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Perception and Readiness of Pharmacy Faculty Students in Surakarta Central Java About Interprofessional Education

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ABSTRACT

Interprofessional Education (IPE) is an important approach in health education to prepare students to work collaboratively in interprofessional teams in clinical practice. This study aims to determine the perception and readiness of Interprofessional Education among students of the Faculty of Pharmacy in Surakarta, Central Java and to determine the factors that influence differences in perception and readiness. This study used descriptive and cross sectional design. The population used was Pharmacy undergraduate students and pharmacist professional students. Sampling using purposive sampling technique. Measurement of perception using the IEPS (Interprofessional Education Perception Scale) questionnaire, while measuring readiness using the Readiness for Interprofessional Learning Scale (RIPLS) questionnaire. Data were analyzed using the Kruskall Wallis test. Of the 219 respondents, 87.2% were female, 81.2% were undergraduate students, 72.1% had one IPE experience. From the results of measuring perceptions, 96.7% had good perceptions and 3.2% had moderate perceptions. While from the measurement of readiness it was found that 99.5% had high readiness and 0.5% moderate readiness. From the IEPS results, the value of p=0.304 (gender), p=0.909 (student batch) and p=0.699 (IPE experience) was obtained and results on RIPLS obtained a value of p=0.122 (gender), p=0.58 (student batch) and p=0.693 (IPE experience) so it can be concluded that there are no differences in perception and readiness between gender, batch and IPE experience.

INTRODUCTION

Interprofessional Education (IPE) is the process by which students from different health professions engage in shared learning and gain insight from one another, with the aim of enhancing efficient teamwork and improving health outcomes (WHO, 2010). Interprofessional education is a necessary educational perspective to ensure that health education graduates can become members or leaders of collaborative health practice teams (Shakhman et al., 2020). Interprofessional Education (IPE) programmes are implemented as a first step towards the development of collaborative efforts and as a means of fostering professional cooperation among health professionals by providing support and basic science knowledge to health professionals through the educational process. In addition, IPE education can help strengthen the concept of teamwork among healthcare professionals by highlighting positive and supportive relationships between participating professionals.

The attitude of readiness to accept learning that is useful in setting personal goals that affect the effort individuals devote to achieving goals is known as readiness in interprofessional

education. Interest, enthusiasm, desire, and acceptance of new things, especially in terms of teamwork, indicate students' readiness for interprofessional education (Wijaya et al., 2023). Student readiness needs to be evaluated to facilitate interprofessional education learning approaches (Spada et al., 2022). A high level of readiness provides more opportunities to implement interprofessional education (Jha et al., 2022).

According to Muktamiroh et al., (2019), the implementation of IPE by incorporating professional data needs to be strengthened in academic teaching so that students can improve teamwork and collaboration skills, solidify the work that has been completed in educational institutions, and recognise some resources that can be used as a starting point. Each health student has different perceptions about the implementation of IPE.

Research on interprofessional education has been conducted by Prakoeswa et al. (2024) in their research which took various batches of UMS Faculty of Medicine students as research subjects and found that there were differences in student readiness regarding interprofessional education.

The Faculty of Pharmacy UMS implements interprofessional education in undergraduate programmes. In the implementation of IPE, Pharmacy students collaborate with students from the Faculty of Medicine and the Faculty of Health Sciences, Nutrition Science Study Program and Nursing Study Program. In this interprofessional activity, Pharmacy has an important role, namely analysing the use of drugs with 4 criteria: the right indications, the right patient, the right drug and the right dose. The experience in interprofessional education makes pharmacy students able to work with team collaboration in health services (Fusco et al., 2019).

METHODS

Research Design

This study was conducted with a descriptive and cross sectional design, with the independent variables being gender, year of entry and IPE experience. The dependent variables were perception and readiness towards IPE. Data was collected using Google Form online.

Population and Sample

The population of this study were Pharmacy students in undergraduate students and Pharmacist professional students. Samples were taken based on the following inclusion criteria:

1) Students who are currently or have taken the undergraduate Pharmacy degree
2) Students have undergone interprofessional education activities.
3) Students are willing to become respondents.

Measurement Tools

For the measurement of perception, the Interdisciplinary Education Perception Scale (IEPS) questionnaire was adopted from McFadyen et al., (2007) which was updated from the original IEPS questionnaire of Luecht et.al. (1990) and has been declared valid and reliable. The IEPS questionnaire consists of 18 questions. Item answers were given on six-point Likert scales (strongly agree =6, agree= 5, somewhat agree = 4, somewhat disagree=3, disagree = 2, strongly disagree= 1).

While measuring readiness using the Indonesian version of the Readiness for Interprofessional Learning Scale (RIPLS) questionnaire which has been translated by Tyastuti et al., and has been declared valid and reliable. The RIPLS questionnaire consists of 16 questions. Item answers were given on five-point Likert scales (strongly agree = 5, scored 5, agree = 4, neutral = 3, disagree = 2, and strongly disagree = 1).

Data Analysis

According to IEPS, perception is categorised into 3 categories: good (> 78), moderate (48-78), poor (<48). While the RIPLS readiness category is divided into three: consisting of good (58.7 - 80), moderate (37.4 - 58.6), and less (16 - 37.3) (Katuuk et al., 2023).

The data analysis technique performed was univariate analysis to analyse the characteristics of respondents, perceptions and readiness of Faculty of Pharmacy students regarding Interprofessional Education. The data analysis programme used was SPSS version 26. In addition, a different test analysis was carried out with the Kruskall-Wallis test to determine differences in perceptions and readiness for Interprofessional Education based on gender, year of entry and IPE experiences.

RESULT AND DISCUSSION

This study has received approval from the Health Research Ethics Commission of Dr Moewardi Hospital with numbers: 339 / II / HREC / 2024 and 340 / II / HREC / 2024.

The Faculty of Pharmacy UMS has conducted IPE for undergraduate students and pharmacists professional students, carried out since the third year of the undergraduate level. The form of IPE carried out is in the form of patient case discussions and counselling to the community. IPE activities collaborate with medical students (preclinical and clinical levels), nursing study programme students, study programmes, psychology and nutrition study programmes. This is in accordance with the research of Berger-estilita et al., (2020) which states that third-year students who are familiar with interprofessional education are considered to be in accordance with basic clinical knowledge that will facilitate students in carrying out interprofessional education.

The Faculty of Pharmacy UMS has conducted IPE for undergraduate program and pharmacists professional program. The form of IPE carried out is in the form of patient case discussions and counselling to the community. IPE activities collaborate with medical students (preclinical and clinical levels), nursing study programme students, psychology study programmes, and nutrition study programmes.

From the total 564 pharmacy students who met the inclusion criteria, 219 undergraduate students and pharmacists completed the questionnaire. Of these respondents 87.2% were female, 86.2% were undergraduate students and 72.1% had done IPE once (**Table 1**). In a study conducted by Dewi et al., (2019) with medical, nursing, and pharmacy student respondents were also dominated by women with a percentage of 84.3%. In addition, in the research of Yasin et al., (2023) with medical, dentistry, and pharmacy student respondents, the majority of respondents were also female (70.7%).

From the measurement of perception, the majority of students (96.8%) had a good perception of IPE (**Table 1**). The majority of good perceptions were also found in UMS medical students (Prakoeswa, 2024) and Padjadjaran University health profession students (Hakiman et al., 2016). According to (Fallatah et al., 2015) with a good perception of IPE will increase teamwork in providing services to patients. If students have a high level of confidence in abilities such as knowledge and communication skills, it will form the character of students who respect each other and give trust to other professions where a problem can be solved with interprofessional contributions. IPE can also deepen students' understanding of themselves as professionals and can increase their understanding of the roles of other professionals. It is intended that students avoid inappropriate understanding of professions that can interfere with communication in interprofessional collaboration.

Table 1. Measurement Results of IPE Perceptions on Faculty of Pharmacy UMS students (n

Variable		Kategori Skor IEPS (N,% n= 219)			p-value (Kruskall Wallis)
		Good	Moderate	Bad	
Gender	Man	26 (11.9)	2 (0.9)	0 (0)	0.304
	Woman	186 (84.9)	5(2.3)	0 (0)	
Student batch	Undergraduate 2020	80 (36.5)	2 (0.9)	0 (0)	0.909
	Undergraduate 2021	91 (41.6)	4 (1.8)	0 (0)	
	Pharmacist professional batch 40	23 (10.5)	0 (0)	0 (0)	
	Pharmacist professional batch 41	18 (8.2)	1 (0.5)	0 (0)	
IPE experience	1	153 (69.9)	6 (2.7)	0 (0)	0.699
	2	53 (24.2)	1 (0.5)	0 (0)	
	3	6 (2.7)	0 (0)	0 (0)	

Table 2. Results of IEPS Questionnaire Answers on Faculty of Pharmacy UMS student respondents

No	Statements	Frequency (%)						Mean ± SD
		Strongly agree	Agree	Somewhat agree	Somewhat disagree	Disagree	Strongly disagree	
1.	Individuals in my profession are well-trained	52 (23.7%)	160 (73.1%)	7 (3.2%)	0	0	0	5.21± 0.47
2.	Individuals in my profession are able to work closely with individuals in other professions	49 (22.4%)	154 (70.3%)	13 (5.9%)	0	3 (1.4%)	0	5.12± 0.62
3.	Individuals in my professions demonstrate a great deal of autonomy	42 (19.2%)	170 (77.6%)	6 (2.7%)	0	1 (0.5%)	0	1.85 ±0.48
4.	Individuals in other professions respect the work done by my professions	39 (17.8%)	144 (65.8%)	32 (14.6%)	1 (0.5%)	3 (1.4%)	0	4.98± 0.68
5.	Individuals in my profession are very positive about their goals and objectives	52 (23.7%)	160 (73.1%)	7 (3.2%)	0	0	0	5.21± 0.47
6.	Individuals in my profession need to cooperate with other professions	110 (50.2%)	108 (49.3%)	1 (0.5%)	0	0	0	5.50 ±0.51
7.	Individuals in my profession are very positive about their contributions and accomplishments	59 (26.9%)	156 (71.2%)	4 (1.8%)	0	0	0	5.25± 0.47
8.	Individuals in my profession must depend upon the work of people in other professions	25 (11.4%)	111 (50.7%)	40 (18.3%)	0	38 (17.4%)	5 (2.3%)	2.68 ±1.33
9.	Individuals in my profession think highly of other related profession	81 (37.0%)	133 (60.7%)	5 (2.3%)	0	0	0	5.35 ±0.52
10.	Individuals in my profession trust each other's professional judgement	35 (16.0%)	155 (70.8%)	26 (11.9%)	0	3 (1.4%)	0	5.00 ±0.63
11.	Individuals in my profession have a higher status than individuals in other professions	58 (26.5%)	149 (68.0%)	12 (5.5%)	0	0	0	5.21± 0.52
12.	Individuals in my professions make every effort to understand the capabilities and contributions of other professions	49 (22.4%)	164 (74.9%)	6 (2.7%)	0	0	0	5.20 ±0.46
13.	Individuals in my profession are extremely competent	62 (28.3%)	146 (66.7%)	11 (5.0%)	0	0	0	5.23 ±0.53
14.	Individuals in my profession are willing to share information and resources with other professionals	80 (36.5%)	132 (60.3%)	(2.7%)	0	1 (0.5%)	0	5.32± 0.57

Table 2. Continue

No	Statements	Frequency (%)						Mean ± SD
		Strongly agree	Agree	Somewhat agree	Somewhat disagree	Disagree	Strongly disagree	
15.	Individuals in my profession have good relations with people in other professions	59 (26.9%)	140 (63.9%)	20 (9.1%)	0	0	0	5.18 ±0.57
16.	Individulas in my profession think highly of other related professions	28 (12.8%)	125 (57.1%)	40 (18.3%)	0	25 (11.4%)	1 (0.5)	2.42± 1.11
17.	Individuals in my profession work well with each other	62 (28.3%)	152 (69.4%)	5 (2.3%)	0	0	0	5.26± 0.48
18.	Individuals in other professions often seek the advice of people in my profession	34 (15.5%)	138 (63.0%)	24 (11.0%)	1 (0.5%)	18 (8.2%)	4 (1.8%)	4.72 ±1.11

Table 2 shows that the highest mean score (5.50±0.51) is on statement number 6: *Individuals in my profession need to cooperate with other professions*. This shows that pharmacy students need cooperation with other professions to solve patient problems. While the lowest mean score value (1.85±0.48) is in statement number 3: *Individuals in my profession demonstrate a great deal of autonomy*. This shows that pharmacy students have not fully demonstrated great autonomy. The effort needed to improve this is to increase the intensity to interact when working together in order to show that each profession has its own rights and authorities. The results of the Kruskall Wallis test obtained a value of $p > 0.05$, it can be concluded that there is no significant difference between student batch, gender and IPE experience of respondents on student perceptions (**Table 1**).

From the measurement of student readiness, it was found that the majority (99.5%) had a high level of readiness to undergo IPE (**Table 3**). The same results were also shown in UMS medical students (Prakoeswa, 2024) and FKIK UIN Alauddin Makassar students had high interprofessional education readiness (Akhmad et al., 2019). This indicates that students are ready to learn together, communicate, and collaborate with other health students. Student readiness for interprofessional education will affect the implementation of joint work or collaboration both at the academic level and in the world of work in health services (Damayanti and Bachtiar, 2020).

Table 3. Measurement Results of IPE Readiness on Faculty of Pharmacy UMS students

Variable		RIPLS category (N,% n=219)			p-value (Kruskal Wallis)
		High	Moderate	Low	
Gender	Man	28 (12.8%.)	0 (0)	0 (0)	0.122
	Woman	190 (86.8%)	1(0.5%)	0 (0)	
Student batch	Undergraduate 2020	82 (37.4%)	0 (0)	0 (0)	0.58
	Undergraduate 2021	95 (43.4%)	1 (0.5%)	0 (0)	
	Pharmacist professional batch 40	22 (10.0%)	0 (0)	0 (0)	
	Pharmacist professional batch 41	19 (8.7%)	0 (0)	0 (0)	
Experience IPE	1	157 (71.7%)	1 (0.5%)	0 (0)	0.693
	2	55 (25.1%)	0 (0)	0 (0)	
	3	6 (2.7%)	0 (0)	0 (0)	

Table 4. Results of RIPLS Questionnaire Answers on Faculty of Pharmacy student respondents

No.	Statement	Frequency (%)					Mean ± SD
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
1.	Learning with other students/professionals will make me a more effective member of a health and social care team	45 (20.5%)	143 (65.3%)	29 (13.2%)	2 (0.9%)	0	4.05 ±0.61
2.	Patients would ultimately benefit if health and social care students/professionals worked together	130 (59.4%)	87 (39.7%)	2 (0.9%)	0	0	4.58 ± 0.51
3.	Shared learning with other health and social care students/professionals will increase my ability to understand clinical problems	95 (43.4%)	115 (52.5%)	8 (3.7%)	1 (0.5%)	0	4.39 ± 0.58
4.	Communications skill should be learned with other health and social care students/professionals	104 (47.5%)	111 (50.7%)	4 (1.8%)	0	0	4.46 ± 0.54
5.	Team-working skills are vital for all health and social care students/Professionals	110 (50.2%)	108 (49.3%)	0	0	1 (0.5%)	4.49 ± 0.55
6.	Shared learning will help me to understand my own professional limitations	79 (36.1%)	134 (61.2%)	3 (1.4%)	3 (1.4%)	0	4.32 ± 0.57
7.	Learning between health and social care students before qualification and for professionals after qualification would improve working relationships after qualification/collaborative practice	95 (43.4%)	122 (55.7%)	1 (0.5%)	1 (0.5%)	0	4.42 ± 0.53
8.	Shared learning will help me think positively about other health and social care professionals	78 (35.6%)	137 (62.6%)	4 (1.8%)	0	0	4.34 ± 0.51
9.	For small-group learning to work, students/professionals need to respect and trust each other	100 (45.7%)	118 (53.9%)	1 (0.5%)	0	0	4.45 ± 0.51
10.	I don't want to waste time learning with other health and social care students/professionals	59 (26.9%)	121 (55.3%)	8 (3.7%)	24 (11.0%)	7 (3.2%)	3.92 ± 1.02
11.	It is not necessary for undergraduate/postgraduate health and social care students/professionals to learn together	9 (4.1%)	41 (18.7%)	3 (1.4%)	92 (42.0%)	74 (33.8%)	3.83 ± 1.20
12.	Clinical problem solving can only be learnt effectively with students/professionals from my own school/organization	10 (4.6%)	63 (28.8%)	35 (16.0%)	83 (37.9%)	28 (12.8%)	3.26 ± 1.14
13.	Shared learning with other health and social care professionals will help me to communicate better with patients and other professionals	83 (37.9%)	133 (60.7%)	3 (1.4%)	0	0	4.37 ± 0.51

Table 4. Continue

No.	Statement	Frequency (%)					Mean ± SD
		Strongly agree	Agree	Neutral	Disagree	Strongly disagree	
14.	I would welcome the opportunity to work on small group projects with other health and social care students/professionals	58 (26.5%)	158 (72.1%)	3 (1.4%)	0	0	4.25 ± 0.47
15.	I would welcome the opportunity to share some generic lectures, tutorials or workshops with other health and social care students/professionals	59 (26.9%)	154 (70.3%)	6 (2.7%)	0	0	4.24 ± 0.49
16.	Shares learning and practice will help me clarify the nature of patients' or clients' problems	75 (34.2%)	143 (65.3%)	1 (0.5%)	0	0	4.34 ± 0.48

The highest mean score of statement item number 2 containing '*Patients would ultimately benefit if health and social care students/professionals worked together*' with a mean value of 4.58±0.51(**Table 4**). This is in line with the research of Yasin et al., (2023) that high scores were found in the statement containing 'Patients would ultimately benefit if health professionals worked together'. Cooperation and collaboration offer many advantages in improving patient care. Understanding and appreciating the strengths and weaknesses or limitations of one's own profession and other health professions related to patient care is essential for every student. Learning with other health professions will provide opportunities to better collaborate with other professions and optimize teamwork skills (Salih et al., 2019).

While the lowest mean of statement item number 12 with a mean score of 3.26±1.14 which contains *Clinical problem solving can only be learnt effectively with students/professionals from my own school/organization* (**Table 4**). This statement is a negative professional identity statement item. The low mean is evidence that students understand the value of interprofessional education and learning in groups with students of other health professions (Aye et al., 2020).

Based on the results of the Kruskall Wallis test, the p value > 0.05, it can be concluded that there is no difference between student batch, gender and IPE experience on student readiness **(Table 3**). This is in line with the research of Rahmadayani et al., (2020) which found that there was no effect of the number of IPE debriefings on student readiness.

The absence of the influence of gender on students' perceptions and readiness for IPE reflects that IPE is an integrative approach, which does not differentiate based on certain biological or social factors. The absence of the influence of the entry cohort on students' perceptions and readiness suggests that the learning experiences gained during the pharmacy curriculum are consistent in providing an understanding of the importance of IPE. This result also indicates that the pharmacy curriculum has been implemented uniformly across different academic years, so students from different batches do not show significant differences in understanding the concept and preparation for IPE.

The absence of influence of IPE experience on students' perceptions and readiness can be interpreted that knowledge and attitudes towards IPE are not solely dependent on direct experience, but may also be influenced by exposure to theories and concepts in formal learning. This may indicate that the theoretical component of the pharmacy curriculum is effective in building students' initial understanding of the importance of interprofessional collaboration.

However, this result may also indicate that the IPE experience may not have been intense or comprehensive enough to make a significant difference. Therefore, the IPE program at the

Faculty of Pharmacy could be further evaluated to ensure that the practical experience provided actually has an impact on student readiness.

CONCLUSIONS

The results of Kruskall Wallis test on IEPS, the value of p=0.304 (gender), p=0.909 (student batch) and p=0.699 (IPE experience) was obtained. The results on RIPLS obtained a value of p=0.122 (gender), p=0.58 (student batch) and p=0.693 (IPE experience).

This study shows that the perceptions and readiness of Faculty of Pharmacy students in Surakarta towards Interprofessional Education (IPE) are not influenced by gender, year of entry, or experience in participating in IPE programs. This finding indicates that the IPE learning approach applied in pharmacy education institutions in Surakarta tends to be inclusive and equitable, thus not creating significant differences based on demographic characteristics or specific experiences of students.

These results provide a foundation for improving the effectiveness of IPE programs, both through integrating the value of collaboration in the curriculum and strengthening interprofessional practical experiences. Further research is needed to explore other factors that may influence students' readiness to fulfil their roles in interprofessional teams in the workplace stands alone.

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AUTHORS' CONTRIBUTIONS

Anisa Rachma Priyastiningrum, Nurus Hasta Rani-Designed the study, Literature review, method selection, collected samples, writing the original draft, and Editing; Nurul Mutmainah-Designed the study, Review, editing, compilation of data, and supervision.

CONFLICT OF INTERESTS

The authors declare no conflict of interest

ETHICAL CONSIDERATION

The authors hereby declare that the work presented in this article is original and that any liability for claims relating to the content of this article will be borne by them.

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