SURABAYA MEDICAL JOURNAL
(SMJ IDI SURABAYA)
Volume 4, Issue 1, 2026, p.1-8
e-ISSN: 2986-7584
p-ISSN: 2986-2469
Islami et al. (2026)
OPEN ACCESS

**ORIGINAL RESEARCH**

# Correlation of Academic Achievement of Bachelor of Medicine with the Results of the Objective Structured Clinical Examination Medical Competency Test for Professional Program Students

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**Article Info**

***Article history:***
Received: 11-01-2026
Revised: 01-10-2026
Accepted:12-11-2026
Published: 16-11-2026

***Keywords***:
Bachelor of Medicine's GPA;
clinical skills;
quality education;
OSCE;
UKMPPD.

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**ABSTRACT**

**Background**: The Medical Competency Test for Professional Program Students (UKMPPD) is an evaluation method at the professional phase of medical students, one of which tests clinical skills, namely the Objective Structured Clinical Examination (OSCE). Clinical skill ability is one of the indicators contained in academic achievement at the Bachelor of Medicine phase. This study examines the correlation between Bachelor of Medicine academic achievement and OSCE UKMPPD results. **Objective**: This study aims to determine the correlation between the Undergraduate Medical Grade Point Average (GPA) and the Objective Structured Clinical Examination (OSCE) results of the medical competency test for professional program students (UKMPPD) among the 2016 cohort of medical students at Universitas Andalas for the 2022–2024 period. **Material and Method:** This is an observational analytical study with a cross-sectional approach, including Bachelor of Medicine GPA and OSCE UKMPPD results. The data analysis used is the Pearson correlation test. **Result**: The results obtained are the average undergraduate GPA was 3.41. The average OSCE UKMPPD result is 79.88. The Pearson correlation test obtained $p < 0.001$. **Conclusion**: The conclusion of this study proves that undergraduate GPA and OSCE UKMPPD results have a moderate correlation that can be used as a predictor of OSCE UKMPPD results.

***Citation:***
Islami, A.N., Sauma, E. (2026). Correlation of Academic Achievement of Bachelor of Medicine with the Results of the Objective Structured Clinical Examination Medical Competency Test for Professional Program Students. Surabaya Medical Journal, 4(1): 1-8. DOI: https://doi.org/10.59747/wrgfhp62

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Surabaya Medical Journal (SMJ IDI SBY)
eISSN: 2986-7584; pISSN: 2986-2469; DOI: https://doi.org/10.59747/wrgfhp62

**Highlights**

1. This study evaluates the academic performance of medical students sitting for the Objective Structured Clinical Examination Medical Competency Test for Professional Program Students (UKMPPD) by contrasting their pre-pandemic undergraduate phase with their clinical clerkship conducted amidst the COVID-19 pandemic, characterized by significant educational constraints;
2. The COVID-19 pandemic disrupted various aspects of medical education, particularly the clinical clerkship phase, due to regulations restricting direct contact between students and patients.

## BACKGROUND

The Objective Structured Clinical Examination (OSCE), as part of the Medical Competency Test for Professional Program Students (UKMPPD), is a summative assessment administered at the end of the medical professional education phase. This examination evaluates the clinical competencies of medical students through objective and structured clinical case simulations, lasting 15 minutes per station rotation (Lestari et al., 2016). The OSCE UKMPPD serves as the gold standard for assessing clinical competence, as it evaluates multifaceted domains including theoretical knowledge, practical skills, and professional conduct essential for medical practitioners (Al-Hashimi et al., 2023).

The participants of this study are medical students from the Faculty of Medicine, Universitas Andalas (Class of 2016), with the analysis focusing on their undergraduate Grade Point Average (GPA) and UKMPPD OSCE scores. Based on preliminary consultations with the Medical Doctor Professional Program coordinators, this cohort is selected because they are the final group to complete their pre-clinical academic phase entirely prior to the COVID-19 pandemic. Conversely, their clinical clerkship phase was significantly hindered by pandemic-related restrictions, making the 2016 cohort most profoundly impacted by the pandemic compared to other year groups.

The correlation between Undergraduate Medical GPA and UKMPPD OSCE scores in the 2016 cohort warrants close examination due to the distinct pedagogical differences between the pre-clinical and clinical phases, which may ultimately influence the quality of medical graduates. Furthermore, the 2016 cohort represents a unique transitional group that shifted from traditional face-to-face instruction to online or hybrid learning models. This transition introduced unprecedented adaptation challenges in clinical training that remain largely unexplored. Consequently, this study aims to evaluate the relationship between Undergraduate Medical GPA and UKMPPD OSCE performance among the 2016 cohort at Universitas Andalas.

The findings of this study are expected to provide a comprehensive assessment of educational efficacy during the clinical clerkship phase for the 2016 cohort. Furthermore, this research contributes to a deeper understanding of how COVID-19 adaptations in clinical settings influenced student readiness and their subsequent performance in the national OSCE UKMPPD.

## OBJECTIVE

This study aims to analyze the relationship between Bachelor of Medicine's GPA and performance in the National Clinical Skills Examination (OSCE UKMPPD) for the 2016 medical student cohort at Universitas Andalas between 2022 and 2024.

Surabaya Medical Journal (SMJ IDI SBY)
eISSN: 2986-7584; pISSN: 2986-2469; DOI: https://doi.org/10.59747/wrgfhp62

## MATERIAL AND METHOD

### Study design

This study employed an observational analytical design with a cross-sectional approach. Data were collected at a single point in time.

### Data collection

This study utilized secondary data consisting of undergraduate Grade Point Averages (GPA) and OSCE UKMPPD scores of medical students from the Faculty of Medicine, Universitas Andalas (Class of 2016), who participated in the OSCE UKMPPD between 2022 and 2024.

### Data analysis

Univariate analysis was performed to describe the characteristics of each variable, presented as mean, standard deviation, minimum, and maximum values. Normality of the data was assessed using the Kolmogorov-Smirnov test. Since the data were normally distributed ($p > 0.05$), the Pearson correlation test was employed to analyze the correlation between undergraduate GPA and OSCE UKMPPD scores. A p-value of $< 0.05$ was considered statistically significant. The strength of the correlation was interpreted using the correlation coefficient (r): 0.00–0.199 (very weak), 0.20–0.399 (weak), 0.40–0.599 (moderate), 0.60–0.799 (strong), and 0.80–1.000 (very strong).

### Ethical consideration

Ethical approval for this study was obtained from the Ethics Committee of the Faculty of Medicine, Universitas Andalas (Approval No. 466/UN.16.2/KEP-FK/2025; July 15, 2025). This study used anonymous secondary data, and all data were maintained with strict confidentiality and used solely for research purposes.

## RESULT

This study shows that the mean undergraduate GPA was 3.41 ± 0.13 among a total of 213 students. The GPA scores ranged from a minimum of 3.00 to a maximum of 3.74, as shown in Table 1.

**Table 1.** The Distribution of Undergraduate Cumulative GPA

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Undergraduate GPA | 213 | 3,00 | 3,74 | 3,41 | 0,13 |

The majority of undergraduate GPAs fell within the 3.01 – 3.50 range, accounting for 166 students (77.9%). This was followed by the >3.50 range, which comprised 46 students (21.6%). The lowest frequency was observed in the 2.76 – 3.00 range, represented by only one student (0.5%).

**Table 2.** Frequency Distribution of Undergraduate GPA

| Undergraduate GPA | GPA | |
|---|---|---|
| | f | % |
| 2,50 – 2,75 | 0 | 0 |
| 2.76 – 3,00 | 1 | 0,5 |
| 3,01 – 3,50 | 166 | 77,9 |
| >3,50 | 46 | 21,6 |
| Total | 213 | 100 |

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eISSN: 2986-7584; pISSN: 2986-2469; DOI: https://doi.org/10.59747/wrgfhp62

The overall mean score of the UKMPPD OSCE was 79.88 ± 6.00 among 213 students. The scores ranged from a minimum of 55.48 to a maximum of 93.85. The highest mean score was recorded in the May 2022 session, whereas the lowest was observed in November 2024.

**Table 3.** Distribution of OSCE UKMPPD Scores

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Overall OSCE UKMPPD | 213 | 55,48 | 93,85 | 79,88 | 6,00 |
| May 2022 | 41 | 78,03 | 93,85 | 84,58 | 3,77 |
| August 2022 | 60 | 64,31 | 90,53 | 80,02 | 5,07 |
| November 2022 | 40 | 68,68 | 89,50 | 80,43 | 5,42 |
| February 2023 | 39 | 61,68 | 88,75 | 76,88 | 6,38 |
| May 2023 | 13 | 69,14 | 87,65 | 78,17 | 5,22 |
| August 2023 | 5 | 64,31 | 81,21 | 73,21 | 6,56 |
| November 2023 | 6 | 70,80 | 81,91 | 77,27 | 4,72 |
| February 2024 | 1 | 77,24 | 77,24 | 77,24 | - |
| May 2024 | 3 | 74,85 | 79,95 | 77,64 | 2,58 |
| August 2024 | 3 | 80,06 | 82,17 | 81,31 | 1,11 |
| November 2024 | 2 | 55,48 | 75,05 | 65,27 | 13,84 |

Data on undergraduate GPA and OSCE UKMPPD results were initially subjected to the Kolmogorov-Smirnov normality test. The test yielded a p-value > 0.05, confirming that the data followed a normal distribution.

**Table 4.** Correlation of Undergraduate GPA with UKMPPD-OSCE Scores

| | N | Mean | Significance of Distribution | Significance of Correlation | Correlation Coefficient |
|---|---|---|---|---|---|
| Undergraduate GPA<br>OSCE UKMPPD | 213 | 3,41±0,13<br>79,88±6,00 | 0,558<br>0,272 | < 0,001 | 0,440 |

## DISCUSSION

### Profiles of undergraduate GPA and UKMPPD OSCE scores

A study by Intan among medical students at Diponegoro University reported a similar mean undergraduate GPA of 3.49 (n=30) (Permatasari I. et al., 2019). Similarly, Winda's research at Sam Ratulangi University found an average GPA of 3.41, which corresponds to the findings of the present study (Febrianti W. et al., 2017).

The results of this study indicate that the majority of students (n=166) achieved an undergraduate GPA ranging from 3.01 to 3.50, categorized as 'Very Satisfactory' (Sangat Memuaskan) (Universitas Andalas, 2022). This finding is consistent with several previous studies conducted in 2023. For instance, Ari (2023) reported that 183 students at the Faculty of Medicine, Pattimura University, fell within the same GPA range (Simanjuntak C.A. et al., 2023). Similar distributions were also observed at the Faculty of Medicine and Health Sciences, Universitas Kristen Krida Wacana (Hartono B., 2023), and in a study by Viona at YARSI University, where the majority of students (n=72) maintained GPAs between 3.01 and 3.50 (Ayuni W.V. et al., 2023).

In contrast, a 2024 study by Ayu found that the majority of medical students at Warmadewa University (n=55) achieved an undergraduate GPA exceeding 3.50. This variation in academic achievement is influenced by internal factors, specifically learning motivation across physical, psychological, and

Surabaya Medical Journal (SMJ IDI SBY)
eISSN: 2986-7584; pISSN: 2986-2469; DOI: https://doi.org/10.59747/wrgfhp62

social dimensions. External factors also play a critical role, including the complexity of the subject matter, the quality of teaching materials, the learning environment, and faculty assessment methods (Ayu P. et al., 2024).
The univariate analysis of the overall UKMPPD OSCE scores revealed a mean of 79.88 with a standard deviation of 6.00. These findings indicate that the majority of medical students at Universitas Andalas who participated in the 2022–2024 examination periods scored within this range. The OSCE scores ranged from a minimum of 55.48 to a maximum of 93.85. Notably, the average OSCE performance of Universitas Andalas medical students across all periods consistently exceeded the minimum passing grade.

In comparison, a study by Irma involving 170 medical students at the University of Muhammadiyah Malang reported a higher mean OSCE score of 84.25 for the 2016–2017 period. This higher average was attributed to the implementation of peer mentorship programs, which included case discussions with expert lecturers or tutors and clinical skill refreshing sessions aligned with the SKDI (Indonesian Medical Program Standard of Competence) standards (Suswati I. et al., 2017). Conversely, research by Susiana at Abdurrab University reported a lower mean OSCE score of 72.5 among 239 students. This lower performance was influenced by several factors, including undergraduate and clinical stage GPAs, as well as the duration of study (Anggraini S. et al., 2024).

**Correlation between undergraduate GPA and UKMPPD OSCE scores**

This study demonstrates a significant correlation ($p < 0.001$) between undergraduate GPA and UKMPPD OSCE scores, with a moderate positive correlation ($r = 0.440$). This positive direction indicates that a higher undergraduate GPA is associated with higher OSCE performance, suggesting that undergraduate GPA can serve as a predictor for UKMPPD OSCE outcomes (Flores, 2022). These findings align with research conducted in Peru, which also reported a positive relationship between undergraduate GPA and national medical examination results. Other factors influencing national medical exam outcomes include age, simulation exams, learning resources, preparation time, learning styles, anxiety, and the clinical clerkship system (Anggraini S. et al., 2024). Similarly, studies at the Faculty of Medicine and Health Sciences, Universitas Abdurrab, and the Faculty of Medicine, Sam Ratulangi University, reported moderate, significant correlations, with r values of 0.54 and 0.544, respectively (Febrianti W. et al., 2017).

The results of this study differ from a previous study by Ani at the Faculty of Medicine, Universitas Lampung, which reported a low correlation between undergraduate GPA and UKMPPD OSCE scores. This discrepancy may be attributed to the fact that undergraduate GPA tends to reflect cognitive abilities, whereas the UKMPPD OSCE is more focused on clinical skills (Yuli A. et al., 2017).

This study demonstrates that the recent adaptation to the clinical clerkship system at the Medical Doctor Professional Program, Faculty of Medicine, Universitas Andalas, during the COVID-19 era did not hinder student performance in the UKMPPD OSCE. To date, there is a lack of prior research addressing the performance of students who completed their academic stage under normal conditions but transitioned to the clinical stage during the COVID-19 pandemic.

Optimal UKMPPD OSCE outcomes, despite the limitations imposed by the COVID-19 pandemic, were attributed to specialized institutional preparation and external support, such as private tutoring services (PNUKMPPD, 2020). Furthermore, effective OSCE preparation—specifically focusing on time efficiency and understanding the examination rubrics—has been proven to enhance scores. Students with strong undergraduate academic records tend to demonstrate better strategies in exam preparation (Hong., et al., 2021). A 2022 study by Marinda identified several factors influencing UKMPPD OSCE scores during the COVID-19 era. Internal factors, such as goal orientation, drive students to maximize their potential in facing the examination. Another internal motivator is the perceived benefit of passing, such as the eligibility to commence internships or pursue further studies. Additionally, self-confidence

Surabaya Medical Journal (SMJ IDI SBY)
eISSN: 2986-7584; pISSN: 2986-2469; DOI: https://doi.org/10.59747/wrgfhp62

or optimism significantly influences student performance regarding preparation strategies and exam execution. Regarding external factors, the peer environment plays a crucial role in fostering high motivation and a strong determination to pass. Finally, the institutional learning system acts as an external driver that compels students to engage more rigorously in their studies (Firmansyah M., et al., 2022).

A 2022 study by Yani highlighted several factors that supported the academic success of medical students during the clinical clerkship stage amid the COVID-19 pandemic. Factors such as learning flexibility, adequate technological support, high levels of social support, and strong self-regulated learning skills significantly contributed to the students' ability to perform well in examinations (Istadi Y. et al., 2022). Similarly, research at the University of Birmingham demonstrated that despite the negative impacts on clinical clerkships during the pandemic, success in competency examinations was influenced by effective virtual learning methods, adaptive learning approaches, and adjustments to practical examination formats (Kasun et al., 2021).

### Limitations

This study has several limitations. It doesn't consider the impact of remediation on undergraduate GPAs, potentially introducing bias. Additionally, the research is restricted to Universitas Andalas, which limits its generalizability to other medical schools.

## CONCLUSION

The results of this study demonstrate a significant, moderate positive correlation between undergraduate GPA and UKMPPD OSCE scores. This indicates that the higher the GPA, the higher the OSCE performance.

### Acknowledgment

I would like to thank dr. Eldi Sauma and dr Yulistini as my research supervisors and co-authors for their insightful guidance and expertise throughout the research process.

### Conflict of Interest

The author declares no conflict of interest.

### Ethics Consideration

This research received ethical clearance from the Research Ethics Committee, Faculty of Medicine, Universitas Andalas (Approval No. 466/UN.16.2/KEP-FK/2025; July 15, 2025).

### Funding

Private funding.

### Author Contribution

ANI: writing, curation, translating, data analysis, funding; ES: conceptualizing, review, editing.

Surabaya Medical Journal (SMJ IDI SBY)
eISSN: 2986-7584; pISSN: 2986-2469; DOI: https://doi.org/10.59747/wrgfhp62

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