

Students' Perceptions on the Interprofessional Education: The Differences among Medical, Nursing, and Pharmacy's Student

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Abstract: Collaboration influences the quality of healthcare; therefore, collaboration skills must be owned by every member of the healthcare team. The knowledge about competencies and the role of each profession must be understood, so can avoid overlap of competencies, role, and responsibilities between professions. One of the learning methods can improve collaboration skill is Interprofessional Education (IPE), so that every member of healthcare can learn and discuss the case based on the competencies of each profession. This study is aimed to know the perception of Interprofessional Education (IPE) students of medical, pharmacy, and nursing science. This study used a pre-experimental design Factorial Design. This research was followed by medical, pharmacy and nursing students of the University of Muhammadiyah Malang, Indonesia. This study showed that perception of IPE before and after IPE was good for pre-test perception (85,95%) and post-test (94,60). Results from the Wilcoxon Test ($p < 0.05$) showed no significant changes in perception on IPE ($0.068 > 0.05$). However, the results of the analysis of each domain in IEPS for measure perception found a significant change in the competence and autonomous domain (0.000). In conclusion, this study shows that IPE can improve perceptions of competence, autonomy, and cooperation of IPE.

1 INTRODUCTION

Providing interdisciplinary care services that are able to work together between medical teams, such as doctors, nurses, pharmacy, and other medical personnel, must always be maintained to provide optimal and maximum health services. Collaboration between teams originating from multidisciplinary sciences must continue to be developed and improved by conducting good collaboration or what is commonly called Interprofessional Collaboration (IPC) (Plake, Schafermeyer and McCarthy, 2012; Donald A. Barr, 2016).

Lack of collaboration between medical teams will have a negative impact, especially on patients such as the case of Medication Error (ME), where ME is a condition or event caused by improper treatment by the medical team that endangers the patient (Zamjahn *et al.*, 2018). So far the case of Medication Error in Indonesia has not been recorded clearly, but according to a study conducted by Ernawati, Lee, and Hughes (2015), a study conducted in Bali in 2014 reported that out of 7,662 doses of the drug given were detected as ME with 1,563 (20, 4%). While the

most common causes of ME are Administration Errors (59%), Transcription Errors (15%), Dispensing Errors (14%), and Prescribing Errors (7%).

One form of efforts to create a good and optimal collaboration system is through integrated learning called Interprofessional Education (IPE). Where IPE is a method that must be followed by two or more professions, the team conducts learning or discussion to create effective collaboration in order to improve health service outcomes. IPE not only discusses the knowledge of each profession but also discusses the skills needed to contribute to the welfare of patients in terms of physical, mental, and social life so that patients or clients are able to improve a better quality of life holistically (World Health Organization, 2010).

The use of appropriate IPE methods must be applied to provide good results so that in IPE there are four essential components, namely knowledge, skills, attitudes, and abilities of the team, where the four components must be prioritized in learning IPE. So, the right IPE method will produce perceptions and readiness of students on a good IPE (Page *et al.*, 2009;

Stehlik, Frotjold and Schneider, 2018; Zamjahn *et al.*, 2018).

Increased collaboration and collaboration because in IPE, students are required to have good knowledge not only in terms of clinical knowledge and expertise, but also in organizational or team management, good attitude in collaborating in teams, and able to contribute in teams so that they have good team skills (Hall and Zierler, 2015; Lehrer *et al.*, 2015). Such competence will create good perceptions and readiness in all team members, change in better behavior, expertise, and knowledge and change in good organizational practices (Huang, 2008). Team members clearly know the rights and responsibilities that they get and live them, so that with this awareness of respect among interprofessional members (Ong *et al.*, 2017) while the readiness of team members is closely related to improving the quality of health services, because of members (Thannhauser, Russell-Mayhew and Scott, 2010).

The purpose of this study was to determine changes in perceptions of students of medical, pharmacy, and nursing in interprofessional education learning at the University of Muhammadiyah Malang, Indonesia.

2 METHOD

The research design used in this study is factorial design where researchers only use one group and do not use a control group in this study (Denise, F. Polit, and Cheryl, Tatano, 2013) and the selection of samples is done randomly, in the method of data collection using quantitative data which is done twice, namely pre (before) and post (after) because in measuring the level of perception carried out before and after the implementation of Interprofessional Education (IPE). The population in

this study was a medical, pharmacy, and nursing students of the University of Muhammadiyah Malang Indonesia, who participated in the 2017/2018 academic year IPE were 530 students using a non-probability sampling method. The number of samples used was 206 students consisting of 62 medical students, 49 nursing students, and 95 pharmacy students. This study has already approved by both Dean of Faculty of Medicine and Faculty of Health Science, University of Muhammadiyah Malang.

The research instrument used the IEPS (Interdisciplinary Education Perception Scale and Subscale) questionnaire to measure students' perceptions of Interprofessional Education (IPE) (Stull and Blue, 2016). The validity test uses the Spearman Correlation and the correlation probability value [sig. (2-tailed)] <0.05 (95% truth level) then made a comparison of r arithmetic and r tables and the reliability test using Cronbach alpha with provisions > 0.6 using SPSS 23. The Kolmogorov-Smirnov table shows that the Perception of data distribution is not normal because 0,000 is less than 0.05 and seen from the histogram that the medical, pharmaceutical and nursing study programs show an abnormal distribution.

3 RESULTS AND DISCUSSION

Table 1 shows that the study was dominated by 166 women with a percentage of 80.6%, while men amounted to 40 with a percentage of 19.6%.

Table 2 shows that perceptions before attending IPE in the three majors of medicine, pharmacy, and nursing have ethical perceptions where medicine is 90.3%, pharmacy 93.7%, and nursing science 93.9%.

Table 1: Respondent Characteristics by gender

Characteristic	Frequencies			n	%
	Medical Students	Pharmacy Students	Nursing Students		
Male	18	9	13	40	19,4
Female	44	86	36	166	80,6
Total Score	62	95	49	206	100%

Table 2: Perceptions before learning Interprofessional Education (IPE)

Study Program	Pre-Test		
	Perception	n	%
Medical	Good	56	90,3 %
	Moderate	6	9,7 %
	Poor	0	0%
	Total Score	62	100 %
Pharmacy	Good	89	93.70 %
	Moderate	6	6,3 %
	Poor	0	0%
	Total Score	95	100%
Nursing	Good	40	81,6%
	Moderate	9	18,4%
	Poor	0	0%
	Total Score	49	100%

Table 3: Perceptions about collaboration in Interprofessional Education (IPE) of medical, pharmacy and nursing students

Perception	Pre-Test		Post-Test		Deviation
	n	%	n	%	
Good	185	89,80%	195	94,70%	4,9%
Moderate	21	10,20%	11	5,30%	
Poor	0	0	0	0	
Total Score	206	100%	206	100%	

Table 4: Changes in perception about collaboration on IPE in medical, pharmacy and nursing science students

	Medical	Pharmacy	Nursing	Average
Z Asymp. Sig. (2-tailed)	-1,000	-0,333	-1,732	-1,826
	0,317	0,739	0,083	0,068

Based on table 3, it can be seen that the majority of respondents had good perceptions of IPE before, and after attending Interprofessional Education (IPE), there was an increase of 4,9 %.

Based on table 4, using the significance of $p \leq 0.050$ for medicine, pharmacy and nursing does not

show a significant value, the results of the combination of the three also found no significant value so that H_0 is accepted which means there is no change in perception about collaboration in Interprofessional Education medical students, pharmacy and nursing.

Changes in perception about the collaboration of medical, pharmacy and nursing students in each domain.

Table 5: Changes in perception about collaboration on IPE of medical, pharmacy and nursing students in each domain

Component	No	Pre	Post	P-value	Information
Competence and autonomy	1	4,66	4,96	0,001	Significantly different
	3	4,87	5,05	0,03	Significantly different
	7	4,77	4,87	0,136	No significant difference
	13	4,79	4,95	0,010	Significantly different
	16	4,90	5,11	0,001	Significantly different
		23,98	24,94	0,000	Significantly different

Component	No	Pre	Post	P-value	Information
Perception of the need to work together	2	4,79	5,03	0,000	Significantly different
	8	5,03	5,11	0,209	No significant difference
	9	5,00	5,17	0,012	Significantly different
	10	5,04	5,19	0,014	Significantly different
	11	5,01	5,09	0,200	No significant difference
		24,87	25,61	0,002	Significantly different
The need to collaborate	4	5,33	5,37	0,258	No significant difference
	5	4,97	5,09	0,024	Significantly different
	6	4,15	4,13	0,919	No significant difference
	12	4,90	5,05	0,028	Significantly different
		19,37	19,54	0,427	No significant difference
Understanding of other professions	15	4,51	4,58	0,562	No significant difference
	14	4,98	5,11	0,023	Significantly different
		9,50	9,70	0,184	No significant difference

Based on table 5, the average total pretest and posttest scores of domains the need to collaborate and understanding of other professions in the perception variable obtained p-values higher than the real level of 0.05, so that it was concluded that in the two domains, there was no difference between before and after giving treatment. While in domains 1 and 2, the p-value is smaller than the 0.05 level, so it can be concluded that in the two domains, there are differences between before and after treatment.

This study shows that the perception of collaboration before Interprofessional Education is good. This can be due to knowledge about the competencies, roles, and functions of each profession previously obtained. Knowledge greatly influences perception, considering that one aspect of knowledge is the psychological aspect, which is an aspect of human behavior after obtaining information (Judge *et al.*, 2015; Seaman *et al.*, 2017).

This research is in line with research conducted by Lairamore *et al.* (2013), in which this study was attended by 594 nutrition students, nurses, therapists, physical therapists, and speech linguists. This study uses RIPLS to test readiness and IEPS to test perceptions, proving that perceptions and readiness about collaboration before joining IPE are good. In addition, the study was conducted by Ernawati, Lee & Hughes (2015), where the research was conducted on 21 medicine, 16 nursing, and 22 pharmacies. The research examines the readiness to collaborate, using the RIPLS questionnaire, the research shows that before joining IPE, students have good readiness.

Research conducted by Zanotti, Sartor, & Canova (2015) was conducted on 421 students, while only 277 students followed this study until IPE was completed. The research uses IEPS questionnaire to see the perceptions and results of this study before participating in the IPE.

So this research is in line with previous studies that before participating in the IPE is good. Research conducted at the University of Muhammadiyah Malang, it can be because aspects of prior knowledge can influence the results of this study, besides the disproportionate number of samples can affect the results of research because of one of the groups that dominate in determining answers.

Perceptions about the Collaboration of Medical, Pharmacy and Nursing Students after following Interprofessional Education

The results of this study indicate that perceptions about the collaboration of medical, pharmacy, and nursing students after attending Interprofessional Education are good, where the results of this study show an improvement after attending IPE. The existence of this good perception is because when IPE, each student is able to master the competencies in Interprofessional Education, namely knowledge, skills, attitudes and team abilities (Purwanto and Pratiwi, 2017). The discussion process that involves each different profession will create more effective collaboration.

Research on Interprofessional Education which also measures perceptions about collaboration using IEPS is research conducted by Lairamore *et al.* (2013) which shows that after learning IPE perceptions that students have are good, in addition there is an increase between before and after participating in IPE. Ernawati, Lee & Hughes (2015) also examined with the same variables where this study also showed that the readiness for collaboration after Interprofessional Education was good and showed a positive increase. Another study that measures perception is the study of Zanotti, Sarto & Canova (2015), using IEPS which proves that after IPE

students have a good perception, and there is an increase in perception.

So that research on perceptions about the collaboration of medical, pharmacy, and nursing students after Interprofessional Education at the University of Muhammadiyah Malang shows that perception are good, and the results of this study are supported by previous research. This is because the method in IPE allows interprofessional students to discuss and cooperate in problem-solving, where each profession performs their respective roles and functions according to the ethical legality of the practice.

Changes in Perception on the Collaboration of Medical, Pharmacy and Nursing Students in Interprofessional Education and each Domain

This research shows that there is no change in perception about the significant collaboration after conducting Interprofessional Education as a whole. So that researchers look at each question domain, for the IEPS questionnaire, there are four dominants, namely competence and autonomy, perception of the need to work together, they need to work together, understanding in other professions (Stull and Blue, 2016).

The results of this study indicate that the overall of the IEPS questionnaire does not show significant changes, whereas seen from each domain, there are significant changes, namely in the domains of competence and autonomy, and the perception of the need to cooperate there are significant differences. Overall for IEPS there was no change before IPE students already had a good perception, although there was an increase, but the increase was not significant. That is because before IPE students have gotten about the material competencies, roles, functions, and legality of professional practice. So that knowledge about collaboration is good, considering that knowledge has psychomotor aspects that can affect students' perceptions, besides the disproportionate number of samples, will have an impact on the similarity of answers in dominating groups.

However, seen from each domain of perception for the domain of competence and autonomy and the perception of the need for cooperation there is a change in that because when IPE students can effectively discuss directly with other professions so that they are able to apply their knowledge according to the competence and autonomy of each profession. The results of this study are consistent with the research that Judge et al. (2015), where the study

conducted a pre-posttest method to see the readiness of 308 students from dentistry, nutrition, medicine, pharmacy, and therapists. Using the IEPS questionnaire generated that overall, there was no significant change in perception. However, seen in each domain, there are significant changes in competence and autonomy.

Another study that is in line with the results of this study is the research of Tsang et al. (2016), which was published in the Journal of Interprofessional Care participated by 21 University of British Columbia students, resulting in no significant overall changes but seen in each domain there were changes significant in the domains of competence and autonomy and cooperation. So, it was concluded that for the overall perception, there was no change, but in the domain of competence and autonomy and the perception of the need for cooperation, there was a significant increase.

The results of this study are not in accordance with research conducted by Seaman et al. (2017), where the study was attended by 51 students from seven professions who participated in the IPE program for 13 weeks, where this study uses pre-post measurements that result in an increase in readiness for IPE on a "teamwork & collaborating" scale with a significance value of 0,000 and a scale of "positive professional identity" with a significance value of 0.001. Research conducted by Gunaldo et al. (2015) found that there was a change in readiness at the IPE when viewed from per item and domain; namely, question item 18 "I am not sure what my professional role will be" and the domain of roles and responsibilities. The journal revealed that the research was only conducted with small respondents so that overall IPE readiness was not significant, and only one question and domain of significance was significant. Besides the significant results in that section, it was difficult to determine the factors associated with these changes.

The difference in the results of this study is because medical, pharmacy, and nursing students of the University of Muhammadiyah Malang know how to collaborate and collaborate, professional identity, and professional roles and responsibilities because before learning about professional identity, roles, and responsibilities and cooperating on previous material.

The researcher realizes that this study still has shortcomings and limitations in its implementation, the following are the limitations of the study as seen from the bias factors including the uneven proportion of samples because the number of pharmacy students who dominated in this study, influenced the results of this study. It is hoped that further research will

involve a larger population so that it can provide more significant results.

4 CONCLUSIONS

The conclusion of this study is the perception of medical, pharmacy, and nursing students respectively, both before and after undergoing interprofessional education. Despite an increase in perception of IPE, the results are not significant. However, in the domains of competence, autonomy, and cooperation, there is a significant increase.

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