

The Effect of Progressive Test Implementation on the Cumulative Grade Point Average (GPA) of Medical Students at FKKGIK, Universitas Prima Indonesia in 2024

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Abstract

Progressive Tests are structured, longitudinal formative assessments used globally to evaluate knowledge retention and cognitive development in medical education. While they are increasingly integrated into curricula, limited empirical data exists regarding their predictive validity within Indonesian private medical institutions. Evaluating their impact on academic performance is essential to refine assessment strategies and promote effective learning. This study investigates the influence of Progressive Test scores on the academic performance of medical students at the Faculty of Medicine, Dentistry, and Health Sciences (FKKGIK), Universitas Prima Indonesia during the 2024 academic year. A quantitative, cross-sectional study was conducted using academic records from 160 randomly selected preclinical students. Progressive Test scores were used as the independent variable, while Cumulative Grade Point Average (CGPA) represented the dependent variable. Pearson's correlation analysis was conducted using SPSS version 27, with a significance level of $p < 0.05$. The average Progressive Test score was 40.58 (SD ± 10.2), and the mean CGPA was 3.30 (SD ± 0.28). A strong, positive, and statistically significant correlation was found between Progressive Test scores and CGPA ($r = 0.757$, $R^2 = 0.573$, $p < 0.001$). These findings indicate that Progressive Test performance significantly predicts academic achievement, explaining 57.3% of the variance in CGPA. Progressive Tests demonstrate strong predictive value for student performance and serve as an effective tool for curriculum monitoring and early academic intervention. Institutionalizing their use in Indonesian medical schools is recommended. Future multicenter and longitudinal studies are suggested to broaden applicability and assess additional influencing factors.

Keywords: *Progressive Test, Academic Achievement, Medical Education, Formative Assessment.*

Introduction

Progressive tests have emerged as a cornerstone in the evolution of formative assessment within medical education, especially in institutions that implement integrated and competency-based curricula. Designed as longitudinal, structured evaluations, progressive tests aim to comprehensively monitor students' knowledge acquisition, retention, and cognitive development throughout the preclinical and clinical stages of study. These tests are administered simultaneously across multiple cohorts to evaluate cumulative knowledge rather than isolated content mastery, thereby providing a more holistic view of student academic progression. (Majeed et al., 2024)

Historically, the concept of progressive testing was pioneered in the 1970s by Maastricht University in the Netherlands and later adopted by the University of Missouri in the United States. The success of its early implementation led to widespread recognition of its utility, particularly in medical education settings that demand continuous and in-depth evaluation of student

learning outcomes. Progressive tests serve not only to measure cognitive competence but also to track developmental trajectories in student understanding across disciplines over time. Their design inherently discourages rote memorization and instead promotes integration of knowledge, critical reasoning, and reflective thinking.(Ningrum & Ekayani, 2022)

Progressive tests offer substantial pedagogical value due to their dual functionality: as an instrument for curriculum-based monitoring and as a tool for early detection of academic underperformance.(Cunningham, 2024) By identifying students with declining or stagnating performance patterns, educators are able to initiate timely academic interventions, adjust pedagogical strategies, and offer tailored remedial support. This capacity for early academic diagnostics enhances the quality assurance mechanisms of medical education programs and aligns with the standards promoted by global accreditation bodies such as the World Federation for Medical Education (WFME).(Wajid et al., 2019)

The literature affirms the effectiveness of progressive testing in supporting deep learning strategies and long-term retention. In East Asian contexts, for instance, progressive assessments have been shown to enhance conceptual integration and perceptual depth among students. A notable study by the Faculty of Dentistry at Universitas Muhammadiyah Yogyakarta demonstrated a statistically significant correlation between students' progressive test scores and their final Grade Point Average (GPA), thereby validating its predictive function in academic success. Furthermore, the integration of progressive testing has gained momentum in both public and private medical schools throughout Indonesia, affirming its relevance in various institutional settings.(Ayu et al., 2024)

In the Indonesian context, assessment in medical education is typically bifurcated into two major categories: summative evaluation and formative evaluation. Summative evaluation encompasses final course grades, group discussion marks, Objective Structured Clinical Examinations (OSCEs), practical exams, post-tests, and integrated mini-tests. While summative assessments provide certification of learning, they often fall short in offering continuous, diagnostic feedback that is essential for guiding academic development. In contrast, formative evaluations—such as progressive tests—are designed to provide ongoing feedback that informs both instructors and students about the learning process, enabling timely corrective actions.(Stasolla et al., 2025)

At FKKGKIK Universitas Prima Indonesia, the progressive test has been implemented as an annual institutional initiative and is administered at the beginning of each even semester. This is intended to allow benchmarking of student performance over time. Each student receives a detailed academic transcript of their progressive test results, highlighting performance in various cognitive domains. The regular implementation of this assessment aligns with pedagogical best practices that emphasize the importance of assessment for learning, not merely assessment of learning.(Ayu et al., 2024)

Research has shown that long-term, repeated exposure to progressive assessments encourages students to adopt deeper learning approaches, engage in more reflective study behaviors, and resist the temptation of surface-level or strategic learning focused solely on passing exams. As a result, progressive testing serves not only as a metric for academic evaluation but also as a formative mechanism to cultivate professional competence, lifelong learning attitudes, and ethical reasoning—attributes that are indispensable in the medical profession (Stasolla et al., 2025)

Despite these advantages, empirical investigations into the impact of progressive test implementation in Indonesian medical schools remain limited.(Hidayah, 2018) Most existing studies are either institution-specific, lack robust statistical analyses, or fail to account for longitudinal academic outcomes. Therefore, there is a compelling need to explore whether the

use of progressive tests truly correlates with measurable academic success, particularly through indicators such as the Cumulative Grade Point Average (CGPA). (Hidayah, 2018)

This study seeks to fill that gap by examining the relationship between progressive test scores and academic achievement among medical students at FKKGK Universitas Prima Indonesia. By employing a robust quantitative approach and analyzing a sizable dataset, this research aims to generate empirical evidence on the effectiveness of progressive testing as an academic predictor. The findings are expected to inform curriculum developers, educators, and policymakers about the value of institutionalizing progressive tests as an integral component of formative assessment in medical education. (Kulasegaram & Rangachari, 2018)

Method

This study employed a quantitative non-experimental design with a cross-sectional approach. The quantitative methodology was chosen to facilitate objective measurement of the relationship between variables using numerical data that had been systematically recorded and documented. As a non-experimental observational study, no interventions were applied to the subjects. Instead, data were analyzed as they existed at a specific point in time, reflecting the real academic environment during the 2024 academic year.

The cross-sectional design was used to obtain data at a single time point, focusing on the association between medical students' performance in Progressive Tests and their Cumulative Grade Point Averages (CGPA) at the Faculty of Medicine, Dentistry, and Health Sciences (FKKGK), Universitas Prima Indonesia. This design allowed the researchers to identify statistical relationships without requiring longitudinal tracking or repeated measures.

The data source for this research was secondary data, specifically extracted from official academic records provided by the academic administration office of FKKGK. The dataset included verified Progressive Test scores and CGPAs of undergraduate medical students, all of which were anonymized to maintain confidentiality. The use of administrative records ensured high data validity and minimized self-reporting bias, thus enhancing the reliability of the study's findings.

A total of 160 medical students from the 2023 cohort were included as research subjects through total population sampling, since all students met the inclusion criteria. These criteria included: (1) active enrollment in the 2024 academic year, (2) completion of the Progressive Test, and (3) availability of complete academic performance data (Progressive Test score and CGPA). Exclusion criteria included students on academic leave, transfer students who did not participate in the Progressive Test at FKKGK, or records with missing or inconsistent data.

Data analysis was performed using the Statistical Package for the Social Sciences (SPSS) software, version 27. Two key statistical analyses were conducted: the Pearson product-moment correlation to examine the strength and direction of the relationship between Progressive Test scores and CGPA, and simple linear regression to determine the predictive contribution of Progressive Test scores to students' academic performance. A significance level of $p < 0.05$ was set as the threshold for statistical significance. Additionally, the coefficient of determination (R^2) was calculated to quantify the proportion of CGPA variability that could be explained by the Progressive Test scores.

Although this study did not involve human subjects directly, ethical considerations were upheld by ensuring that all data were anonymized and analyzed in aggregate form. No personally identifiable information was used, in accordance with institutional policies on data confidentiality and academic research ethics.

Through this rigorous methodological framework, the study aimed to produce empirical evidence on the predictive value of Progressive Test implementation within the context of Indonesian medical education. The findings are expected to support institutional decision-making regarding formative assessment strategies and student academic monitoring.

Results

Univariate Analysis

Table 1. Study Cohort Frequency Distribution

Study Cohort	n	%
2023	160	100
Total	160	100

Table 1 presents the frequency distribution of the study cohort involved in this research. It shows that all 160 respondents (100%) belonged to the 2023 academic cohort.

This indicates that the data were collected from a homogeneous group in terms of academic year, which strengthens the internal consistency of the study. By focusing on a single cohort, the research avoids potential confounding variables related to curriculum changes, instructional modifications, or policy shifts across different academic years. As a result, the analysis of the relationship between Progressive Test scores and Cumulative Grade Point Average (CGPA) becomes more precise and reliable.

Table 2. Frequency Distribution of Progressive Test Scores

Progressive Test Scores	
Measure	Result
Mean	40.58
Median	38.25
Mode	35
Minimum	23
Maximum	68

Table 2 displays the descriptive statistics of the Progressive Test scores among the 160 respondents. The mean score is 40.58, suggesting that the average student performance on the Progressive Test falls within the lower academic range. The median score of 38.25 indicates that half of the students scored below this value, while the mode of 35 represents the most frequently occurring score among the participants, further reinforcing the tendency toward lower performance.

The minimum score of 23 and maximum score of 68 reflect a relatively wide range of scores, indicating considerable variability in cognitive achievement among the students. This spread may imply differences in prior knowledge, learning strategies, or engagement levels across the cohort. Overall, the data suggest that while some students performed relatively well, a significant proportion demonstrated challenges in achieving higher scores on this formative assessment. This supports the relevance of Progressive Tests in identifying students in need of academic intervention early in the learning process.

Table 3. Frequency Distribution of Cumulative Grade Point Average
Cumulative Grade Point
Average

Measure	Result
Mean	3.3
Median	3.18
Mode	3.09
Minimum	2.78
Maximum	4

Table 3 presents the descriptive statistics of the Cumulative Grade Point Average (CGPA) among the 160 medical students. The mean CGPA of 3.30 indicates that, on average, students achieved a solid academic performance falling into the “good” category. The median score of 3.18 shows that half of the respondents earned a CGPA below this value, while the other half performed better. The mode, or most frequently occurring GPA, is 3.09, suggesting a clustering of student performance near this value.

The minimum CGPA of 2.78 and the maximum CGPA of 4.00 demonstrate that while some students performed just above the minimum passing threshold, others achieved the highest possible academic score. This relatively narrow range implies a generally consistent academic performance across the cohort, with most students falling within an acceptable performance spectrum. These findings support the notion that while progressive tests help differentiate learning outcomes, overall academic performance remains relatively stable, likely influenced by institutional support and standardized curricular expectations.

Bivariate Analysis

Table 4. . Pearson Test on the Influence of Progressive Test Implementation on the Cumulative Achievement Index of Medical Students at FKKGIK Universitas Prima Indonesia in 2024

Pair of Variables	Pair of Variables	Pair of Variables	Pair of Variables	Interpretation
Progressive Test Score – CGPA	160	0,757**	0,000	A strong and statistically significant positive correlation

Table 4 presents the results of a Pearson correlation analysis between students' Progressive Test scores and their Cumulative Grade Point Average (GPA) at FKKGIK Universitas Prima Indonesia. The analysis involved 160 students and yielded a Pearson correlation coefficient (r) of 0.757, with a p -value (Sig. 2-tailed) of 0.000.

This result demonstrates a strong and statistically significant positive correlation between Progressive Test scores and GPA. The coefficient of 0.757 indicates that as Progressive Test scores increase, GPA tends to increase as well. Since the p -value is less than 0.05, the correlation is considered statistically significant, meaning the observed relationship is unlikely to be due to chance.

Discussion

This study aimed to examine the relationship between Progressive Test scores and the Cumulative Grade Point Average (CGPA) of medical students at FKKGK Universitas Prima Indonesia. The analysis revealed a strong and statistically significant positive correlation ($r = 0.757$; $R^2 = 0.573$; $p < 0.001$), indicating that Progressive Test performance predicts 57.3% of the variance in CGPA. This finding confirms that Progressive Tests function not only as formative assessment tools but also as effective predictive indicators of final academic achievement.

These results are consistent with the study by Ayu et al. (2024) at the Faculty of Dentistry, Universitas Muhammadiyah Yogyakarta, which found a significant correlation between Progressive Test scores and students' final GPA, reinforcing its predictive function. Internationally, research by Majeed et al. (2024) in Pakistan and Cunningham (2024) in Australia demonstrated that progressive testing within integrated medical curricula can effectively monitor longitudinal knowledge development while accurately predicting final academic outcomes. The alignment of these findings across diverse contexts strengthens the case for the relevance of Progressive Tests in medical education globally.

The practical implication of this high correlation is the need to position Progressive Tests as a central instrument for curriculum monitoring. Test results can be used to identify students at risk of low academic performance at an early stage, enabling timely interventions such as academic advising, adjustments in teaching methods, or provision of remedial materials.

Additionally, aggregated results can assist curriculum developers in evaluating the effectiveness of content delivery, workload distribution, and integration across subject blocks, ensuring that the learning process is adaptive and responsive to students' needs.

Predictive Value of Progressive Tests

The predictive value of progressive tests in medical education lies in their ability to serve as early indicators of students' academic performance and long-term cognitive development. (Karaca & Yilmaz, 2025) As a form of structured formative assessment, progressive tests are designed to measure students' comprehension and integration of multidisciplinary knowledge, reflecting not only what students know at a given time but also the trajectory of their learning over a specific period. This function aligns with the fundamental goals of formative assessments, which are to support continuous feedback, promote self-directed learning, and identify students who may require academic intervention before the summative phase of the evaluation (Srimulyani & Hermanto, 2022).

In the context of this study, the results demonstrated a statistically significant and strong correlation between progressive test scores and the Cumulative Grade Point Average (CGPA) of medical students at FKKGK Universitas Prima Indonesia. The Pearson correlation coefficient ($r = 0.757$, $p < 0.001$) and the coefficient of determination ($R^2 = 0.573$) indicate that approximately 57.3% of the variance in CGPA can be explained by the progressive test scores. These findings underscore the predictive capacity of progressive tests and confirm their potential as a reliable academic monitoring tool.

The theoretical basis for this predictive relationship can be supported by the principles of constructive alignment and longitudinal assessment models. Progressive tests are aligned with the intended learning outcomes of medical education, which emphasize critical thinking, clinical reasoning, and knowledge integration across various medical disciplines. Therefore, high performance in progressive tests often correlates with mastery of these competencies, which are essential for achieving academic excellence reflected in students' CGPAs. (Easton et al., 2017)

Previous studies conducted in various educational settings have also affirmed the predictive role of progressive tests. For example, research by Ayu et al. (2024) and Ningrum & Ekayani (2022) in Indonesian medical faculties found a consistent correlation between progressive test performance and GPA outcomes. This study reinforces and expands upon those findings by presenting a more comprehensive statistical analysis within a single academic cohort, thereby enhancing the generalizability and robustness of the evidence.

Moreover, the predictive value of progressive tests extends beyond mere academic correlation; it offers practical implications for educational policy and curriculum development. Through early detection of students' academic challenges, institutions can implement targeted remediation programs, personalized tutoring, and adaptive learning strategies. The predictive insights gained from progressive test data can also inform faculty development initiatives and course redesign, ensuring that teaching strategies remain responsive to student needs and performance trends (Lakhtakia et al., 2022).

Additionally, progressive tests contribute to the creation of a data-driven academic culture where learning analytics are used to monitor academic progression systematically. The ability to anticipate academic outcomes through progressive tests enables medical educators and administrators to make informed decisions regarding student support services, resource allocation, and curriculum mapping.(Chang et al., 2021)

Despite the strength of the correlation found in this study, it is important to acknowledge that the predictive value of progressive tests is not absolute. Other internal and external factors, such as student motivation, learning environment, teaching quality, psychological well-being, and socio-economic background, also significantly influence academic performance. Therefore, while progressive tests provide valuable predictive insight, they should be interpreted within the broader context of holistic student assessment.(Gotwals, 2018)

In conclusion, the results of this study provide compelling evidence for the predictive value of progressive tests in the academic journey of medical students.(Mohamad Nasri et al., 2022) Their ability to forecast CGPA performance validates their role as a crucial component in formative assessment systems. Institutions are encouraged to institutionalize progressive tests as part of their regular academic assessment strategies to enhance learning outcomes and foster academic excellence among medical students.(Stamov Roßnagel et al., 2021)

The findings of this study, particularly the strong and statistically significant correlation between progressive test scores and students' cumulative academic performance, present crucial implications for curriculum development and instructional design in medical education.(Cooke & Lemay, 2017) The evidence that progressive tests can predict student academic outcomes suggests the need to integrate this formative assessment tool not only as an evaluative measure but also as a central component in the pedagogical and curricular architecture of medical programs.(Wongwatkit et al., 2017)

From a curriculum design perspective, progressive tests offer valuable feedback loops that allow educators and curriculum committees to continuously evaluate whether the intended learning outcomes (ILOs) are being achieved throughout the educational process.(Mendoza et al., 2022) The results of each progressive test can serve as benchmarks for curriculum alignment, indicating whether the content delivery, learning activities, and assessments are effectively cultivating the desired competencies among students. This aligns with the principle of constructive alignment proposed by Biggs (1996), which emphasizes that the curriculum should be designed in such a way that learning activities and assessments are directly aligned with the intended learning outcomes.(Jaiswal, 2019)

Furthermore, the implementation of progressive tests supports the incorporation of spiral curriculum models, especially relevant in competency-based medical education

(CBME).(Marcotte & Gruppen, 2022) The spiral curriculum, introduced by Harden and Stamper (1999), emphasizes the repeated and deepening exposure of learners to core concepts over time. Progressive testing complements this by periodically assessing students' cognitive integration and readiness, enabling curriculum planners to identify which subjects or domains require reinforcement and which can be further expanded.(Brauer & Ferguson, 2015)

In terms of instructional design, progressive test results can guide faculty in refining teaching strategies and delivering more targeted instruction. Educators can analyze patterns of student performance to identify areas of conceptual misunderstanding or knowledge gaps, then adjust the teaching approach accordingly. For instance, if a significant proportion of students underperform in basic clinical sciences as revealed in the test results, additional emphasis may be placed on problem-based learning (PBL), case-based learning (CBL), or peer-assisted learning (PAL) approaches to enhance comprehension and retention.(Challa et al., 2021)

In summary, this analysis supports the conclusion that Progressive Tests are a valid predictor of academic performance, reinforcing their use as a formative assessment tool in medical education.

Moreover, the integration of progressive tests in instructional design promotes the concept of formative feedback and reflective learning. As students receive feedback from test results, they are encouraged to self-assess, set personal learning goals, and adapt their study strategies.(Zhai et al., 2018) This self-regulatory learning behavior is essential in preparing students to become lifelong learners—one of the fundamental attributes expected in medical professionals. This perspective is supported by Nicol and Macfarlane-Dick (2006), who argue that formative assessments, when used effectively, enhance students' self-efficacy and metacognitive abilities.(Spooner et al., 2022)

The periodic nature of progressive testing also enables educators to transition from a teacher-centered to a learner-centered model.(Lukose, 2021) Since students are repeatedly exposed to evaluative experiences that mirror real-world cognitive demands, instructional methods must evolve to promote active learning, critical thinking, and integration rather than rote memorization. This aligns with contemporary paradigms in health professions education, which advocate for student-centered, competency-driven, and outcome-oriented instructional methodologies.(Ghosh & C. Siva Sankar, 2025)

Additionally, the predictive power of progressive test results can inform curriculum revision processes. Academic committees can use aggregated data to conduct curriculum mapping and gap analysis, ensuring that course content, assessment blueprints, and instructional time are optimally distributed according to student performance trends. Areas with persistently low progressive test outcomes can be flagged for curriculum enhancement, additional faculty training, or integration of supplemental instruction.(Maki & Kuh, 2023)

Finally, the standardized implementation of progressive testing across multiple cohorts enables benchmarking across academic years, which is essential for quality assurance and program accreditation processes. Longitudinal data generated from progressive tests not only contribute to internal quality improvement but also provide external stakeholders—such as accreditation bodies, university leadership, and clinical training hospitals—with measurable indicators of educational effectiveness.(Aws Alshamsan et al., 2025)

In conclusion, the implications of this study emphasize that progressive testing should not be treated merely as an assessment tool, but rather as a strategic lever for enhancing curriculum coherence and instructional quality in medical education. By embedding progressive tests into curriculum planning and instructional design, medical schools can foster an academic environment that prioritizes continuous improvement, evidence-based teaching, and learner-centered development.

Nevertheless, this study has limitations. First, the data were obtained from a single institution, which means that the generalizability of the findings to other medical education settings in Indonesia should be approached with caution. Second, the cross-sectional design captures the relationship at a single point in time, thus it cannot establish a direct causal link. Future research employing longitudinal designs and involving multiple institutions is recommended to strengthen the external validity of these findings.

Conclusion

This study found a strong, statistically significant correlation between progressive test scores and GPA ($r = 0.757$; $R^2 = 0.573$), indicating substantial predictive value for academic performance. Practically, progressive tests can be used to identify learning gaps early, guide instructional adjustments, and support competency-based education. However, as GPA is also influenced by other factors, further multi-institutional and longitudinal studies are recommended to validate these findings and explore additional determinants of academic success.

Acknowledgment

The authors would like to express their deepest gratitude to the Faculty of Medicine, Public Health, and Nursing (FKKGIK) Universitas Prima Indonesia for the support and access to academic data necessary for this study. Special thanks are also extended to the administrative staff who facilitated the collection of secondary data, ensuring the accuracy and completeness of the academic records used in the research. We also thank all academic mentors and colleagues who provided valuable input during the research process, as well as those who assisted with the statistical analysis and manuscript review. Without their guidance and cooperation, this research would not have been possible.

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