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Contributing Factors of Acceptance and Rejection to Interprofessional Education: Undergraduate Students' Perception

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Abstract: Interprofessional education (IPE) is considered to be a way to introduce health profession students on the importance of teamwork in providing excellent healthcare services. There has been no report that explores students' perception toward IPE before implementation of the program. This study aimed to examine the factors that might affect students' attitude towards IPE and explore the underlying reasons of their attitude. The population of this study was students of final year of preclinical program of Medicine, nursing, dentistry and midwifery of Sultan Agung Islamic University (Unissula) Indonesia. Attitudes towards IPE were collected by questionnaire adapted from RIPL which has been validated with alpha Cronbach 0.885. The quantitative data were analyzed using multivariate logistic regression. Uni-profession FGs were conducted to explore the underlying reason of students' attitude toward IPE. Qualitative data were evaluated by two experts in medical education with the help of ATLAS Ti software. The data were evaluated from 389 students. Of this total, 210 (52.8 %) of them had RIPL score low–moderate. Students' health professional program (RR=15.99 CI95%=6.18-41.43,p= 0.000) and GPA (RR=2.76 CI95%= 1.54-4.92 p=0.001) were the most dominant variable of the readiness to IPE. Qualitative data revealed that motivation to enhance knowledge and clinical skills and desire to discuss the roles and responsibilities of each profession were the main reasons for students' approval to IPE. Conversely a lack of confidence and role blurring were the reasons for rejecting IPE program.
Key Words: Interprofessional education (IPE), Readiness for interprofessional Learning Scale (RIPL), Learners' background, Learners' perceptions.

Introduction:
Current health problems become very complex, since health care is not only focused on the effort to cure the disease, but also in the promotion and disease prevention efforts. The entire healthcare professionals must work together to realize the comprehensive health services in order to obtain maximum results service. However, studies reported that there is a less effective communication, poor interprofessional relationships, and lack of trust between team members, and underestimate the role of other health professionals which in turn give a negative impact on collaboration among health professions.[1] These factors hinder the involvement of team members in collaborative decision-making both in patient care and in the implementation of health care service. In fact, "Hospital Patient Safety Standards" issued by the Joint Commission on Accreditation of Health Organizations, Illinois, USA, in 2002 stressed the importance of communication as a standard for patient safety. Due to negligence and poor health care team coordination, a study conducted in Australia reported that there were 16.6% of patients exposed to unwanted incidents; 51% of them have been handled, meanwhile 13.7% of the patients who underwent the discomfort suffered from permanent paralysis and 4.9% patients have died.[2]
To minimize the problems of interpersonal medical team, the WHO recommends interprofessional Education (IPE), by giving opportunity to students from different health professions to learn with, from and about each other profession. Such learning pattern is recognized as a means to promote and develop the skills needed by students to collaborate in implementing health care system with patient safety approach.[3] Interpofesional education should provide an opportunity for learners to perform collaborative learning, so that they can learn how to develop an effective collaboration as interprofessional health care team in the context of formal education.[4]
Apart from the WHO 's call, western countries have developed interprofessional education program.[3,5,6] Countries in other regions, such as the Middle East has also begun implementing

IPE.[7] Although this region has a very strong culture of social hierarchy and complex health problems, there have been very few reports on the application of IPE within ASIA region.

Given the importance of interprofessional education for the health professions, Unissula considered to implement a pattern of interprofessional education for its health professions students. For this purpose, it is necessary to study the students' perceptions toward IPE and the various factors that influence these perceptions. It was reported that gender, age, social status, religion, health profession education background will affect the attitude towards IPE.[5] Various reasons for acceptance and rejection of the IPE program should also be explored in order to be considered in the implementation of the program.

Previous study reported that age affects perceptions of IPE.[8] There were different perceptions toward IPE between students from different health professions education backgrounds. It was reported as well that the general perception of the student prior to attending the IPE program was previously negative [6] and after participating in the IPE program it became more positive.[9] Factors on students which potentially have influence on their attitudes toward IPE other than age and health education background have not been explored and reported in the literature.

Methods

The population of this observational study was final yeas medical, nursing, midwifery and dentistry students. Samples were taken from a population with inclusion criteria such as students attend the class on the day when the data collected and they answer all questions in the questionnaire. The data of attitudes towards IPE was collected using Readiness to Interprofessional Learning (RIPL) questionnaire developed by Parsel G and Bligh J [10] which was adapted into Indonesian context. The RIPL questionnaire was translated into Indonesian by double translation method; firstly, the original questionnaire was translated into Indonesian by linguists, then Indonesian translation version was translated back into English by other linguist. Furthermore, the result of the final English translation of the questionnaire was matched with the original version by both linguists. If the language expressed no significant difference between the translated version and the original one, it is stated that the Indonesian translation of the questionnaire is feasible. To determine the internal consistency and validity of each option, the translated questionnaire tested. Data of students' demographic factors was collected by questionnaire. Data of students' GPA was retrieved from Unissula students' database.

A risk factor was considered to be potential confounder if in the bivariate test it had P-value <0.25, which would be considered as a candidate for the multivariate model together with all known risk factors for attitude toward IPE. Ninety-five percent confidence intervals were considered based on the standard error of coefficient estimates. Relative risks were estimated by the methods of maximum likelihood. SPSS 16 for windows was used to analyze the quantitative data.

The qualitative research was conducted to find out the underlying reasons of students' approval or rejection toward IPE. Data were taken by uni-profession focus group discussions. The participants of FGD were those who had positive and negative perception of toward IPE, which was considered based on their RIPL score. However, their participation within the FGD was voluntarily basis. If the student was not willing to participate in the FGD, another student who had similar criteria of RIPL score would take over their positions. The uni-profession FGDs were attended by 8 to 10 students and were video recorded. The discussions were transcribed by experts, and the results of transcription were conveyed to the participants of FGD for reconfirm the content of discussion. To confirm the reliability, the analysis of the qualitative data was performed by two medical educationalist applying ATLAS Ti qualitative data analysis software. The themes which were subsequently used as coding for data analysis were defined by both experts. Firstly, each expert assigned the theme coding individually, then they met to agree on a theme for coding. The coding that has been agreed was used to analyze the statements within the discussions. All participants were provided informed consent, and the ethics committee of the Faculty of Medicine, University Islam Sultan Agung approved the study.

Result

The overall population is 470 students (240 medical students, 120 Nursing students, 60 Midwifery students and 50 Dentistry students), however, among them, only 420 students took part the study and 30 students excluded as they did not fill out a questionnaire completely. Thus, in total the data were collected from 398 subjects.

The suitability of the correlation matrix was determined by the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. The numbers of factors retained for the initial solutions and entered into the rotation were determined with the application of Kaiser's criterion (eigenvalues >1). The initial factor extraction was performed using principal component analysis. Finally, we performed an exploratory factor analysis using promax rotation to define the clearer structure. The KMO index was 0.928, indicating sampling adequacy, while the Bartlett sphericity chi-square index was 5388.09, with $p<0.001$ indicating that null hypothesis that the correlation matrix was an identity matrix and therefore unsuitable for factor analysis was rejected. Exploratory factor analysis yielded that of the 19 components, there were three components that had initial value of eigenvalues greater than 1 (Table 1). Thus, all of the 19 components could be grouped into 3 groups. The first group had a value of 8.002 and it represents 42.115 % of the variance. The second group and the third groups had value of 3.693 and 1.036 which explained 19.437% and 5.452% of the total variance respectively. Therefore, all components could explain 67.004% of the variance or only 32.99 % of the variance lost or was not represented. Since there were more than 50% of the variance could be explained, the results of the factorial analysis can be used.

Table 1: Matrix of factor loading for each question				
	Items	Factor loading		
		Subscale 1	Subscale 2	Subscale 3
Q1	Learning with other students will help me become a more effective member of a health care team	0.767		
Q2	Patients would ultimately benefit if health care students worked together to solve patient problems	0.788		
Q3	Shared learning with other health care students will increase my ability to understand clinical problems	0.807		
Q4	Learning with health care students before qualification would improve relationships after qualification	0.790		
Q5	Communication skills should be learned with other health care students	0.790		
Q6	Shared learning will help me to think positively about other professionals	0.832		
Q7	For small group learning to work, students need to trust and respect each other	0.734		
Q8	Team-working skills are essential for all health care students to learn	0.760		
Q9	Shared learning will help me to understand my own limitations	0.771		
Q10	I don't want to waste my time learning with other health care students		0.925	
Q11	It is not necessary for undergraduate health care students to learn together		0.929	
Q12	Clinical problem-solving skills can only be learned with students from my own department		0.874	
Q13	Shared learning with other health care students will help me to communicate better with patients and other professionals	0.739		
Q14	I would welcome the opportunity to work on small-group projects with other health care students	0.777		
Q15	Shared learning will help to clarify the nature of patient problems	0.804		
Q16	Shared learning before qualification will help me become a better team worker	0.736		
Q17	The function of nurses and therapists is mainly to provide support for doctors		0.646	
Q18	I'm not sure what my professional role will be		0.836	
Q19	I have to acquire much more knowledge and skills than other health care students			0.747

The loading factor of each question (Table 1) seemed to be different from the original RIPL questionnaire compiled by Parsel G and Bligh J.[10] This difference could be due to the distinction of the number of study subjects of both studies. Parsel G and Bligh J [10] reported that studies the data were taken from 120 students of 8 programs, those were medicine, dentistry, physiotherapy, nursing, occupational therapy, orthopedic, radiography and diagnostic radiology departments, each of them was represented by 15 students. Those numbers of samples was less than 10 times the number of tested item questions (190). On the other hand, the samples of this current study were taken from: 240 medical program were represented by 208 (86.7%) students, 120 students of nursing program were represented by 99 (82.5%) students, 60 students of Midwifery program were represented by 44 (73.3 %) and 50 students of Dentistry program were represented by 44 (88%) students. The total number of samples also met the prerequisite; 10 times the number of total question tested or they should be more than 190 subjects.

Based on the factorial test, the subscales had name or category different from those of the original RIPL's. "Teamwork and collaboration" was given to subscale I, which included questions : q1, q2, q3, q4, q5, q6, q7, q8, q9, q13, q14, q15, 16, and "role- understanding" was given to subscale II, which consists of q10, q11, q12, q17 and q18. Validity and reliability test for all 18 items of the inquiry has been conducted, and it is found that the translated RIPL was reliable with Cronbach alpha 0.885 and the overall questions were valid, with r corrected item - total correlation > 0.138.

Data of possible factors which might influence students' perception toward RIPL were obtained and statistically analyzed. Those were health professional program, gender, age, and GPA. The judgment of whether a participant could be considered as being a high or a low scorer on the RIPL was considered based on the median score. Those who scored under the median (70) were considered as having low-moderate score of RIPL, and those who scored above median were considered as having high score of RIPL.

Table 2 informs the result of multiple bivariate analyses which was evaluated using regression logistic. Among all samples 52.3% of them had low-moderate score of RIPL. This result indicates that fewer students had good readiness to and had positive attitude toward IPE. The distribution of girls was twice as many as the boys. The number of both genders who had low-moderate RIPL score was higher than those who had high RIPL score. The result of chi-square analysis indicated there was no influence of gender to RIPL score (p=0.890). There were 5 times more students aged 20 years or older than those aged 19 years and younger. Students who had high score of RIPL were almost similarly distributed with respect to gender and age. However, students aged 20 and older had a tendency to have a high RIPL score in comparison to those aged 19 and younger. Statistical analysis reveals that age did not influence RIPL score (p=0.363). In contrast, other study reported that new students are likely ready to learn with other professions, while the senior students tend to choose to study with fellow profession.(8) In this study, the data is not taken from a different group of year entry, so that the age group of respondents was not much different. It is necessary to study the students' perception toward IPE from the different year entry of students to ensure the effect of age on the perception of IPE.

Midwifery students (85.1%), nursing students (80.8%), and dentistry students (61.4%) more likely to obtain a low-

moderate RIPL score. On the other hand, only 30.3% of medical students obtained low-moderate RIPL score and the remaining 69.7% had a high score of RIPL. These findings indicated that in general most medical students were ready to have IPE. Statistical analysis indicated that study program affect RIPL score (p = 0.000). Similar findings were reported by other study.[11] Meanwhile, students with GPA <2.75 and 2.75 to 3 mostly had low-moderate RIPL score, while those with GPA> 3 tend to have high RIPL score. The result of chi square analysis indicated that GPA affected RIPL score (p = 0.006). Students who had GPA> 3 obtained high score of RIPL, meaning that they tend to have good readiness to have IPE. In general, GPA describes how well a student masters the knowledge and science, which in turn will make them more confident with the knowledge. Both mastering knowledge and confidence are becoming important assets when they have to discuss and learn together with other profession health professions.

Qualitative research has been conducted to find out more in depth reason for students having positive attitude (agree) and negative (disagree) toward IPE. Data were collected using focus group discussions with students of each profession. A total of 34 students consisted of 10 medical students, 8 dentistry students, 8 midwifery students, and 8 nursing students participated in the focus group discussions. Table 3. is the description of participants' perception based on the coding which has been agreed by the experts.

Table 2: Some factors which might influence RIPL score

Variable	RIPL Score				p value
	Low-moderate [210 (52.8)]		High [188 (47.2%)]		
	N	%	n	%	
Gender					
Male	69	52.3	63	47.7	0.890
female	141	53.0	125	47.0	
Age					
≤ 19	36	58.1	26	58.1	0.363
≥20	174	46.4	162	41.9	
Health professional program					
midwifery	40	85.1	7	14.9	0.000
nursing	80	80.8	19	19.2	
Dentistry	27	61.4	17	38.6	
Medical	63	30.3	145	69.7	
GPA					
<2.75	71	62.3	43	37.7	0.006
2.75 - 3	55	57.9	40	42.1	
>3	84	44.4	188	55.6	

Table 3: Coding of qualitative data

Coding	Example of description	Medical	Nursing	Dentistry	Midwifery	Total
AGREE						
IPE will teach students work collaboratively and respect other profession	… but I just want to add . Because in a variety of cases, there must be a specific case that we definitely will require collaboration between doctors, dentists, medical specialists and nurses. So for example of dentistry, in some emergency cases, we have to refer the patient to a specialist in internal medicine ... so if given a module that requires the cooperation which is meant to teach us to cooperate with other (profession) I do agree, as it will make us a better practitioner in the future. (dentistry student) Based on my experience of practice in the field (hospital), sometimes of clinical year medical students (junior doctors) less know about the patients' problem in detail as they did not with the patients the whole day, but we, the nurses do that. But may be because of their prestige, they do not want to ask to us (about what is going on to the patient). Usually finally we just keep silence, although we were in the same room and deal with the same patient. I think our relationship would not like that if we had been together since the beginning of the meeting to learn together. There will be no such prestige. So I strongly agree with IPE and tried to be ready. (nursing student)	3	4	2	2	8
Avoid mall practice	If we can learn together and work well together, then the patient can be treated appropriately, quickly and no medical errors (medical student)	2	0	0	0	1
Discuss and understand own and other	I would say that IPE would be very good for us students, because before we plunge into the real world of work field, we've got an idea of ??how	4	1	4	3	9

professions' roles and responsibility and are able to distributes roles	we should interact with other professions, discussed the case in class and immediately distribute tasks for each profession. (Midwifery student) I agree with IPE, Mom. Why? Thus this will be something exciting. We can share knowledge around patient cases. We can educate and share tasks with other professions. In a series of treatments that I do, I need communication and sharing of roles, such as nurses should do this, nutritionist should educate patient concerning their intake and etc. what we do not want to happen is when we treat our patients each of us do not know what should be done and to what extent he had to do . Well actually it could be discussed in IPE (medical student) By learning together (with other professions) at least we want to understand and know other professions, we must understand the role of the other (professional), because each profession has contribution (for patients' treatment). Once we know what is the role , then we have to work on, ands to be able to create inter-professional collaboration ... (nursing student)					
Understand own limitation and need other profession's help	Every profession must have limitation, so they have to work in collaboration with other professions. By learning together ... we can learn together, interact and help each other. (nursing student) Perhaps in cases such as surgery, I often saw a film, the nurse must know what tools should be prepared for the surgery. And in fact surgeon cannot do the surgery alone. He needs the help of other health profession such as nurses, anesthesiologist, and others. By doing discussion together we can find our flaws that could be done by other professions. (medical student)	3	1	2	1	6
Each profession has different knowledge background so as a team need to learn how to discuss things	The difference of knowledge and perceptions of nurses and doctors about the patient's condition could impact negatively on the patient. For example, the nurse explained to the patient that the problem is A, but doctor said B, this turned out a matter. In order to achieve a common perception of the patient's case, it would be better if these professions discuss the patient cases together, and it can be done and familiarized since in college. And I think IPE is good way to resolve the problem. (medical student)	1	0	1	0	2
Improve, share and learn knowledge and skill from each other profession	I strongly agree and am ready for IPE, *insyaAllah*, because with them (other professions) I will be able to improve my knowledge. For example, as, I am not expert in the field of nutrition, when we study with nutritionist, I can get nutrition related information from them so it will improve my knowledge (midwifery student) May be, we can share our knowledge to them as well (midwifery student) I have a positive thinking that later on (in IPE class) most what we do with them (other professions) will be sharing knowledge. (nursing student)	1	1	3	8	13
Improve soft skill: communication	I think what we need and will improve during IPE is communication skill with other professions. Because if we use the module system with small group discussion, our skill to argue and explain will be trained, so I believe that it will increase our communication skills (Dentistry student) In my opinion, soft skill such as communication can be developed if we learn together with other professions (medical student)	5	1	2	0	8
Improve soft skill: leadership and management	… in a medical team, doctor usually acts as a leader and manager. So we have to have a real workout. I know IPE will be a perfect place for us to train our leadership skill. So I agree. (Medical student)	1	0	0	0	1
Discuss and solve patient problem	During IPE we can solve patients' problem together with students from other profession. We can discuss what actions should be taken to solve the problem, so that we can give comprehensive care to patients. (medical student)	1	1	2	1	5
DISAGREE						
Less confidence	I don't think that we will be able to learn with them (medical students), medical students are more capable, so we are lazy to join IPE as we are not confidence ... (dentistry student) I want to add a little. We are not confidence so we think that when we have to assemble with other professions such as medical group we could not keep up, so Mom, we are so scared, we could not do anything there, we're low. So that's why we do not agree with IPE. (Midwifery student)	2	2	6	4	14
In real practice, other health profession is	I'm not sure that we would be able to learn together with them (medical students). You see, when we did our practice at the hospital we never communicate each other. They just want to interact with their peers from medical program. Although we took care of a patient, but we never	2	4	1	0	7

arrogant and underestimate others	interact. They asked the progress of the patient to the nurse in charge rather than to us, the nursing students. It seemed to me that they underestimate us. With this type of communication model, I do not think we'll be able to learn together. (nursing student)					
Do not trust other profession (they will take their roles when they know how to do)	By conducting discussion and sharing knowledge with other profession, I am worried that students from other profession other than medical, particularly nursing students will know more about how to handle the patient, about what to ask in history taking session and what treatment that should be given. Next, just like usual, they will do it (the medical practice) themselves in their private practice in the future, although we know that they should not do. I worry that professions other than doctor will take all of what supposed to be the responsibility of doctor. (Medical student)	4	0	2	0	6
Logistic problem: facilities and schedule	I think IPE class would be difficult to conduct, because there will be definitely a time constraint. Our class schedule is so full from the morning to afternoon; additional IPE class is certainly impossible. (Midwifery student) Well, a lot of friends who do not agree with IPE learning time because the conditions do not allow us to learn together with students from other faculties. Do you know why? Arranging time for our own SGD classes is somehow difficult, due to the facility and tutor problem. Besides, if all students of nursing, medicine and midwifery programs take IPE course at a same time do we have enough rooms for us altogether? I don't think so. So, sorry to say that it is impossible to have IPE course here. (Nursing student)	0	2	1	5	8
IPE for clinical year, not for preclinical year	I will agree for IPE if the program is for clinical year students, otherwise, I don't agree. (Medical student) For us, I think IPE would be applicable well if is for clinical year program (professional programs). In the hospital, we will meet all professions, handle the same patients together, so we can have much practice in collaborative practice. (nursing student)	1	1	0	0	2
IPE won't work because students have different knowledge background	Why do a lot of my friends do not agree with IPE, because we thinks that students from different programs must have different subjects to learn. If we have to learn together in a group of a round table, what will be discussed in small group discussion will not quite clear. We predict that most of the discussion will only debating things with no clear direction (midwifery student)	2	0	2	3	7
In real practice, there is no clear role boundary that will led to conflict in the discussion and practice	We still find unclear boundaries of roles and jobs yet, we have not been able to determine the detail of the division of work is like. So we worry that this will led to conflict during the discussion. (Dentistry student)	2	0	1	0	3
Own roles and responsibility do not have to be explained to others	So actually, we have our own roles and tasks and I think that there is no need to explain each other roles, as we should know. So for me, we don't have to sit together with other professions in IPE, as we will meet them as a team later on when we work as health professions in hospitals and public health service. (medical student)	1	1	0	0	2

Discussion

The quantitative results reveal that medical students had higher score of readiness for IPE compared to the other profession. This finding indicates that medical students were still idealistic concerning the concept of health care team collaboration. This finding is interesting as in contrast, some other studies reported that the RIPL score of medical students are generally lower than those of students from other health profession programs.[7,12] Nursing students on the other hand, have shown to be more receptive to the idea of collaborating with other health professionals compared to medical students.[13]

Students' back ground of study program and GPA were factors that influence perception toward IPE. These findings appear to confirm previous research which has suggested that students' attitudes towards IPE do differ on the basis of professional background.[14] Other study also reported that students with high professional knowledge quality seem to be more ready to learn with students from other professions in IPE.[15]

The qualitative data reveal that some of the themes that can be drawn from the statement in favor of the IPE those were: IPE would educate students for inter-professional collaboration and respect other professions, IPE can educate students to avoid malpractice, within the IPE students can discuss, understand as well as distribute the role and responsibility of own the profession and of other professions, within IPE students can understand their own limitation that make them to consider that they need help from professions, by involving in IPE students understand that each profession has different knowledge so that as a team they will feel the need to discuss inter-professionally to make up the perception, within IPE students can enhance knowledge through sharing and learning from each other professions, students can improve the soft skills of communication, students can improve leadership and

management skills, students can discuss and resolve patients' issues.

Meanwhile, those who disagreed with IPE argued as follows: they didn't want to have IPE because of less confident, they believed that IPE would not be run as some professions were arrogant and underestimate the other professions, they did not agree with IPE for their role and responsibility would be taken other professions, it was impossible to apply IPE due to scheduling and logistical reasons, the IPE is not appropriate for the level of pre-clinical year program, it was impossible to apply IPE because the participants came from different scientific backgrounds obviously that might led to confusing discussions, students disagreed IPE as there was no clear role boundary, students considered that roles and responsibilities did not necessarily be explained to other professions. The reason that IPE would increase students' knowledge and skill is the most common reasons given by students who agree with IPE (13 statements), and midwifery students were among the most who gave related statements. Students considered that by sharing knowledge and skills to and from each other professions definitely the most important factors that made them support IPE. Their expectations were in accordance with the goal of IPE, that students from two or more profession will sit down together and learn from and about each other professions. Literatures reported that after participating in IPE activities students perceived that they increased their knowledge and skills by teaching and learning knowledge and skill to and from other professions.[16] Sharing of ideas, knowledge, goals and problems is one of the benefits derived by the students from IPE activities.[17] Students also argued that IPE would give opportunity to students to discuss patients' problem and how to handle that problem. They believed that this would obviously avoid malpractice.

The other important reason that was often raised by students who agree with the IPE was that by conducting IPE they hope that they would understand the role and responsibility of own and other profession so that they could distribute the tasks according to their respective roles. Medical and dentistry students were the most students who gave opinions concerning this category. In FG this opinion was commonly used as counter opinion to those who did not agree with IPE because of unclear boundary of roles and responsibility within health practice in Indonesia. The reason that the IPE will be able to educate students to work as a medical team and educate them to respect other professions were often raised by students who agree with IPE. Students also hope that IPE can educate them to work collaboratively and respect other professions (8 statements) and nursing students expressed the statements the most. Student expectations that IPE will improve teamwork skills, can be a vehicle for them to discuss the role and responsibility was exaggerated because the evaluation result of the IPE program in some centers did show that after following the IPE activities student generally argued that IPE is importance for developing interprofessional teamwork that IPE can educate students to understand the role of other health professionals [18], and develop a positive attitude towards interprofessional health care.[17,19]

Students who agree with IPE also believed that by learning with other professions, they will develop communication skills (8 statements). The statements delivered by the majority of medical students. Some publications reported that IPE could improve students' communication skills.[18,20] In addition, medical students also argued that the leadership and management skills will be developed during the IPE program, as they would have experience to lead a health care team. The interesting thing is that it was only medical students who gave this particular reason. This might because culturally, medical profession was always placed and positioned as leader in the medical team hierarchy. Understanding that, medical students were charged to cultivate and felt the need to master these skills. Student leadership is essential to the success of IPE as it enhances students' willingness to collaborate and facilitates the long term sustainability of IPE efforts.[21]

The most common reason stated by students who did not agree or were not ready to IPE was "they were lack confidence to learn together with other professions" (14 statements). Dentistry students raised the statements most often. Four similar statements were also produced by midwifery students. Generally they were not confident because they feel they did not yet have sufficient knowledge and skills to be able to express opinions and gave appropriate explanations based on their own scientific background.

Phenomena of professional arrogance and stereotyping other professions were also another reasons expressed by students who disagrees with IPE. Nursing students were among the most who stated the reasons. Less optimism performed by nursing students to IPE was generally based on their unsatisfactory experience with medical students during their practice at the Hospital. Communication hindrance such as did not greet each other, did not ask and give patient's health progress information occurs in delivering health care practice. Here is an excerpt of their statement:

"I'm not sure that it would be able to learn along with them (medical students). You see, when I did health care practice at the hospital, we never communicate each other. It seems that they keep the prestige as medical students. They also did not want to ask, for example, how the patient's progress was, but more of a silent; they just wanna speak to their fellow medical students and did not want to ask nursing students although we were there the whole days to take care the patient." (Nursing student)

Nurse and physician relationship problems have been reported in so many previous studies, which generally affect the inharmonious of team work.[22,23] Such worries should not happen if the culture of learning in the workplace directed to interprofessional education. Various studies have shown that after taking part in IPE program, health care team communication in addressing the problem of patients actually get better and students value the interprofessional work.[20]

On the other hand, Medical and dentistry students' distrust to other professions is another reason for them to reject IPE. Medical students, for example, they worry that if they learn together with nursing and midwifery students, both professions will know more medical science and treatment of patients. As a result, they will take over the role of the doctor in providing medical services that should be a duty doctor. Such perceptions have emerged actually departed from the role conflict phenomenon that occurs among some health professions within health services in Indonesia. According to students, the government, in this case the ministry of health or other governmental office which in charge with health care service regulations do not provide clear role boundaries for each health professions and there is no punishment for violation of that role boundary. No clear boundary on the role of health professionals was also the other reason that made student did not agree with IPE. It is common in Indonesia that nurses can provide medical services independently and even to provide therapeutic treatment to patients, prescribing medicine, etc., a task that should be charged to the doctors. It is not uncommon that nurses perform medical services at a cheaper cost in the region although there are doctors in practice around. The regulation is clear that health care workers, including nurses and midwives may provide medical services in remote areas where there is no doctor in practice. Accordingly, if in a region any doctor iis on duty, he or she is responsible for providing medical service to the surrounding community, the task of the nurse is supposed to provide nursing services and the task of midwives is to helping normal baby delivering. According to students, the IPE can be run if there is clarity of roles of each profession. With regard to the

issue Miller [24] suggested that there should be made a clear distinction lines related to the role and authority of doctors and nurses.

Logistics and scheduling problems also another reasons proposed by students to not approve the IPE. According to them, it would be very difficult for principles of study programs to schedule IPE learning activities, as each program has their own curriculum and fixed schedule every semester. Facilities will also be a significant factor since IPE will need more classes for small group discussions and skill training. In addition, students also disagreed on IPE as it would make students confusion when students from various scientific backgrounds sit together to discuss a certain case, and the largest group which stated the reason were midwifery students. They said that the terminology, the area of study, and other basic things might be different, and it would make problem during the discussion.

With respect to their perceptions, students suggested that in order for IPE can be done some preparation should be made such as: organized training for tutors who will facilitate the IPE, so that tutors would have similar perception about what should be discussed during the IPE small group discussion, the curriculum team should prepare a prefect IPE curriculum with proper scheduling so that all students can take part in all IPE activities, student should increase their medical science and skills, students should be confidence, students should motivate to learn and students should have good communication and team-working skills.

Although we can explore students' perception toward IPE using 18 items of RIPL model of Indonesian version and explored the underlying reasons of students' perception, there is limitation of this study. Our sample was confined to a school of health professionals in Indonesia that might not represent all Indonesian students. Accordingly, the findings may be difficult to generalize because the sample was only derived from one institution.

Conclusion

The quantitative data analysis concluded that: among the whole respondents, 210 (52.8 %) of students had low - moderate readiness learning in IPE. Students' study program (RR = 15.99 CI = 6.18 to 41.43, p = 0.000) and GPA (RR = 2.76 CI = 1.54 to 4.92 p = 0.001) were the most dominant variables predict readiness to IPE. Motivation to improve knowledge by learning and teaching of knowledge and skills from and to other professions as well as the desire to discuss the roles and responsibilities of each professions becoming the main reason for students acceptance to IPE. Conversely, a lack of confidence and unclear role boundary of each profession were the main reasons for rejecting IPE. Overall reasons that students stated for rejecting IPE were challenges and warning that must be considered by the IPE curriculum development team and tutors of IPE.

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Authors' contributions

EL designed and performed the studies, analysed the data and drafted the manuscript. SY, IR, ES and AL contributed to performed the study, to the study's conception and helped draft the manuscript. All authors reviewed and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests. The authors alone are responsible for the writing and content of this paper.

Ethics approval and consent to participate

The study was approved by the Bioethics Committee for Medical/ Health Research Faculty of Medicine Islamic University of Sultan Agung Semarang (Letter No. 290/XII/2013/Komisi Bioetik) and was conducted at Sultan Agung Islamic University, Semarang, Indonesia. Taking part in the study posed no physical risks to participants. A covering letter explaining the study's goal, procedures and confidentiality accompanied the RIPLS questionnaires distributed to the participants. The authors explained to all students that participation was voluntary basis and that refusal to join the study would have no consequences. Consent was implied by the fact that respondents completed the questionnaire voluntarily. To ensure confidentiality we anonymized both the RIPLS questionnaires and the transcripts of the focus group discussion.

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