

Factors influencing readiness and perceptions of Interprofessional Education (IPE) implementation at the Faculty of Medicine, Udayana University



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ABSTRACT

Background: Currently, there is a learning method that includes two or more professions known as Interprofessional Education (IPE), which aims to create cross-disciplinary collaboration regarding principles and improve the quality of health services. However, implementing IPE in medical faculties has several obstacles influenced by various factors. Unfortunately, research related to the implementation of IPE is still minimal.

Objective: To evaluate the factors influencing the readiness and perception of implementing IPE at the Faculty of Medicine, Udayana University.

Methods: This research was carried out at the Faculty of Medicine, Udayana University, from May to October 2023, with first and second-year medical students as subjects. The number of samples is determined by total sampling. Data were analyzed using SPSS version 25.0 software. Univariate analysis consists of a description of the basic characteristics of the subject. The bivariate analysis took the form of a Chi-square comparative test. Statistical values are considered significant if $p < 0.05$.

Results: A total of 379 students, most of whom were 19 years old and female, were obtained as samples. Most of the sample, 265 students (69.9%) and 288 students (76%), had a moderate level of perception and readiness, respectively. Based on bivariate analysis, the level of readiness was not influenced by gender ($p=0.216$), study program ($p=0.069$), class ($p=0.293$), and latest GPA ($p=0.798$). On the other hand, only the class factor was significantly related to the level of perception ($p=0.027$).

Conclusion: Force factors are significantly related to the level of readiness for implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University.

Keywords: Influencing factors, Interprofessional Education (IPE), Medical Faculty, Perception, Readiness.

Cite This Article: Darmayani, I.G.A.S., Manuaba, Amertha, I.B.P., Yani, M.V.W., Sadeva, I.G.K.A., Wulandari, P.A., Erawati, N.K.Y., Tyas, N.L.P.L.P., Supadmanaba, I.G.P. 2024. Factors influencing readiness and perceptions of Interprofessional Education (IPE) implementation at the Faculty of Medicine, Udayana University. *Bali Medical Journal* 13(1): 361-366. DOI: 10.15562/bmj.v13i1.5072.

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Received: 2023-10-02

Accepted: 2023-12-16

Published: 2024-01-01

INTRODUCTION

Excellent and optimal health services can be achieved by implementing collaborative practices. The combination of various professions in the health service team makes communication a vital skill that must be possessed to carry out optimal collaboration in providing health services. According to WHO, many fragmented health systems occur throughout the world. Meanwhile, in the future, the world's health problems will become increasingly complex. The innovative strategy used to form practical communication skills in every existing health profession is with special education,

namely Interprofessional Education (IPE).^{1,2}

IPE is a condition when two or more professions collaborate and learn to work with each other to optimize health services.³ However, in reality, the results of implementation in the field are various obstacles experienced by students and staff who provide this education.¹ At the readiness and perceptions of students in a study conducted by Anissa et al., 2021, at Airlangga University, the percentage of perceptions obtained was 53% good and 47% perfect, with the rate of readiness obtained being 36% good and 60% very good.⁴ A previous study stated that most

students had good readiness, but student perceptions were almost balanced between good and bad perceptions.⁵ In addition, in a study conducted by Novianto et al., 2022, it was stated that most Students also have good perception and readiness, both before and after the implementation of IPE.⁵ This shows that students have positive perceptions and willingness to implement IPE.

However, no articles have discussed the factors influencing the readiness and perception of implementing IPE at the Faculty of Medicine, Udayana University. In a study conducted by Rahmadayani et al., 2020, at the Faculty of Medicine,

Udayana University, regarding the influence of the amount of briefing on students' perceptions and readiness regarding IPE at Udayana University, results found that there was no effect.⁶ Apart from that, IPE collaboration from various study programs has various advantages that are very necessary as the main provision for health professions in their work, such as training trust and mutual respect among health teams, increasing understanding and personal responsibility within the team, as well as effective communication, which will have an impact positive impact on-field performance, so that it can increase the positive impact on patients, such as reducing the patient's length of hospital stay and a reduced number of medical errors.⁷ Therefore, further investigation is needed regarding the factors influencing the willingness and perception of implementing IPE at the Faculty of Medicine. This is the basis for making this research proposal to provide an overview of the factors that influence the readiness and perception of implementing IPE and become evaluation material to improve the quality of the medical education curriculum at the Faculty of Medicine, Udayana University.

METHODS

Study design

This analytical study used a cross-sectional design that aims to determine the factors that influence medical students' perceptions and readiness for the implementation of interprofessional education (IPE). This study was conducted at the Faculty of Medicine, Universitas Udayana, from May 2023 to October 2023.

Population and Sample

The target population in this study was medical students. The population covered in this study were first and second-year medical students with several study programs, namely Undergraduate Medical Study Program (PSSK), Undergraduate Public Health Study Program (PSKM), Undergraduate Nurse Study Program (PSSN), Undergraduate Dental Study Program (PSSKG), Undergraduate Physiotherapy Study Program (PSSF), and Undergraduate Psychology Study Program

(PSSP). The sampling technique used total sampling with a minimum sample size calculated using the formula for analytical research using the cross-sectional method. Sample selection was carried out using the consecutive sampling method. Inclusion criteria, namely 1) Subjects are first-year and second-year medical faculty students who are physically and mentally healthy; 2) They are willing to be a research subject. Exclusion criteria, namely 1) Students who are on study leave, are undergoing a period of suspension, or have problems in lecture activities (inactive students); 2) Subjects who did not fill out the questionnaire completely.

Data collection

The research variables are age, gender, class year, study program, student GPA, readiness, and perception of students at the Faculty of Medicine, Udayana University, regarding implementing Interprofessional Education (IPE). All research subjects will be distributed questionnaires according to the specified schedule. The questionnaire contains several instruments, including an informed consent form and the respondents' data (age, gender, study program, and class year). The questionnaire used to evaluate student perceptions was the Interdisciplinary Education Perception Scale (IEPS). Meanwhile, the Readiness for Interprofessional Learning Scale (RIPLS) was used to assess student readiness for IPE.

Data analysis

Data analysis was carried out using SPSS for Windows version 25.0 software. The stages of statistical analysis carried out are Univariate analysis of proportions; normality analysis of numerical data to determine data distribution using the Kolmogorov-Smirnov test; bivariate inferential analysis, namely chi-square or an alternative in the form of fisher-exact if the data does not meet the chi-square requirements. The P-value is considered significant if $p < 0.05$.

RESULTS

Sample Characteristics

A total of 379 students were obtained as samples in the research. Most of the sample was 19, namely 196 students

(51.7%). Most of the sample was female, namely 287 students (75.7%) and 92 male students (24.3%). Based on the study program, most of the samples came from the general medicine study program, namely 138 students (36.4%). Meanwhile, based on class year, the majority of the sample was students from the class of 2022, namely 238 students (62.8%). Most of the samples had a final GPA of ≥ 3.50 , namely 290 students (76.5%). Based on the level of perception regarding the implementation of Interprofessional Education (IPE), the majority of the sample was reported to have a medium level of perception, namely 265 students (69.9%). Moreover, based on the level of readiness for implementing Interprofessional Education (IPE), the majority of the sample was reported to have a medium level of readiness, namely 288 students (76%). The characteristics of the research sample are described in [Table 1](#)

The association between gender factors and readiness and perceptions of implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University

The bivariate analysis results show a significant association between gender and perceptions of implementing Interprofessional Education (IPE) ($p = 0.025$). A significant association exists between gender and readiness to implement Interprofessional Education (IPE) ($p < 0.001$). The results of the analysis are described in [Table 2](#).

The association between study program factors and readiness and perceptions of implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University

Based on the bivariate analysis results, no significant association exists between study programs and perceptions of implementing Interprofessional Education (IPE) ($p = 0.069$). There is no significant association between the study program and readiness to implement Interprofessional Education (IPE) ($p = 0.256$). The results of the analysis are described in [Table 3](#).

The association between force factors and readiness and perceptions of implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University

Based on the bivariate analysis results, there is no significant association between generation and perceptions of implementing Interprofessional Education (IPE) ($p=0.293$). There is no significant association between generation and readiness to implement Interprofessional Education (IPE) ($p=0.316$). The results of the analysis are described in [Table 4](#).

The association between GPA factors and readiness and perceptions of implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University

Based on the bivariate analysis results, no significant association exists between GPA and perceptions of implementing Interprofessional Education (IPE) ($p=0.798$). No significant association exists between GPA and readiness to implement Interprofessional Education (IPE) ($p=0.739$). The results of the analysis are described in [Table 5](#).

DISCUSSION

Sample Characteristics

Based on the characteristics results, it was found that the age of the respondents in this study was dominated by 19-year-olds, namely 196 people (51.7%) in the 18-22 year age range. In theory, age has a direct correlation with the level of knowledge. The more mature a person is, the more it will influence their perceptions and behavior. Age 18-22 years is the productive age category included in the range of pre-clinical students at the Faculty of Medicine, Udayana University, who are part of the IPE course. This is similar to a previous study, which adjusted the age of respondents based on the age of the students included in the IPE collaborative course, namely in the 20-21 age range.⁸ The majority of ages will depend on the age demographics of faculty students. Apart from that, the dominant gender of respondents was women, with a total of 287 people (75.7%). This condition is similar to previous studies, with the dominance

Table 1. Sample characteristics

Variable	Sample (N=329)	
	Frequency (n)	Percentage (%)
Age		
18	31	8,2
19	196	51,7
20	88	23,2
21	57	15
22	7	1,8
Gender		
Female	287	75,7
Male	92	24,3
Study program		
Undergraduate Medical Study Program (PSSK)	138	36,4
Undergraduate Public Health Study Program (PSKM)	55	14,5
Undergraduate Nurse Study Program (PSSN)	52	13,7
Undergraduate Dental Study Program (PSSKG)	14	3,7
Undergraduate Physiotherapy Study Program (PSSF)	52	13,7
Undergraduate Psychology Study Program (PSSP)	68	17,9
Class year		
2020	84	22,2
2021	57	15
2022	238	62,8
GPA (Grade Point Average)		
<3,50/4,00	89	23,5
≥3,50/4,00	290	76,5
Perception level		
Low	50	13,2
Moderate	265	69,9
High	64	16,9
Readiness level		
Low	51	13,5
Moderate	288	76
High	40	10,6
Total	329	100,0

Table 2. The association between gender factors and readiness and perceptions of implementing Interprofessional Education (IPE)

		Perception			P value (chi-square)
		Low	Moderate	High	
Gender	Female	40 (13,9%)	207 (72,1%)	40 (13,9%)	0,025*
	Male	10 (10,9%)	58 (63%)	24 (26,1%)	
Total		50 (13,2%)	265 (69,9%)	64 (16,9%)	
		Readiness			P value (chi-square)
		Low	Moderate	High	
Gender	Female	38 (13,2%)	230 (80,1%)	19 (6,6%)	<0,001*
	Male	13 (14,1%)	58 (63%)	21 (22,8%)	
Total		51 (13,5%)	288 (76%)	40 (10,6%)	

*Significant value ($p<0,05$)

of female respondents also reaching 71.6% and 83.7%. In theory, this is caused by women's higher level of responsiveness than men. Apart from that, the gender composition of students can also influence the proportion of female students, which is greater than that of males.^{9,10}

Apart from that, the study programs filled are dominated by PSSK, namely 138 people (36.4%). This is by the distribution of student capacity for each study program; PSSK has the most significant proportion of students and is continued with other study programs. This condition is similar to previous studies, which stated that medical study programs had the highest percentages. The more significant number of PSSK students causes it compared to other study programs.⁹⁻¹¹ The respondents for this research were dominated by students from the Class of 2022, totaling 238 people (62.8%) who were first-year IPE participants. In addition, 290 respondents (76.5%) were students with a GPA of ≥ 3.50 .

Based on the level of perception and readiness, most respondents had a moderate level, namely 265 (69.9%) and 288 (76%). This condition is by the proportion of the respondent class, dominated by the Class of 2022, namely first-year IPE participants. It shows that most have the same perception and readiness for implementing IPE. This is based on previous studies, which stated that the initial perception and enthusiasm for implementing IPE started quite well. After that, multifactorial conditions will determine the continuation of the results of students' perceptions and readiness for implementing IPE.¹² This similar condition of perception and readiness can also facilitate the implementation of IPE.¹¹

The association between gender factors and readiness and perceptions of implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University

The results of this study show a significant association between gender and readiness and perception in IPE at Udayana University. However, female students tended to be more ready to collaborate in implementing IPE than male students. A study that states that women have

Table 3. The association between study program factors and readiness and perceptions of implementing Interprofessional Education (IPE)

		Perception			P value (chi-square)
		Low	Moderate	High	
Study program	PSSK	12 (8,7%)	95 (68,8%)	31 (22,5%)	0,005*
	PSKM	9 (16,4%)	36 (65,5%)	10 (18,2%)	
	PSSN	2 (3,8%)	42 (80,8%)	8 (15,4%)	
	PSSKG	0 (0%)	13 (92,9%)	1 (7,1%)	
	PSSF	13 (25%)	31 (59,6%)	8 (15,4%)	
	PSSP	14 (20,6%)	48 (70,6%)	6 (8,8%)	
Total		50 (13,2%)	265 (69,9%)	64 (16,9%)	
		Readiness			P value (Chi-square)
		Low	Moderate	High	
Study program	PSSK	16 (11,6%)	100 (72,5%)	22 (15,9%)	0,105
	PSKM	7 (12,7%)	46 (83,6%)	2 (3,6%)	
	PSSN	3 (5,8%)	43 (82,7%)	6 (11,5%)	
	PSSKG	2 (14,3%)	11 (78,6%)	1 (7,1%)	
	PSSF	10 (19,2%)	36 (69,2%)	6 (11,5%)	
	PSSP	13 (19,1%)	52 (76,5%)	3 (4,4%)	
Total		51 (13,5%)	288 (76%)	40 (10,6%)	

*Significant value ($p < 0,05$)

Table 4. The association between force factors and readiness and perceptions of implementing Interprofessional Education (IPE)

		Perception			P value (chi-square)
		Low	Moderate	High	
Class year	2020	5 (6%)	65 (77,4%)	14 (16,7%)	0,007*
	2021	6 (10,5%)	34 (59,6%)	17 (29,8%)	
	2022	39 (16,4%)	166 (69,7%)	33 (13,9%)	
Total		50 (13,2%)	265 (69,9%)	64 (16,9%)	
		Readiness			P value (chi-square)
		Low	Moderate	High	
Class year	2020	11 (13,1%)	64 (76,2%)	9 (10,7%)	0,116
	2021	2 (3,5%)	46 (80,7%)	9 (15,8%)	
	2022	38 (16,0%)	178 (74,8%)	22 (9,2%)	
Total		51 (13,5%)	288 (76%)	40 (10,6%)	

Table 5. The association between GPA factors and readiness and perceptions of implementing Interprofessional Education (IPE)

		Perception			P value (chi-square)
		Low	Moderate	High	
GPA	<3,50/4,00	8 (9%)	65 (73%)	16 (18%)	0,406
	$\geq 3,50/4,00$	42 (14,5%)	200 (69%)	48 (16,6%)	
Total		50 (13,2%)	265 (69,9%)	64 (16,9%)	
		Readiness			P value (chi-square)
		Low	Moderate	High	
GPA	<3,50/4,00	11 (12,4%)	68 (76,4%)	10 (11,2%)	0,924
	$\geq 3,50/4,00$	40 (13,8%)	220 (75,9%)	30 (10,3%)	
Total		51 (13,5%)	288 (76%)	40 (10,6%)	

a more positive and open attitude when collaborating with the IPE team supports this condition of readiness.¹³ Another study says that female students better understand the importance of interprofessional collaboration than male students. When viewed personally, female students tend to have a more robust professional identity, are serious, and have a strong desire to manage collaborative problems.¹⁴ Another study also stated that the perception results of female students were better than male students. This is due to women's better understanding of receiving the IPE program, which impacts better perceptions.⁵

The association between study program factors and readiness and perceptions of implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University

The results of this research show an insignificant association between the study program and readiness and a significant association between the study program and perception. This indicates that each study program covered in IPE has the same readiness, even though in terms of the proportion of respondents and implementation, there is dominance from PSSK.⁵ However, like several previous studies, this difference in perception occurs because differences in study programs cause differences in initial knowledge of the IPE program, which impacts perceptions of each study program. In several studies, these differences in perception are also formed from different points of view in implementing the IPE program. However, along with IPE education, a sense of responsibility for each role in collaboration will be formed so a better perception will be formed.^{8,11,15}

The association between force factors and readiness and perceptions of implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University

This study's results show a significant association between force and perception but not substantial with readiness. A study states that there is a change in perception of IPE as the semester progresses.

These changes in perception tend to change according to increasing learning accumulation and semesters.¹⁶ Perception is a condition of students' understanding of IPE.⁵ This course will be adjusted as the semester progresses, starting from theory to practice or as a field trip. This will form a better perception of IPE, from idea to direct implementation. However, each force has IPE readiness, which tends to be uniform. This condition is supported by the proportion of IPE implementation carried out routinely and on a schedule with weights adjusted in line with the development of student perceptions.¹⁷ Therefore, there is consistency in the readiness to implement IPE between the Forces.

The association between GPA factors and readiness and perceptions of implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University

The results of the research in this study show that there is no significant association between GPA and readiness and perception. GPA is one of the cognitive parameters commonly used in student assessment. Based on previous studies, it was stated that cognitive level is one of the factors that influences and is directly proportional to the perception and readiness of IPE.¹² However, other studies state that not only cognitive but GPA is also influenced by multifactorial factors, such as sleep quality, socio-economics, learning style, and several other factors.^{18,19} Based on this, it can be shown that all students with different GPA ranges have the same perception and readiness to participate in IPE activities.

The main limitation of this study is the uneven distribution of sample, namely females more than males. This condition also occurs in several studies at medical faculties related to IPE, possibly due to the unequal composition of the total students' genders. Apart from that, the composition of respondents from each study program is also disproportionate, which occurs in several studies. This is caused by differences in the capacity of each study program, which is adjusted to their respective accreditation.

CONCLUSION

The conclusions of this research are as follows: The factors of gender, study program, class, and last GPA are not significantly related to perceptions of implementing Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University. Force factors are significantly related to readiness. On the other hand, gender, study program, and last GPA were not significantly associated with willingness to implement Interprofessional Education (IPE) at the Faculty of Medicine, Udayana University.

RESEARCH ETHICS

This research has obtained a certificate of ethical clearance from the Faculty of Medicine, Udayana University Ethics Commission unit, with protocol number 2023.03.1.0761.

FUNDING

The funds used in the research came from the DIPA PNPB Universitas Udayana TA-2023.

AUTHORS CONTRIBUTIONS

All authors have the same contribution to the implementation of this research.

DISCLOSURE

The author states that there is no conflict of interest in the data collection process up to the publication stage in this research.

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