Comparison Between Preclinical And Clinical Students Of Influence Of Intrinsic Factors In Academic Achievement

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Abstract. *Academic achievement is used to identify student skill levels, ensure academic progress and predict student achievement. Academic achievement can be influenced by many factors, such as self-regulated learning (SRL), emotional intelligence, motivation, and learning environment. In Indonesia, there has been no research on the relationship between SRL, motivation, emotional intelligence, and the environment on academic achievement for the last five years, comparing preclinical students with clinical students in one study. Most studies only focus on preclinical samples. This article explores the factors that influence academic achievement in preclinical and clinical students. In addition, this article also discusses the relationship between SRL, motivation, emotional intelligence, and the learning environment on academic achievement, as well as knowing the most influential factors in improving academic achievement. This is a cross-sectional study that implemented MSLQ, WLEIS, and DREEM questionnaires. GPA measures academic achievement. 249 students consisted of 224 preclinical students and 25 clinical students were enrolled to this study, Results There was a significant value between SRL and GPA in preclinical students (p=0.000) and clinical students (p=0.087); motivation on the GPA of preclinical (p=0.000) and clinical students (p=0.011); emotional intelligence with GPA of preclinical (p=0.000) and clinical students (p=0.004); and the learning environment on the GPA of preclinical (p=0.000) and clinical students (p=0.814). SRL, emotional intelligence, and learning environment influence the GPA of 49.5%. Emotional intelligence was the most significant influence variables on improving academic achievement.*

Keywords**:** *GPA, learning environment, medical students ,motivation, self-regulated learning*

Abstrak. Prestasi akademik digunakan untuk mengidentifikasi tingkat kemampuan siswa, memastikan kemajuan akademik, dan memprediksi prestasi siswa. Prestasi akademik dapat dipengaruhi oleh banyak faktor, seperti self-regulated learning (SRL), kecerdasan emosional, motivasi, dan lingkungan belajar. Di Indonesia, belum ada penelitian mengenai hubungan antara SRL, motivasi, kecerdasan emosional, dan lingkungan terhadap prestasi akademik selama lima tahun terakhir yang membandingkan mahasiswa preklinik dengan mahasiswa klinik dalam satu penelitian. Kebanyakan penelitian hanya berfokus pada sampel preklinik. Artikel ini membahas faktor-faktor yang mempengaruhi prestasi akademik pada mahasiswa preklinik dan klinik. Selain itu, artikel ini juga membahas hubungan antara SRL, motivasi, kecerdasan emosional, dan lingkungan belajar terhadap prestasi akademik, serta mengetahui faktor yang paling berpengaruh dalam meningkatkan prestasi akademik. Penelitian ini merupakan penelitian cross-sectional dengan menggunakan kuesioner MSLQ, WLEIS, dan DREEM. Indeks Prestasi Kumulatif (IPK) mengukur prestasi akademik. Sebanyak 249 mahasiswa yang terdiri dari 224 mahasiswa preklinik dan 25 mahasiswa klinik terdaftar dalam penelitian ini . Hasil Terdapat hubungan yang signifikan antara SRL dengan IPK pada mahasiswa preklinik (p=0,000) dan mahasiswa klinik (p=0,087); motivasi pada IPK (p=0,000). 087); motivasi terhadap IPK mahasiswa preklinik (p=0.000) dan mahasiswa klinik (p=0.011); Kecerdasan emosional dengan IPK mahasiswa preklinik (p=0.000) dan mahasiswa klinik (p=0.004); dan lingkungan belajar terhadap IPK mahasiswa preklinik (p=0.000) dan mahasiswa klinik (p=0.814). SRL, kecerdasan emosional, dan lingkungan belajar mempengaruhi IPK sebesar 49,5%. Kecerdasan emosional merupakan variabel yang paling signifikan pengaruhnya terhadap peningkatan prestasi akademik.

Kata kunci: Indeks Prestasi Kumulatif, lingkungan belajar, mahasiswa kedokteran, motivasi, self-regulated learning

1. Introduction

Academic achievement is the result of a reflection of the individual's ability to make an effort that has been made in the form of awards in the field of education (Nabizadeh et al., 2019; Handayani and Sholikhah, 2021). The cumulative achievement index (GPA) indicates students' academic achievement (Handayani and Sholikhah, 2021). Academic achievement is used to identify student skill levels, ensure academic progress and predict student achievement (Flashman, 2012; Sitepu and Isnayanti, 2021). Academic achievement can be influenced by many factors, such as self-regulated learning (SRL), emotional intelligence, motivation, and learning environment (Artino et al., 2012; Nabizadeh et al., 2019; Duckworth et al., 2019; Panjaitan and Isnayanti, 2020; Wu et al., 2020). SRL can lead individuals to think critically (Nabizadeh et al., 2019; Ballouk et al., 2022). Motivation is considered the primary determinant of learning quality and success in the learning process to help improve academic achievement (Pelaccia and Viau, 2017). Students with emotional intelligence tend to manage emotions well, indirectly affecting academic achievement (Dugué, Sirost and Dosseville, 2021). The learning environment is also one-factor affecting academic achievement because medical students have two stages of lectures, namely preclinical and clinical (Cho et al., 2017; Artino et al., 2012).

In Indonesia, there has been no research on the relationship between SRL, motivation, emotional intelligence, and the environment on academic achievement for the last five years, comparing preclinical students with clinical students in one study. Most studies only focus on preclinical samples. This article explores the factors that influence academic achievement in preclinical and clinical students. In addition, this article also discusses the relationship between SRL, motivation, emotional intelligence, and the learning environment on academic achievement, as well as knowing the most influential factors in improving academic achievement.

2. Methods

This research was conducted at the Veterans National Development University, Jakarta, Faculty of Medicine, January to July 2022. 224 undergraduates medical students from four different years enrolled to this cross-sectional study, such as 57;57;53;57 students from year (2021,2020,2019 and 2018 respectively). Meanwhile, clinical students were 25 students from batch 58. Total respondents were 249 students. We used Spearman correlation test with a p-value < 0.05 to determine the significancy of relationship between each independent variable on academic achievement. The Multiple Linear Regression Test was used to evaluate the independent variable that has the most significant influence on improving academic achievement There were three main instruments: the MSLQ, WLEIS, and DREEM questionnaires. The MSLQ questionnaire consists of 68 items divided into 18 questions for motivation and 50 questions about SRL (Afifah, 2021). The WLEIS questionnaire consists of 16 question items to measure emotional intelligence (Wong and Law, 2017). The DREEM questionnaire consists of 50 things to measure learning environment satisfaction (Gowda, Prashanth and Ismail, 2018). These four questionnaires use a Likert scale. Each questionnaire has been tested for validity and reliability on 35 preclinical and clinical respondents and was declared valid and reliable.

3. Results

The Relationships Among Self-Regulated Learning, Motivation, Emotional Intelligence, and Learning Environment to Academic Achievements of Preclinic and Clinic Students

Table 1. Results of Correlation Test of Independent Variables with GPA

Dependent Variable	Independent Variable	Significant	Correlation Coefficient	Result
Preclinical Student SRL	Preclinical Student GPA	0.000	0.491	Positive Relationship
Clinical student SRL	Clinical Student GPA	0.087	0.350	Not Positively Related
Preclinical Student Motivation	Preclinical Student GPA	0.000	0.330	Positive Relationship
Clinical Student Motivation	Clinical Student GPA	0.011	0.498	Positive Relationship
Preclinical Student Emotional Intelligence	Preclinical Student GPA	0.000	0.626	Positive Relationship
Clinical Student Emotional Intelligence	Clinical Student GPA	0.004	0.561	Positive Relationship
Preclinical Student Learning Environment	Preclinical Student GPA	0.000	0.357	Positive Relationship
Clinical Student Learning Environment	Clinical student GPA	0.814	0.050	ot Positively Related

Source: primary data, 2022

The relationship of SRL to academic achievement in preclinical and clinical students

Based on the table above, it is known that the SRL variable with academic achievement in preclinical students has a p-value of 0.000 (p <0.05), which means there is a significant relationship between SRL and academic achievement in preclinical students. In addition, the correlation coefficient value is 0.491, which indicates the correlation between SRL and moderate academic achievement (0.40-0.599). The correlation coefficient value shows a positive direction, which means that the relationship between the SRL variables and the GPA is unidirectional. The results of research on preclinical students align with research conducted by Khan (2021) on preclinical students of the Faculty of Medicine, UPN Veteran Jakarta. This study shows that SRL has a significant relationship with academic achievement with a p-value of 0.000 and a correlation coefficient of 0.416 (Khan, 2021). Another study conducted by Puspita, et al. (2018) on preclinical students at Udayana University also had the same results as this study. Research conducted by Puspita shows a relationship between SRL and academic achievement with a significant value of 0.012 and a positive direction of the relationship (Puspita and Rustika, 2018). In the table above, it is also known that clinical student respondents showed a p-value of 0.087 or p>0.05, meaning that there was no significant relationship between SRL and academic achievement in clinical students. The positive correlation coefficient value is 0.350, which is in the range of 0.20 – 0.399, which

means it has a low correlation with GPA. The results of the research on clinical students align with the research conducted by Simaremare (2019) on clinical students from several FK in Sumatra. The study showed that SRL did not have a significant relationship with academic achievement, with a p-value of 0.731 (p>0.05) (Simaremare, 2019). The absence of this relationship can be caused by several factors, such as differences in the characteristics of individual capacities. Each individual has a different understanding of knowledge and metacognitive abilities, and each individual's goals are other (Simaremare, 2019). Then another reason that causes the difference in the results of this study is the inability of respondents to apply the SRL strategy effectively, as well as the lack of resource utilisation such as learning together with peers (Afifah, 2021). Medical students have many academic demands that are quite a lot, so they need SRL to maintain academic achievement (Cho et al., 2017). SRL is one of the independent, active learning strategies to self-regulate in the learning process to maximise academic achievement results. SRL will enable students to monitor their learning process, design learning strategies, and then evaluate and observe how to learn to be more effective and disciplined (Simaremare, 2019). According to Moghadari-Koosha (2020), students who apply SRL will have an exciting view of the learning process, a good level of efficacy and maximised effort in every job (Moghadari-Koosha et al., 2020). This shows that students who apply for SRL will get better academic achievement than students who do not apply for SRL (Ballouk et al., 2022).

The relationship of motivation to academic achievement in preclinical and clinical students

Based on the table above, it is known that the motivation variable with academic achievement in preclinical students obtained a p-value of 0.000 (p <0.05), meaning there is a significant relationship between motivation and academic achievement. In addition, the correlation coefficient value is 0.330, which indicates the level of closeness of motivation with low academic achievement (0.20-0.399). The correlation coefficient value shows a positive direction, which means that the relationship between motivational variables and GPA is unidirectional. The clinical student respondents showed a p-value of 0.011 or a p-value <0.05, indicating that H1 was accepted, meaning there was a significant relationship between motivation and academic achievement in clinical students. The positive correlation coefficient value is 0.498, which is in the range of 0.40 – 0.599, which means it has a moderate correlation with GPA. The research results on preclinical and clinical students align with the research by Khan (2021) on preclinical students Faculty of Medicine, UPN Veteran Jakarta. The study shows that motivation has a significant relationship with academic achievement, with a p-value of 0.000 and a correlation coefficient of 0.409 (Khan, 2021). Another study conducted by Kapitan et al. (2021) on preclinical FK students in NTT had results that were not in line with this study; namely, there was no relationship between motivation and academic achievement with a significant value of 0.109 and a positive direction of the relationship (Kapitan, Kareri and Amat, 2021). Dissimilar results were also obtained in the research conducted by Ompusunggu (2020) on HKBP Nommensen Medical Faculty students who had a p-value of 0.227 (p>0.05), meaning that there was no relationship between motivation and academic achievement (Ompusunggu, 2020).

A relationship between learning motivation and academic achievement can indicate that someone with a high motivation score will get better academic achievement results when compared to students who have a lower motivation score (Pelaccia and Viau, 2017). This is caused by several impulses from within and outside a person. These intrinsic factors include a sense of interest, curiosity about something, a sense of competence and interest in achieving the best results, while external factors, for example, are encouragement from families who support each learning process (Purnamasari et al., 2020; Afifah, 2021; Ommering et al., 2021).

The relationship between emotional intelligence and academic achievement in preclinical and clinical students

Based on the table above, it is known that the emotional intelligence variable with academic achievement in preclinical students obtained a p-value of 0.000 ($p < 0.05$), which means a significant relationship between emotional intelligence and academic achievement. In addition, the correlation coefficient value is 0.626, which shows the closeness of emotional intelligence with solid academic achievement (0.60-0.799). The correlation coefficient value shows a positive direction, which means that the relationship between emotional intelligence variables and GPA is unidirectional. The results of research on preclinical students are not in line with the research conducted by Khan (2021) on preclinical students of the Faculty of Medicine, UPN Veteran Jakarta. This study shows that emotional intelligence does not have a significant relationship with academic achievement, with a p-value of 0.887 and a correlation coefficient of 0.010 (Khan, 2021). Differences in research results in preclinical students who are only one year apart can be caused by age factors; the older a person gets, the more experiences and life lessons he gets. The span of a year will increase self-regulation abilities, especially emotional regulation, as someone will be better able to recognise their own emotions and recognise other people's emotions so they can control the situation (George et al., 2021).

Based on the table above, the clinical student respondents showed a p-value of 0.004 or a p-value <0.05, meaning there was a significant relationship between emotional intelligence and academic achievement in clinical students. The positive correlation coefficient value is 0.561, which is in the range of 0.40 – 0.599, which means it has a moderate correlation with GPA. Research conducted by Harianja, et al. (2021) on FK students at Tanjungpura University aligned with this study. The results of this study indicate a relationship between emotional intelligence and academic achievement with a significant value of 0.001, and the direction of the relationship is positive (Harianja, Armyanti and Fitrianingrum, 2021). Emotional intelligence is essential in improving academic achievement (Dugué, Sirost and Dosseville, 2021). Students with high emotional intelligence scores will get better academic achievement results when compared to students who have lower motivation scores. This emotional intelligence will help students regulate emotions and understand emotions that come from themselves and others so that they can think critically when facing all situations in a calm state. In addition, medical students with high emotional intelligence regulatory abilities will also communicate well with other people. Clinical students will be able to communicate well with their patients by considering their feelings; this will create a good relationship between doctors and patients (George et al., 2021).

4. Discussion

The relationship between the learning environment and academic achievement in preclinical and clinical students Based on the table above, it is known that the learning environment variable with academic achievement in preclinical students obtained a p-value of 0.000 ($p < 0.05$), which means that there is a significant relationship between the learning environment and academic achievement in preclinical students. In addition, the value of the correlation coefficient is 0.357, which shows the level of closeness of emotional intelligence with low academic achievement (0.20-0.399). The correlation coefficient value indicates a positive direction, which means that the relationship between the learning environment variables and the GPA is unidirectional. This study's results align with the research conducted by Sitepu, et al. (2021) on medical students at the Muhammadiyah University of North Sumatra. The research shows that the learning environment significantly correlates with academic achievement, with a p-value of 0.000 (Sitepu and Isnayanti, 2021). Based on the table above, the clinical student respondents showed a p-value of 0.814 or $p > 0.05$, meaning there was no significant relationship between the learning environment and academic achievement in clinical students. The positive correlation coefficient value is 0.050, which is in the range of 0.00 – 0.199, which means it has a very low correlation with GPA. The research results on clinical students align with Aditya et al. (2021) on medical students at Tarumanagara University. The study showed that emotional intelligence did not have a significant relationship with academic achievement, $p > 0.05$. Based on this research, it is known that there is no relationship because the learning environment is only a small factor of several factors that affect learning achievement (Aditya et al., 2021).

The cause of the absence of a relationship between the learning environment and academic achievement in this study was influenced by several factors such as differences in student perceptions of the learning process, teachers, academic achievement, learning environment, and social environment. (Gowda, Prashanth and Ismail, 2018). Differences in student perceptions of the learning process and teachers can be seen in the differences in stations, hospitals, and supervising doctors. This difference is an essential point in this study; the difference in the learning environment for each change in status will make students continue to adapt to the new environment. It is known that every time there is a change of station, there is also a change of supervisor; the absence of a relationship between the learning environment and academic achievement can also occur because there is no positive feedback from the supervising doctor on the accomplishments of students (Hasan et al., 2021). The learning environment plays a vital role in improving academic achievement in students (Dunham et al., 2017). Students with a high learning environment score will get better academic achievement results when compared to students who have a lower learning environment score. A comfortable learning environment will make students more interested in studying harder (Sitepu and Isnayanti, 2021).

The most influential variable in improving academic achievement Tabel 2. The Multiple Linear Regression Test

Mode	Variable	Unstandardized Coefficients Beta	Std. error	Correlation Coefficient	t	Sig.
1	*(constant)*	2.743	0.073		37.421	0.000
	SRL	0.001	0.000	0.236	3.939	0.000
	Motivation	0.001	0.001	0.076	1.318	0.189
	Emotional Intelligence	0.008	0.008	0.493	9.717	0.000
	Learning Environment	0.001	0.001	0.076	1.466	0.144
2	*(constant)*	2.780	0.068		41.026	0.000
	SRL	0.001	0.000	0.271	5.001	0.000
	Emotional Intelligence	0.008	0.001	0.500	9.908	0.000
	Learning Environment	0.001	0.000	0.091	1.794	0.074

R^2 = 49.5%

Source: primary data, 2022

Based on the results of multivariate research using multiple linear regression tests, it was found that the variables of the learning environment, emotional intelligence, and SRL have a relationship with increasing academic achievement. The motivation variable is not included because it has the most significant value, so motivation is excluded from the second equation model. The greater the value of p, the less influence caused by these variables. The last model of the multivariate test showed a positive result at the constant (□) of 2,780, with a positive sign indicating a one-way influence between the independent and dependent variables. This shows that if all independent variables (SRL, emotional intelligence and learning environment) are 0% or unchanged, the GPA is 2.78. The regression coefficient value for the SRL variable is 0.001. This value indicates that SRL has a positive effect on GPA. This shows that if the SRL increases by 1%, it will affect the increase in GPA by 0.001, assuming that other variables remain constant. The value of the regression coefficient on the emotional intelligence variable is 0.008. This value shows that emotional intelligence has a positive influence on GPA. This indicates that if emotional intelligence increases by 1%, the GPA will also increase by 0.008, assuming that other variables are constant. The regression coefficient value for the learning environment variable is 0.001, which means the learning environment positively influences the GPA. This shows that if the learning environment increases by 1%, the GPA variable will also increase by 0.001, assuming that other variables are constant. The explanation concludes that the emotional intelligence variable has the most dominant influence on improving academic achievement.

5. Conclusion

Self-regulated learning was significantly related to the academic achievement of preclinical students Faculty of Medicine UPNVJ. At the same time, there was no relationship between SRL and academic achievement for clinical students. Motivation was significantly related to the academic achievement of preclinical and clinical students. Emotional intelligence was significantly related to the academic achievement of preclinical and clinical students. The learning environment was significantly associated with the academic achievement of preclinical students. In contrast, the clinical students do not find a relationship between the learning environment and academic achievement. Self-regulated

learning, emotional intelligence, and learning environment significantly influenced the academic achievement of preclinical and clinical students Faculty of Medicine UPNVJ by 49.5%, and the most influential factor on academic achievement was emotional intelligence.

The authors do not have any declarations of interest to report

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