

## RELATIONSHIP BETWEEN UNIVERSITY ADMISSION SELECTION AND ACADEMIC PREDICTION IN MEDICAL STUDENTS

I Putu Yudi Pradnyana<sup>1</sup>, I Gusti Ayu Harry Sundariyati<sup>2</sup>, Ida Bagus Amertha Putra Manuaba<sup>2</sup>, I Gusti Ayu Sri Darmayani<sup>2</sup>

<sup>1</sup> The Undergraduate Medical Study Program, Faculty of Medicine, Udayana University, Bali

<sup>2</sup> Department of Medical and Health Education, Faculty of Medicine, Udayana University, Bali

e-mail: [sri\\_darmayani@unud.ac.id](mailto:sri_darmayani@unud.ac.id)

### ABSTRACT

Selection of new students at the undergraduate level in public universities is carried out in 3 selection pathways, namely SNMPTN, SBMPTN, and Mandiri. Selection of student admission exams will affect the quality of students which can be measured by student academic achievement, including GPA and academic competition winners. The purpose of this study was to see the differences in academic achievement and the relationship between admission pathways and student academic achievement. This study is an analytic study through a cross-sectional approach conducted at the Faculty of Medicine, Udayana University. The data are in the form of primary data and secondary data. Data processing and analysis using STATA 12.0 application. The analysis was conducted in the form of univariate analysis to describe the characteristics and bivariate to see the relationship between variables. Students with a GPA of 3.50 were more accepted through the SBMPTN pathway, while GPA 3.01 - 3.50 were more accepted through the Mandiri pathway. Students who were accepted through the SBMPTN pathway had more achievements in the form of academic competition winners compared to other admission pathways. This study concluded, it was concluded that there were differences in students' academic achievement with the most achievements found in students admitted through the SBMPTN pathway. There is a relationship between admission selection pathway and academic achievement consisting of student GPA and academic competition winners. Students who are accepted through the SBMPTN pathway have a greater chance of achieving high GPA and winning academic competitions than other pathways.

**Keyword :** State University admission, undergraduate GPA, academic competition winners

### INTRODUCTION

Medical students are determined from the ability of the initial selection of new admissions so that in the future they are expected to become competent medical personnel.<sup>1</sup> Article 2 No. 2 of 2015 in the Regulation of the Minister of Research, Technology and Higher Education of the Republic of Indonesia (Permenristekdikti) regarding the new student selection system explains that the new student selection system at the undergraduate level at state universities is carried out in 3 selection pathways, namely the National Admission Selection for State Universities (SNMPTN), Joint Admission Selection for State Universities (SBMPTN), and Selection of Admission Screening Tests (USM) or also known as Mandiri selection.<sup>2</sup>

Several factors can affect the quality of students at a university, one of which is the selection process of the university admission examination. The selection of student admission examinations will affect the quality of students at a university, this can be seen from the stricter the admission selection and the better the selection system applied, the opportunity for prospective students to prepare themselves with their efforts in preparation for the admission examination to higher education is maximized.<sup>3</sup> Students who graduate from one of the three existing pathways certainly get the same treatment and assessment during the learning process. There are other factors that affect student academic achievement besides the intellectual intelligence (IQ) test, which can be seen from creativity, emotional stability, personality factors, and campus and family environmental factors,

as well as student learning motivation.<sup>4</sup> The level of student success during the learning process in each semester is evidenced by the achievement index at the end of each semester.<sup>3</sup>

There has been quite a lot of research in this case. Some studies show the relationship between the type of admission selection of students and their achievements during their studies. Some show no difference<sup>5</sup> while others show the opposite result.<sup>6</sup>

### LITERATURE REVIEW

#### University Admission Selection

Entering university, a prospective student is required to take a university admission selection test. The university admission selection test is one of several efforts to improve the quality of prospective students who meet the graduation criteria.<sup>3</sup> The university admission selection exam is one of several crucial aspects in the smooth running of the education process, especially in the medical faculty. This is because one of the methods to select prospective students who plan to continue their education to the university level, especially in the faculty of medicine, is the university admission examination. When taking the exam, prospective students must get a score that is in accordance with the requirements set by the university.<sup>7</sup>

Based on the provisions of Permen Risetdikti RI Number 60/2018 article 3 paragraphs 1 and 3, it is stated that the student admission path at State Universities (PTN) consists of SNMPTN, SBMPTN, and Mandiri path (USM).<sup>3</sup> SNMPTN or commonly referred to as the invitation selection path is the first selection path

to enter universities. The national selection process is used to determine prospective students who will be admitted to public universities based on their academic achievements.<sup>2</sup> Students who do not pass the SNMPTN selection still have the opportunity to take part in the second selection to enter a university. The second selection in question is a joint selection in the admission of new students at PTN institutions through a national written exam that has been implemented so far or currently known as SBMPTN.<sup>5</sup>

SBMPTN is available for students who have completed their high school education. Prospective students are tested according to their planned majors through this pathway. Scholastic potential test and academic competency test comprise the two parts of the SBMPTN exam. Science and technology, social humanities, and mixed exam groups are the three exam groups available in SBMPTN based on their categories. Participants of the Science and Technology and Social and Humanities exam groups can choose a medical education study program.<sup>3</sup>

There is a final selection path that can be followed by students to enter a university, which is known as the mandiri pathway. The mandiri pathway refers to a system in which the university sets and regulates the admission requirements of prospective students, and the rector appoints an mandiri selection organizer in accordance with legal and regulatory requirements.<sup>3</sup> Using a written exam, prospective students are selected for the mandiri pathway based on their financial need, interests, and aptitudes, as well as considering their abilities and competencies.<sup>8</sup>

This study aims to determine differences in student academic achievement in terms of admission selection and to determine the relationship between admission selection and student academic achievement.

#### **Academic Achievement**

The quality of students when undergoing education at a university can be measured through their academic achievements. Academic achievement or learning outcomes is a learning process that students go through that creates changes in the aspects of application, understanding, knowledge, analysis ability, synthesis, and assessment.<sup>9</sup> Assessment of a learning process results in academic achievement, which is generally provided in quantitative form (numbers) and created specifically for the assessment process, including test scores, course grades, lesson grades, and so on.<sup>10</sup> Student academic achievement is the process by which students work towards achieving the desired outcomes, in this context, academic grades, that they pursue during their studies.<sup>9</sup>

Several indicators can be used to measure academic achievement, namely Cumulative Grade Point Average (GPA), Academic Achievement Index, graduation rate, graduation predicate, academic competition champion, and education travel time.<sup>11</sup> GPA is a student's academic achievement described in the form of numbers, calculated from all courses and semesters that have been passed by students,<sup>12</sup> while the academic achievement index is evidence of learning outcomes that are presented in the form of symbols or numbers.<sup>11</sup> Graduation rate is one of several indicators of success at the university level when conducting the teaching and learning process.<sup>13</sup> The predicate of student

graduation is a strategic part in managing academic data and the progress of student learning activities.<sup>14</sup> Academic competition champion is an academic competition achievement that has been achieved,<sup>11</sup> and education travel time is the time used to complete his undergraduate education.<sup>15</sup>

#### **The Relationship between Admission Selection and Academic Achievement of Medical Students**

The admission examination is one of several ways to improve the quality of prospective students who meet the graduation benchmark. The purpose of the medical school admission examination is to determine the eligibility of a candidate for enrollment in the program.<sup>7</sup> Therefore, in order to attract qualified students, universities have made a number of changes in screening their students.

Students who enter through the SNMPTN pathway have better academic performance than students who enter through other pathways.<sup>2</sup> However, in some studies that have been conducted by other experts, it was found that in some universities that organize medical faculty admission selection exams, it does not correlate with student GPA.<sup>7</sup>

#### **MATERIALS AND METHOD**

This study is an analytical study through a cross-sectional approach to determine the relationship between admission selection and academic achievement in medical students class of 2021 and 2022. Data collection was carried out in the form of secondary data collection obtained from the Academic Section of the Faculty of Medicine, Udayana University. Primary data collection was carried out by applying a survey through a digital platform in the form of a Google Form given to students of the Undergraduate Medical Study Program, Faculty of Medicine, Udayana University class of 2021 and 2022.

The sampling technique was stratified random sampling and the sample size was determined using the Slovin formula. The results obtained a minimum sample of 91 people who met the inclusion and exclusion criteria.

The inclusion criteria for this study sample were students of the Udayana University Undergraduate Medical Study Program who participated in the 2021 and 2022 batches of university admission selection and were willing to become research subjects. The exclusion criteria are students of the Udayana University Undergraduate Medical Study Program who are not active such as students on leave from lectures and students who are undergoing a period of suspension and do not fill out the questionnaire completely.

The data analysis carried out in this study was univariate analysis to see the description of the characteristics of the research subjects and bivariate analysis in the form of chi square analysis to see the relationship between the independent variable and the dependent variable.

This study was approved by the Ethics Committee of the Faculty of Medicine, Udayana University with approval number 0166/UN14.2.2.VII.14/LT/2024.

## RESULTS

The total sample of this study were 120 students of the Udayana University Undergraduate Medical Study Program who participated in the 2021 and 2022 batches.

### Characteristics of Research Subjects

**Table 1.** Characteristics of Respondents of Udayana University Undergraduate Medical Study Program

Variable (N=120)	Frequency	Percentage (%)
Sex		
Female	67	55,83
Male	53	44,17
Class of		
2021	60	50,00
2022	60	50,00
Admission Pathway		
SNMPTN	40	33,33
SBMPTN	40	33,33
Mandiri	40	33,33

Table 1 shows that a large number of respondents are female, namely 67 respondents (55.83%). Respondents from the 2021 and 2022 batches were equal in number, namely 60 respondents (50.00%). In addition, respondents who were accepted through the SNMPTN, SBMPTN, and Mandiri pathways also had the same number, namely 40 respondents from each pathway (33.33%).

### Overview of Respondents' Academic Achievement

**Table 2.** Overview of Respondents' Academic Achievement

Variable (N=120)	Frequency	Percentage (%)
GPA		
Mean (SD)	3,68 (0,21)	
Min	3,01	
Max	4,00	
Student's GPA		
3,01 – 3,50	27	22,50
>3,50	93	77,50
Academic achievement		
Have	37	30,83
Do not have	83	69,17
Internationa Level		

**Table 4.** The Relationship between Admission Pathways and Student GPA

Admission Pathway	Student GPA		OR	[95% CI]	P-value
	3,01-3,50	>3,50			
SNMPTN	8 (20,0%)	32 (80,0%)	0,80	0,273 – 2,189	0,64
SBMPTN	2 (5,0%)	38 (95,0%)			
Mandiri	17 (42,5%)	23 (57,5%)			

Based on Table 4, it is presented that students who were accepted through the SNMPTN pathway mostly get a GPA > 3.50, which is 32 students (80.0%). In those admitted through the SBMPTN pathway, most students get a GPA > 3.50, which is 38 students (95.0%). In addition, students

Competition		
Have	11	9,17
Do not have	109	90,83
National Level Competition		
Have	29	24,17
Do not have	91	75,83
Provincial Level Competition		
Have	2	1,67
Do not have	118	98,33
District Level Competition		
Have	1	0,83
Do not have	119	99,17
University Level Competition		
Have	14	11,67
Do not have	106	88,33

Based on Table 2, the overall mean GPA of respondents was 3.68 with a standard deviation (SD) of 0.21. Most respondents had a GPA above 3.50 amounting to 93 respondents (77.50%).

When viewed from student academic competitions, most respondents did not have academic competition winners, namely 83 respondents (69.17%). For respondents who have won academic competitions, most respondents have won competitions at the national level, namely 29 respondents (24.17%). In addition, the most other competition winners were at the university level, as many as 14 respondents (11.67%).

### The Relationship between Admission Pathways and Student GPA

**Table 3.** Normality Test Kolmogorov Smirnov

Variable	P-value
GPA	0,02

Based on Table 3, it can be seen that the respondents' GPA scores are not normally distributed and statistically significant ( $p < 0.05$ ). Therefore, the researcher categorized the GPA scores into 2 groups, namely 3.01 - 3.50 and >3.50 so that the chi square test could be used to find the relationship with the admission pathway.

admitted through the mandiri pathway mostly get a GPA > 3.50, which is 23 students (57.5%).

The results of chi square analysis showed that the admission pathway did not affect student GPA and did not

have a statistically significant relationship (OR = 0.80; 95% CI = 0.273 - 2.189; p-value = 0.64).

**Relationship between Admission Pathways and Academic Competition Achievements**

**Table 5.** The Relationship between Admission Pathways and Student Academic Competition Achievements

Admission Pathway	Academic achievement		OR	[95% CI]	P-value
	Have	Do Not Have			
SNMPTN	14 (35,0%)	26 (65,0%)	0,75	0,31 – 1,85	0,48
SBMPTN	18 (45,0%)	22(55,0%)			
Mandiri	5 (12,5%)	35 (87,5%)			

Based on Table 4, most students who were accepted through the SNMPTN pathway did not have academic competition achievements, namely 26 students (65.0%). In those accepted through the SBMPTN pathway, most students did not have academic competition achievements, namely 22 students (55.0%). In addition, most of the students who were accepted through the Mandiri pathway also did not have academic competitions, namely 35 students (87.50%).

The results of chi square analysis showed that the admission pathway did not affect students to have academic competition champions and did not have a statistically significant relationship (OR = 0.75; 95% CI = 0.31 - 1.85; p-value = 0.48).

**DISCUSSION**

**Relationship between Admission Pathway and Student GPA Score**

Referring to the findings of the statistical tests in this study, it can be seen that most respondents have a GPA > 3.5, which is 77.50% with an overall average of 3.68. This can occur due to a number of factors that support students to get a good GPA, namely the motivation of the spirit of learning, the ability to manage time, the atmosphere of the living environment, the level of difficulty of lecture material, family economic conditions, learning facilities, relationships with family and friends, lecturers who teach courses, actively participating in organizations or other activities, physical condition and health, and other factors.<sup>16</sup> In addition, burnout, financial circumstances, personal problems, and so on.<sup>17</sup> These factors can be a foundation that is in line with the results of the study which shows that most of the Udayana University Undergraduate Medical Study Program have a good GPA (>3.5 and an average of 3.68).

Based on Table 4, it is known that the student admission pathway is not related to student GPA as indicated by a p-value of 0.64. This is similar to the research of Triabdi, Diana Alexandra and Jelita (2021) which shows that there is no correlation between student admission selection and the GPA shown. This is evidenced by the negative correlation of 0.142 so that there is no relationship and the independent and dependent variables are opposite to each other.<sup>18</sup> Another study conducted by Tulle et al. (2023) also showed that there was no relationship between the university admission selection system and the GPA of undergraduate medical students at Nusa Cendana University with a p-value of 0.349.<sup>19</sup>

The absence of a difference between admission pathways and students' GPA could be due to the fact that

admission selection is only one of the many factors that influence medical students' GPA. Other factors that can affect student GPA are physiological factors; psychology consisting of interest, intelligence; motivation; environment; instrumental; family; and lecturer competence.<sup>19</sup>

Based on the GPA value of medical students, the most students who get GPA > 3.50 are students who were accepted through the SBMPTN pathway, namely 38 (95.0%) students. These results are in line with research conducted by Triabdi, Diana Alexandra and Jelita (2021) which shows that students admitted through the SBMPTN pathway get a higher GPA value in the range of 3.51 - 4.00, as many as 16 people (64%), compared to students who enter through other admission pathways.<sup>18</sup>

This can happen because the screening of students through the SBMPTN pathway applies exam questions that are prepared based on the academic rules of test development. The SBMPTN written exam is designed to measure basic abilities that can predict the success of prospective students in various study programs. Higher order thinking skills are evaluated in this test, along with academic potential, basic study skills, science and technology, and social knowledge and humanities. According to Oktaria and Lisiswanti (2018), students admitted through the SBMPTN pathway are high-quality students. After the announcement of SBMPTN, each university organizes local tests as part of the mandiri admission pathway. This causes differences in the quality of the questions given by each university and the level of difficulty that is different from the SBMPTN admission selection.<sup>5</sup>

**Relationship between Admission Pathways and Academic Performance**

Based on the findings of the statistical tests in this analysis, it can be seen that 69.17% of respondents have no achievements. This incident is similar to the study conducted by Hidayah (2016) in which academic achievement is influenced by several factors, namely facilities and infrastructure factors, student factors, academic service factors, lecturer factors, and curriculum factors.<sup>20</sup>

Student factors include motivation from within themselves to achieve the goals that will be achieved. When students have high motivation to participate in academic competitions, it will increase the opportunity to excel. Lecturer factors include support for students to encourage them to participate in education or academic competitions. The curriculum factor in question, namely the curriculum

used in the teaching and learning process. The academic service factor is a service provided by the university related to teaching and learning activities, while the facilities and infrastructure factor in question is a supporting tool provided from the university to support students participating in academic competitions. In addition, the low number of students who do not have achievements can be caused by their busyness outside the campus, such as participating in organizations, committees, working, and so on or difficulty dividing their time to study by participating in academic competitions so that it makes it difficult for students to divide their time in participating in academic competitions.

The statistical test results also show that in students who have won academic competitions, 24.17% of the competition champions achieved are at the national level. This can be caused because the competition offer given from the university or other parties is at the national level. In addition, this can occur because Udayana University Undergraduate Medical Study Program students have good academic abilities so that they can compete at the national level well and win the championship.

Based on Table 5, it is known that the admission pathway is not related to the ownership of academic competition winners as indicated by a p-value of 0.48. This can be caused by factors that influence student interest in participating in academic competitions, namely learning motivation, peer association, and lecturer competence. Students who have high learning motivation tend to get bored easily with routine activities and prefer to work independently or look for other activities, such as participating in competitions. Peer associations provide an influence to provide a supportive environment for participating in academic competitions. Friends who often participate in academic competitions tend to invite their close friends to participate in academic competitions together. Lecturer competence is also related to student academic achievement because lecturers who provide enthusiasm and motivation to their students will encourage students to be more enthusiastic about participating in academic competitions.<sup>21</sup>

Based on the ownership of academic achievement, students who have the most academic achievement are students who were accepted through the SBMPTN pathway, as many as 18 (45.0%) students. These results can occur because the SBMPTN pathway is a pathway using a more rigorous and competitive selection where participants must compete with thousands of other prospective students. In addition, the SBMPTN admission pathway also emphasizes more on academic values, one of which is a certificate of winning academic competitions. Therefore, students who are accepted through the SBMPTN pathway have more experience in participating in academic competitions when compared to other admission pathways. The experience of participating in academic competitions can be one of the triggers to take part in other academic competitions in universities. In addition, based on research from Sa'Adah

(2017), it is said that high learning achievement can increase student interest in participating in competitions.<sup>22</sup>

## CONCLUSIONS AND SUGGESTIONS

Based on the results obtained in the study on the relationship between admission selection and academic achievement of Udayana University Undergraduate Medical Study Program students, it can be concluded that this study uses primary and secondary data with a total number of 120 student respondents. The result of the study was the discovery of differences in student academic achievement with the most achievement found in students admitted through the SBMPTN pathway.

The results also showed that there was no significant relationship between the selection of admission pathways with academic achievement consisting of student GPA and academic competition winners. The SBMPTN admission pathway with a GPA > 3.50 is more than the other admission pathways. The pathway with the most academic achievement was also found in the SBMPTN admission pathway.

Further research is needed related to student academic achievement as a dependent variable considering that it can be influenced by many factors and a larger scope is needed so that more accurate results are obtained to describe the relationship between variables which can then be more generalized in the population.

## CONFLICT OF INTEREST AND FUNDING DISCLOSURE

The authors declare that the research was conducted in the absence of any commercial or financial relationship that could be construed as a potential conflict of interest. This research was funded by personal funds.

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