3: Comparison of students' perceptions

Categories	Comparison of perceptions of all items	Mean ± SD	*p*-value
Study Programme	Medicine	97.06 ± 6,9	0.071
	Nursing	96.21 ± 7,2	
	Nutrition	94.90 ± 6.9	
Gender	Male	96.03 ± 8.1	0.99
	Female	96.46 ± 6.7	
GPA	≥ 3,00 (high)	96.38 ± 6.9	0.9
	2,50-2,99 (moderate)	96.29 ± 7.8	
Motivation	Have motivation (279 students)	96.90 ± 6.8	0.01*
	No motivation (42 students)	92.86 ± 7.1	

Students' perceptions from open-ended questions

Although implemented as virtual activities, most students wrote that the IPE programme was a valuable experience, and they were able to take advantage of the programme's learning outcomes. The answers to open questions reveal several themes that can be categorised as follows:

1. The benefit of IPE:

1.1Teamwork:
Students feel that although virtual IPE programme and using a family from a group member, they still can identify health problems to be followed up on. They also wrote that they still could learn about community health problems and have experience collaborating with students from other professionals.

"…IPE programme gives us an experience in collaborating with other health professionals students." (NutriF05)

1.2 Understanding professional's role and function:

Students can see how other health professionals work, share knowledge, and learn something new from other health professionals. During IPE implementation, they also know to be professionals in their field, the relationship between health professionals, and soft skills development.

"I can share knowledge and learn something new from students of other professions that have never been taught in my field" (MedM25)
"IPE programme gives me an opportunity to have a relationship with other health professions." (NursF17)

1.3 Communication:
Students felt they received an advantage by practising communication with other professions, meeting and interacting with the community members, increasing their confidence when conducting health education to a family member, and augmenting their relationships and friends.

"It increases my soft skill, especially communication" (MedF31)

"I can learn how to communicate not only with other students but also to family member." (MedM44)

1.4 Application of knowledge:
Students also felt that after having experience with the IPE programme, they changed how to apply their knowledge to solve health problems more comprehensively with teamwork collaboration.

"I have an opportunity to apply my knowledge that I gain in the class by collaborating with other students and by directly interacting with the family." (NutriF98)

2. Attainment of learning objectives

Most students wrote that the virtual IPE implementation with community representatives from one family still gave them the experience of identifying health problems and providing education and counselling to a family member. Besides, they can apply knowledge on how to provide an intervention to students from other health professions.

"This programme broadens my view, relation, and experience to collaborate, develop my soft skill, and the most important is to have direct experience with community health problems." (Nutrition_F78).

3. Obstacles of virtual IPE activities:

Several obstacles were revealed, such as matching time with all family members and team members, limited discussion time, imbalance of the contribution among team members, signal interruption, less responsive family members, and limited choice of media for intervention.

"Matching schedule among us is one of our difficulties, so we have limited time to discuss in a team as well as a bad internet connection." (NutriF35)

"When the programme is online, we face difficulty to communicate with the family and limited choices of media for intervention." (NursF50)

4. IPE as an obligatory programme

A few students had negative perceptions of the IPE programme. The IPE programme was seen as a burden of tasks. Students felt no motivation and only wanted the score. One student thought that the score was not proportional to the effort.

"I think the IPE programme was a burden. I had no motivation to do this programme; I just want to get the score." (NursF27).

Discussion

This study showed that the virtual IPE programme with the students' families as community representative due to the COVID-19 pandemic was still positively accepted by most students. Moreover, most students respect students from other health professions and are aware of the necessity to collaborate and share information.

The result of this study is in line with previous research, which conducted the IPE programme in normal conditions and reported that participating in the IPE programme made students appreciate and respect other health professionals' roles and scope (Ntsiea *et al*, 2021). In addition, when implemented in the community setting, IPE facilitates students to learn how to solve community health problems collaboratively (Asmara *et al*., 2019).

The students' comments revealed satisfaction with communication skills and a positive attitude toward professional's roles. The students also felt they could increase their confidence when performing health education. IPE learning activities helped the students acquire essential skills such as decision-making, leadership, creativity, and problem-solving with approaches from different angles (Brandt, 2017). Within a small group in this IPE programme, the students were involved in each activity and were close to students' efficacy beliefs about their capability to perform tasks.
Based on the types of the study programme, there was no significant difference in students' perceptions of the IPE programme. This similarity might be caused by a similar kind of

health professional, including increasing the awareness of the IPE concepts, which is also mentioned in students' comments. Thus, within the IPE programme, students will understand other health professions' roles and responsibilities, including their necessity for another health profession (Brandt, 2017). However, another study (Fallatah *et al*., 2015) reported that medical students are perceived as lower than other health professionals due to their school's academic burden and tight curriculum.

There was no significant difference between female and male students in their perception of the IPE programme, which is inconsistent with another study (Yune *et al.*, 2020) that reported that female students perceived the IPE programme more positively than male students. In addition, female students have a more robust professional identity than male students, which influences their opinions (Delunas, 2014). Nevertheless, Zeeni (2016) reported that differences in perceptions between genders decreased at the end of the IPE programme.

Similar to another study (Yune *et al*., 2020), this study found no significant difference in students' perceptions of high and moderate GPAs. The domination of students with high GPAs, a small number of students with an average GPA, and no students with low GPA might influence this result.

Few students with no motivation have negative perceptions of the IPE programme, and those students felt that the IPE programme was an obligatory burden. Another study also identified that the main barriers to IPE were scheduling, rigid curriculum, and lack of perceived value to IPE (Curran *et al*, 2005). Other reasons for negative perception are miscommunication due to low confidence, differences in thinking, and leadership culture that confuse their professional role (Lestari *et al*., 2020).

Obstacles of virtual IPE implementation identified in this study were: unmatched time between family members and team members, limited discussion time, imbalance of the contribution among team members, signal interruption, less responsive family members, and limited choice of media for intervention. This result is similar to implementing the IPE programme in the expected condition (Curran *et al*. 2005), except for signalling trouble and limitation of intervention. However, during the pandemic era, almost all educational activities are also used online, and nearly all lectures have flexibility in the schedule. This situation might interfere with the IPE virtual activities plan.

A limitation of our study is that our data were obtained from a single institution and investigated students' perceptions about the virtually IPE programme during the pandemic, which might vary in other institutions. In addition, we selected the family for community representation from one of the students' families, which might influence the opportunity of those students to communicate with community members outside their family.

In conclusion, our study shows that the virtual implementation of the IPE programme in the community due to the COVID-19 pandemic is still relevant and positively perceived by the students from all study programmes involved in this programme. Furthermore, there was no significant difference in opinion due to gender and GPA.

Obstacles during virtual IPE implementation need to be explored. Further research is also required by involving several institutions to get more information about virtual IPE implementation, especially in the community setting.

Ethical considerations

Health Research Ethics Committee Universitas Diponegoro with No: 205/EC/KEPK/FK-UNDIP/VI/2021 declared this research was appropriate and fulfilled the Ethical Clearance standard.

Conflict of interest

We declare that there is no conflict of interest in this research.

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