

The Effect of Academic Self-efficacy on CBT and SOCA Exam Achievement of Neuropsychiatry Block

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Abstract

Introduction: Academic self-efficacy, defined as an individual's belief in their ability to overcome academic challenges, has consistently been linked to improved academic performance. However, its impact on key assessments in medical education, such as the Computer-Based Test (CBT) and the Student Oral Case Analysis (SOCA), remains underexplored. This study examines the influence of academic self-efficacy on knowledge achievement in the CBT and SOCA exams among medical students in the Neuropsychiatry block at the Faculty of Medicine, Muslim University of Indonesia. **Objective:** This study aims to assess the impact of academic self-efficacy on students' knowledge achievement in both the CBT and SOCA exams and to provide insight into the role of self-efficacy across different exam formats. **Methods:** This cross-sectional observational study involved 376 students from the 2022 cohort. Academic self-efficacy was measured using a validated questionnaire, and test scores were analyzed using descriptive statistics. The relationship between self-efficacy and test scores was evaluated using Pearson's correlation test. **Results:** The study found a significant positive correlation between academic self-efficacy and SOCA exam scores ($r = 0.183$, $p = 0.000$), although the correlation was weak. No significant relationship was found between self-efficacy and CBT scores ($r = -0.075$, $p = 0.148$). The majority of students reported high self-efficacy, with the average SOCA score (83.78) significantly higher than the CBT score (60.08). **Conclusion:** Academic self-efficacy significantly influences performance in interactive, communication-based exams like SOCA but has minimal impact on multiple-choice exams like CBT, which rely on recall or recognition. These findings emphasize the importance of fostering self-efficacy in medical education. Educational institutions should consider interventions such as self-efficacy training, learning strategies, and critical thinking development to enhance students' confidence and academic success.

Keywords : Academic Self-Efficacy, CBT Exam, SOCA Exam.

Abstrak

Pendahuluan: Efikasi diri akademik, yang didefinisikan sebagai keyakinan individu terhadap kemampuannya untuk mengatasi tantangan akademik, telah secara konsisten dikaitkan dengan peningkatan kinerja akademik. Namun, dampaknya terhadap ujian penilaian utama dalam pendidikan kedokteran, seperti Computer-Based Test (CBT) dan Student Oral Case Analysis (SOCA), masih belum banyak diteliti. Penelitian ini menyelidiki pengaruh efikasi diri akademik terhadap pencapaian pengetahuan dalam ujian CBT dan SOCA pada mahasiswa kedokteran di blok Neuropsikiatri Fakultas Kedokteran Universitas Muslim Indonesia. **Tujuan:** Penelitian ini bertujuan untuk mengetahui pengaruh efikasi diri akademik terhadap pencapaian pengetahuan mahasiswa dalam ujian CBT dan SOCA, serta memberikan wawasan mengenai peran efikasi diri dalam format ujian yang berbeda. **Metode:** Penelitian analitik observasional ini menggunakan desain cross-sectional, yang

melibatkan 376 siswa dari angkatan 2022. Data dikumpulkan menggunakan kuesioner yang telah divalidasi untuk mengukur efikasi diri akademik, dan nilai ujian dianalisis menggunakan statistik deskriptif. Hubungan antara efikasi diri dengan nilai ujian dinilai menggunakan uji korelasi Pearson. **Hasil:** Hasil penelitian menunjukkan hubungan positif yang signifikan antara efikasi diri akademik dan nilai ujian SOCA ($r = 0,183$, $p = 0,000$). Meskipun korelasi ini signifikan, namun nilainya tergolong lemah. Tidak ditemukan hubungan yang signifikan antara efikasi diri dan nilai ujian CBT ($r = -0,075$, $p = 0,148$). Mayoritas siswa menunjukkan tingkat efikasi diri yang tinggi, dengan nilai rata-rata SOCA sebesar 83,78, yang secara signifikan lebih tinggi dibandingkan nilai CBT yang sebesar 60,08. **Kesimpulan:** Efikasi diri akademik secara signifikan mempengaruhi kinerja dalam ujian aplikatif berbasis komunikasi langsung dengan penguji, seperti SOCA. Namun, pengaruhnya terhadap ujian pilihan ganda yang mengandalkan recall atau recognition, seperti CBT, sangat minimal. Temuan ini menyoroti pentingnya menumbuhkan efikasi diri dalam pendidikan kedokteran, terutama penilaian pembelajaran interaktif. Implikasi dari penelitian ini menunjukkan institusi pendidikan harus menerapkan intervensi yang ditargetkan, seperti pelatihan efikasi diri, strategi belajar, dan peningkatan berpikir kritis untuk meningkatkan kepercayaan diri dan hasil akademis siswa.

Kata kunci : Efikasi Diri Akademik, Ujian CBT, Ujian SOCA.

I. INTRODUCTION

Higher education is an educational institution that provides advanced education after secondary education, where medical students undergo a learning process for approximately five and a half years at the Faculty of Medicine. At the Muslim University of Indonesia, student learning outcomes assessment is carried out through various exam methods, including the computer-based (CBT), Student Oral Case Analysis (SOCA), and Objective Structured Clinical Examination (OSCE). The CBT exam serves to assess the cognitive aspects of students through multiple-choice questions, while SOCA assesses scientific knowledge and communication skills, which are important for future professional interactions. The OSCE, on the other hand, tests students' practical abilities in physical examination and diagnosis. A student's academic success is influenced by internal factors, such as health, interests, motivation, and self-efficacy, as well as external factors, such as support from family and the educational environment.^{1,2}

Self-efficacy, which refers to an individual's belief in his or her ability to cope with academic challenges, is one of the key factors that affect a student's academic achievement. Students with high levels of self-efficacy tend to be more persistent in facing difficulties and achieving better results. The Neuropsychiatry Block, which has the highest credit load at the Faculty of Medicine, Muslim University of Indonesia, requires good readiness and self-confidence from students. This study aims to explore the influence of the level of academic self-efficacy on the achievement of knowledge in the CBT and SOCA exams of students in the 2022 Neuropsychiatry block. It is hoped that the results of this research can provide insight for researchers, educational institutions, and students regarding the importance of self-efficacy in the context of CBT and SOCA exams, as well as become

evaluation material to improve the quality of learning at the Faculty of Medicine.

Academic self-efficacy has consistently been shown to play a crucial role in predicting academic performance across various educational contexts, with students exhibiting higher levels of self-efficacy often achieving better academic outcomes.³ The positive correlation between academic self-efficacy, academic engagement, and academic achievement highlights its role as a key motivator in the academic domain.⁴ This is further supported by evidence that students with high self-efficacy generally perform better academically, regardless of their field of study.⁵ In addition to academic performance, self-efficacy influences learning outcomes through mediators such as academic engagement, learning-related emotions, and metacognitive strategies.^{4,6} Interventions aimed at increasing self-efficacy have also been effective in reducing stress and enhancing performance, particularly among specific populations like left-behind children.⁷ However, the application of these findings to medical students in high-stakes testing scenarios, such as SOCA and CBT exams in the Neuropsychiatry block, remains underexplored. While the relationship between academic self-efficacy and general academic achievement has been well-documented, few studies have focused on its impact in high-pressure environments, such as licensure or qualification exams, which are common in medical education.⁸ Research in this area could investigate how self-efficacy influences students' performance in specialized assessments, offering insights into how academic self-efficacy, through pathways like engagement and resilience, can improve outcomes in critical examinations.^{9,10} Addressing this gap in the literature could contribute valuable knowledge and inform targeted interventions to support students, particularly in fields like medicine, where assessment formats are highly structured and performance is critical.

The hypothesis of this study is that there is an influence of the level of academic self-efficacy on the achievement of knowledge in the SOCA and CBT exams of Neuropsychiatry block students, Faculty of Medicine, Muslim University of Indonesia class of 2022. The purpose of this study was to determine the effect of the level of academic self-efficacy on the achievement of knowledge in the CBT and SOCA exams of students in the neuropsychiatry block of the Faculty of Medicine, Muslim University of Indonesia class of 2022. The results of this study are expected to be the basis for designing intervention strategies that support the improvement of self-efficacy and the quality of learning in the Faculty of Medicine.

II. MATERIALS AND METHODS

This study is an observational analytical research with a cross-sectional design¹¹⁻¹³ which aims to determine the influence of academic self-efficacy levels on the achievement of knowledge in students CBT and SOCA exams in the Neuropsychiatry Block of the Faculty of Medicine, Muslim University of Indonesia class of 2022. The research was conducted in October-November 2024 at the Faculty of Medicine, Muslim University of Indonesia, Makassar City, South Sulawesi Province. The research population is students of the Faculty of Medicine, Muslim University of Indonesia class of 2022, with sampling techniques using a total sampling found to be 376 respondents, including all students who participated in the Neuropsychiatry Block. The inclusion criteria include students who are undergoing the Neuropsychiatric Block, participating in UAB CBT and SOCA, willing to be respondents, and in stable physical and mental condition. The exclusion criteria are students who do not fill out the questionnaire completely. The independent variables in this study are academic self-efficacy, while the dependent variables are CBT and SOCA values. Data collection is

done through questionnaires distributed before the exam, and data processing includes editing, coding, and tabulation. The validity and reliability test of the instrument was carried out using the SPSS program, with the product moment and Cronbach Alpha method. The reliability value of the academic self-efficacy instrument showed a Cronbach Alpha coefficient of 0.85, which indicates good internal consistency ($\alpha > 0.7$).¹⁴ Data analysis includes normality tests, linearity tests, descriptive statistics, and bivariate analysis using the Pearson test to determine the relationship between academic self-efficacy and knowledge achievement.¹⁵ The results of the analysis are expected to provide a clear picture of the influence of self-efficacy on students academic achievement at the Faculty of Medicine.

III. RESULTS AND DISCUSSION

A. CHARACTERISTICS OF RESPONDENT DISTRIBUTION

TABLE 1. RESULTS OF RESPONDENT DISTRIBUTION CHARACTERISTICS

		Number (N)	Percentage (%)
Gender	Male	97	25,8
	Female	279	74,2
Age	17	1	0,3
	19	26	6,9
	20	234	62,2
	21	90	23,9
	22	23	6,1
	23	2	0,5
ASE to CBT Value	Low (<24)	4	1,1
	Medium (24-39)	101	26,9
	High (>39)	217	72,1
ASE to SOCA Value	Low (<24)	4	1,1
	Medium (24-39)	112	29,8
	High (>39)	260	69,1
Family Support	Good (48-64)	324	86,2
	Fair (32-	52	13,8

	47)		
	Less (16-32)	0	0
Peer Social Support	Good (66-90)	326	86,7
	Fair (42-65)	52	13,3
	Less (18-41)	0	0
Education Environment	Good (27-36)	280	74,5
	Fair (18-26)	96	25,5
	Less (9-17)	0	0
Learning Motivation	Good (30-40)	339	90,2
	Fair (19-29)	37	9,8
	Less (8-18)	0	0
Learning Interest	Good (19-25)	314	83,5
	Fair (12-18)	62	16,5
	Less (5-11)	0	0
Total		376	100

Table 1 shows the characteristics of the distribution of respondents in the study regarding the influence of academic self-efficacy on the achievement of SOCA and CBT exams in the Neuropsychiatric Block. The majority of respondents were women (74.2%), with the highest age being in the 20-year range (62.2%). Most of the respondents had a high level of academic self-efficacy, which was 72.1% for the CBT exam and 69.1% for the SOCA exam. Only a few respondents had a low level of academic self-efficacy, 1.1% each for both exams. The factors of family support, social peers, educational environment, learning motivation, and interest in learning were also dominated by the good category, with percentages of 86.2%, 86.7%, 74.5%, 90.2%, and 83.5%, respectively.

B. DESCRIPTIVE STATISTICS OF CBT SCORES AND SOCA SCORES

TABLE 2. RESULTS OF DESCRIPTIVE STATISTICS OF CBT SCORE AND SOCA SCORE

	N	Min	Max	Average	SD
Knowledge attainment on the CBT exam	376	24	86	60,08	10,31
Knowledge attainment on the SOCA exam	376	67	99	83,78	6,53

Table 2 presents the descriptive statistical results of CBT and SOCA values in this study. For the achievement of knowledge in the SOCA exam, the minimum score obtained by respondents was 67, the maximum score was 99, with an average of 83.78 and a standard deviation of 6.53. This shows that student performance in the SOCA exam tends to be high with relatively small variation in scores. Meanwhile, for the achievement of knowledge in the CBT exam, the minimum score achieved was 24, the maximum score was 86, with an average of 60.08 and a standard deviation of 10.31.

C. PEARSON ASE CORRELATION TEST ON CBT SCORES AND SOCA SCORES

TABLE 3. PEARSON CORRELATION TEST RESULTS OF ASE AGAINST CBT SCORE AND SOCA SCORE

Variables	Correlation Strength (R)	p value	Correlation Direction
ASE with Knowledge Attainment on CBT	-0,075	0,148	Negative
ASE with Knowledge Achievement on SOCA	0,183	0,000	Positive

Based on the results of the Pearson correlation test, it was found that there was no significant relationship between academic self-efficacy and knowledge achievement on

the CBT exam, with a p-value of 0.148 and a correlation coefficient of -0.075. This shows that the level of academic self-efficacy does not significantly affect the outcome of the CBT exam. However, there was a significant positive relationship between academic self-efficacy and knowledge achievement on the SOCA exam, with a p-value of 0.000 and a correlation coefficient of 0.183.

D. THE INFLUENCE OF ACADEMIC SELF-EFFICACY ON KNOWLEDGE ACHIEVEMENT IN CBT EXAMS

The results showed that the majority of respondents had a high level of academic self-efficacy, but the achievement of CBT scores showed a lower average (60.08) compared to SOCA scores (83.78). This reflects the differences in the methods and demands of the two types of exams, where CBT emphasizes more on cognitive and multiple-choice aspects, while SOCA is applicable and requires communication skills and case analysis.¹⁶ Pearson's correlation analysis revealed that there was no significant relationship between academic self-efficacy and CBT score achievement (p-value 0.148, correlation coefficient -0.075). These findings suggest that academic self-efficacy may not be the dominant factor in determining student success on CBT-based exams, which rely more on cognitive abilities and theoretical understanding.^{17,18,19}

The complexity of CBT exams, which tend to be objective and structured, may be the reason why the relationship between academic self-efficacy and CBT score achievement is not significant. CBT exams that emphasize more on multiple-choice and mastery of theoretical material may not provide room for students to demonstrate self-confidence or applicative skills that are influenced by self-efficacy.²⁰ In addition, other factors such as study strategies, exam anxiety, and readiness for computer-based exams may have more influence on the

achievement of CBT scores. These findings are in line with previous research that showed that academic self-efficacy has more effect on types of exams that require applicative and communication skills, such as SOCA, compared to theory-based exams such as CBT.²¹

Although no significant association was found between academic self-efficacy and CBT score achievement, it is important to consider the role of other supporting factors, such as social support from family and peers, that can affect students motivation and readiness for exams.^{22,23} In addition, more interactive and technology-based learning strategies can help improve student self-efficacy and in turn contribute to better academic outcomes.¹⁶ Thus, although academic self-efficacy does not directly affect the achievement of CBT scores, the development of a supportive learning environment and effective learning strategies remain essential to improve the quality of education and academic outcomes of students.

E. THE INFLUENCE OF ACADEMIC SELF-EFFICACY ON KNOWLEDGE ACHIEVEMENT IN SOCA EXAMS

Academic self-efficacy has a significant influence on the achievement of knowledge in the SOCA (Student Oral Case Analysis) exam among medical students. The results showed that the average score of the SOCA exam reached 83.78 with the highest score of 99, which reflects good academic performance. This is supported by a high level of academic self-efficacy in the majority of respondents, indicating that students confidence in their academic abilities contributes positively to SOCA exam results.²⁴ These findings are in line with research that states that academic self-efficacy plays an important role in improving academic performance, especially when students are actively involved in the learning process.⁴ The SOCA exam, which demands

communication skills, case analysis, and the application of clinical knowledge, appears to be more influenced by the student's self-efficacy level compared to the CBT exam which is theoretical in nature.

In addition to academic self-efficacy, external factors such as family and peer support also play an important role in shaping students' self-confidence. The study showed that 86.2% of respondents received good family support, and 86.7% received social support from peers. This support can strengthen students' motivation and confidence in facing academic challenges, especially in exams that require applicative skills such as SOCA.²⁶ In addition, intrinsic motivations such as interest in learning also contribute to increasing academic self-efficacy. Interactive and supportive learning activities can increase self-efficacy, which in turn has a positive impact on academic achievement.⁷

The significant difference between SOCA and CBT scores shows that academic self-efficacy is more influential on exams that are applicative. The SOCA exam, which requires students to analyze clinical cases and communicate effectively, allows high self-efficacy students to demonstrate their abilities optimally. In contrast, CBT exams that emphasize more on cognitive and multiple-choice aspects may not provide room for students to make full use of their self-confidence.²⁰ These findings are in line with Bandura's theory which emphasizes that self-efficacy plays a role in building motivation and active involvement in the learning process, especially in contexts that require the application of knowledge directly.⁷

Although academic self-efficacy has a significant positive relationship with SOCA score achievement, other factors such as stress and exam pressure also need to be considered. Students with high self-efficacy tend to be better able to manage stress and

face exam challenges, which contributes to better outcomes.²⁷ In addition, a supportive educational environment, including interactive and case-based learning methods, can strengthen academic self-efficacy and improve students' applicative skills.¹⁷ Thus, the development of learning strategies that support the improvement of self-efficacy and clinical skills is key to improving the quality of education and academic outcomes of medical students. Further research is needed to explore more deeply the factors that influence the relationship between academic self-efficacy and academic achievement in a variety of exam contexts.

F. THE INFLUENCE OF SELF-EFFICACY ON KNOWLEDGE ACHIEVEMENT ON SOCA AND CBT EXAMS IN A LEARNING CONTEXT

The intersection of academic self-efficacy, critical thinking, and communication skills plays a critical role in educational psychology, especially in standardized assessments like the SOCA exam. Academic self-efficacy, defined as students' belief in their ability to perform academic tasks, has emerged as a key predictor of academic success across various contexts. Studies have shown that higher levels of self-efficacy correlate positively with academic performance. For instance, self-efficacy to mediate the relationship between motivation and engagement, ultimately influencing academic achievement. Students with high self-efficacy performed better academically, reinforcing the idea that self-efficacy impacts both motivation and actual performance.^{3,5}

In educational settings, critical thinking and communication skills are equally vital, particularly in exams like SOCA, where assessment and interaction are integral. Research indicates that students with high self-efficacy tend to engage more effectively in communication with peers and faculty, which enhances their learning outcomes.²⁸ Effective communication skills not only

foster academic success but also support personal development by helping students articulate ideas and engage in collaborative discussions.²⁹ Furthermore, self-efficacy plays a mediating role in addressing academic challenges, such as test anxiety. Students with higher self-efficacy are better equipped to manage stress and stay focused during exams.^{30,31}

The integration of CBT strategies can further enhance self-efficacy by helping students manage anxiety and develop effective learning techniques. Research shows that CBT techniques increase students confidence, which in turn improves academic performance.³² Educators are encouraged to foster environments that strengthen self-efficacy through formative assessments, feedback, and a supportive classroom climate, which can lead to improved academic outcomes.^{4,33}

G. RESEARCH LIMITATIONS

This study has several limitations, including its cross-sectional design, which prevents causal relationships from being established, and its reliance on a single-institution sample from the Faculty of Medicine, Universitas Muslim Indonesia, which limits generalizability. In addition, the study did not account for other influencing factors such as learning strategies, anxiety, or test readiness, and the majority of respondents were female (74.2%), which may introduce gender bias. Furthermore, the use of questionnaires to measure self-efficacy has the potential to introduce response bias, where participants do not fully understand the questions being asked. Reliance on quantitative data alone may overlook the nuanced experiences of students, and the short study period (October-November 2024) may not reflect long-term impacts.

IV. CONCLUSIONS AND SUGGESTIONS

The conclusion of the study on the effect of academic self-efficacy levels on knowledge achievement on CBT and SOCA exams in Neuropsychiatry Block students, Faculty of Medicine, Muslim University of Indonesia, class of 2022 shows that most students have a high level of academic self-efficacy, with the number of respondents for the CBT exam being 271 people and for the SOCA exam being 260 people. Although no significant relationship was found between academic self-efficacy and knowledge achievement on the CBT exam, there was a significant positive relationship between academic self-efficacy and knowledge achievement on the SOCA exam. Suggestions for further research can examine other factors that can affect students' academic achievement, such as learning strategies, previous learning experiences, exam anxiety, and exam readiness. Further research can also involve a longitudinal approach that measures changes in students' self-efficacy from the beginning of lectures to the block exam to monitor the development of self-efficacy in the long term and how these changes relate to students' academic achievement.

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