

Baseline Assessment Test: A Predictor for Students' Performance in Pharmacy School



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Background and Objective:

With a concerning rise in attrition rates in pharmacy programs, there is an urgent need to identify factors that can predict which students may face challenges and perform poorly during their enrollment in Pharmacy school. Numerous studies have investigated the contribution of prior knowledge to overall success. Understanding that success is not solely determined by academic knowledge but also by non-cognitive factors such as self-awareness and perseverance; we explored whether baseline knowledge and grit scores could serve as indicators for students' success. *This study aimed to discern predictors of student success to facilitate targeted interventions and mitigate attrition rates.*

Study Design and Methods:

- ❑ First-year pharmacy students from three cohorts comprising the classes of 2023, 2024, and 2025 completed a baseline assessment during the first week of pharmacy school.
- ❑ The baseline assessment consists of both 45 cognitive and 31 non-cognitive measures.
- ❑ Questions assessed students' knowledge of physiology, chemistry, and college algebra.
- ❑ The non-cognitive measures included the BAI (Beck Anxiety Inventory) and the Duckworth GRIT Scale.
- ❑ Pearson correlation coefficients were used to evaluate relationships between baseline assessment scores and Quarter 1 GPA, Year 1 GPA, BAI, and GRIT scores. Paired-tests determined within-group differences in Grit Scores. Alpha for all analyses was set at 0.05.

References:

Duc P. Do, Anna Ratka. Trends in Admissions, Attrition, Dismissals, and Board Performance for Pharmacy Students between 2012 and 2022. American Journal of Pharmaceutical Education, Volume 87, Issue 8, 2023, 100176, ISSN 0002-9459, <https://doi.org/10.1016/j.ajpe.2023.100176>.
 Duckworth, A. L., Peterson, C., Matthews, M. D., & Kelly, D. R. (2007). Grit: Perseverance and passion for long-term goals. Journal of Personality and Social Psychology, 92(6), 1087–1101. <https://doi.org/10.1037/0022-3514.92.6.1087>

Results:

Table 1: Correlation Between Baseline Scores and Students' GPA in Quarter 1 and Year 1

- Baseline performance correlated significantly with the students' performance in quarter one ($p < .001$) and at the end of year 1 ($p < .001$).
- There were negative correlations between GRIT scores, BAI scores, and student success; however, they were not significant

Baseline Scores	Quarter 1 GPA (n)	Year 1 GPA (n)
Science	.555** (232)	.519** (175)
Grit	-.102 (232)	-.112 (224)
BAI	-.099 (221)	.025 (221)

** Indicates the correlation is significant at $p < .001$

Table 2: Comparison of Grit Score Means at Baseline and the completion of Years 1, 2, and 3 of the Pharm.D Curriculum

Over the study period, students completed the grit survey at baseline and at different time intervals throughout the curriculum. The highest Grit scores were reported at baseline.

Cohort (n)	Grit Scores				p-value
	Baseline	Year 1	Year 2	Year 3	
2023 (51)	4.1070			2.9198	< .001
2024 (40)	4.1205		3.9841		.093
2025 (58)	4.0517	3.5345			< .001

Conclusion:

- ❑ Notably, students with higher baseline scores demonstrated greater academic success.
- ❑ Students with high initial grit scores tend to struggle more with academic performance, potentially due to over confidence, lack of self-awareness, or ineffective study habits.
- ❑ At baseline, students overestimated their grittiness, but as they faced challenges throughout the curriculum, their Grit scores declined, reflecting a more realistic self-assessment.
- ❑ **Undergraduate science knowledge remains the main predictor for students' success in the didactic year in the Doctor of Pharmacy Program.**