



Quartile-Based Student Performance Trends between Paramedic Entrance and Readiness Exams



Mason Dworak, BA, EMT-B; Alycia M. Brantz-Miller, MS, NRP; Jeffrey E. Rollman, MPH, NRP; Sahaj Khalsa, BS, NRP; Eric A. Martens, BS, EMPA, NRP; Whitney D. Morgan, MS, NRP; Jennifer C. Berry, BA; Thomas L. Fentress, MBA, NRP, PI, CFI; James D. Dinsch, MS, NRP, CCEMTP

Introduction

Paramedic programs are pressured by student retention-level standards to admit students more likely to succeed, their cognitive abilities often measured by the Paramedic Entrance Exam (PEE). To avoid facing consequences, it is critical for programs to accurately predict student success on the Paramedic Readiness Exam (PRE-3/PRE-4). The Fisdap PEE and PRE measure student knowledge at program start and end. The PEE assesses knowledge in four cognitive domains—anatomy and physiology (A&P), EMT, mathematics, and reading comprehension—along with several affective domains.

It is not well understood how PEE performance correlates with PRE success. This deters further investigation into the mobility of student scores between the PEE and PRE.

Objective

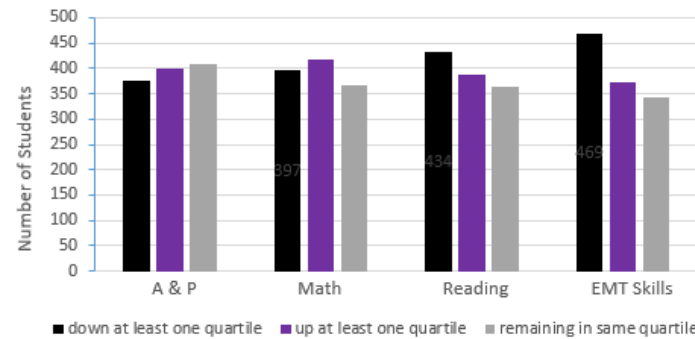
- Investigate student mobility between PEE cognitive domain scores and PRE performance.
- Examine the significance of the PEE predictability of student success.

Methods

An IRB-approved, retrospective study linked deidentified PEE and first-attempt PRE records. Cognitive PEE sections and overall PRE scores were individually split into quartiles and compared to determine the proportion of students in each PEE cognitive section quartile who persisted to the corresponding PRE quartile. A chi-square test of independence was performed to determine any significant difference in persistence among the cognitive sections.

Results

Student Quartile Performance Trends: PEE to PRE



In total, 1,185 students met inclusion criteria for analysis- each cognitive domain score split into four quartiles. Students remaining in the same quartile from PEE to PRE was most persistent in Anatomy and Physiology, but there was no significant difference for any of the cognitive domains. Percentage of students remaining in the same quartile are as follows:
Anatomy/Physiology: **34.43%**, Math: **31.05%**, Reading: **30.72%**, EMT: **28.86%**, $\chi^2=4.625$ ($p=0.201$).

Discussion

The results indicate that quartile-based examination of test performance usually shifts between the PEE and PRE. Given the small sample size, the results may be hard to generalize, but paramedic educators should be encouraged to recognize that low or high PEE performance is not necessarily indicative of future PRE performance.

Factors other than knowledge in the four cognitive domains measured by the PEE influence student paramedic course performance. Further research is needed to determine other factors educators must consider when reviewing student candidates.

Conclusion

Paramedic educators should be aware that the performance of most students, as measured by PEE then PRE, changes over time. Our findings suggest that educators cannot assume that students who initially perform poorly or well on assessment examinations will continue to perform at a similar level later in the course.