

The Association Between EMT Entrance Exam (EEE) Scores and Emergency Medical Technician (EMT) Student Success



Foat, C., PhD, NRP; May, J., BA, EMTP; O'Connor, K., MPP, NRP; Klassen, A., MD, MA; Lemke, A., BA; Corry, M., EdD, EMTP; Fernandez, A., Ph.D, NRP

Background

Many EMT programs anecdotally propose that open-enrollment practices drive a lack of EMT students' success; however, they do not use a screening tool or entrance exam to predict success or identify critical variables that may contribute to success. Many EMT students do not complete the course or complete, but the course but are unable to pass the NREMT cognitive exam. In this study, we explored if EEE scores can predict EMT program success.

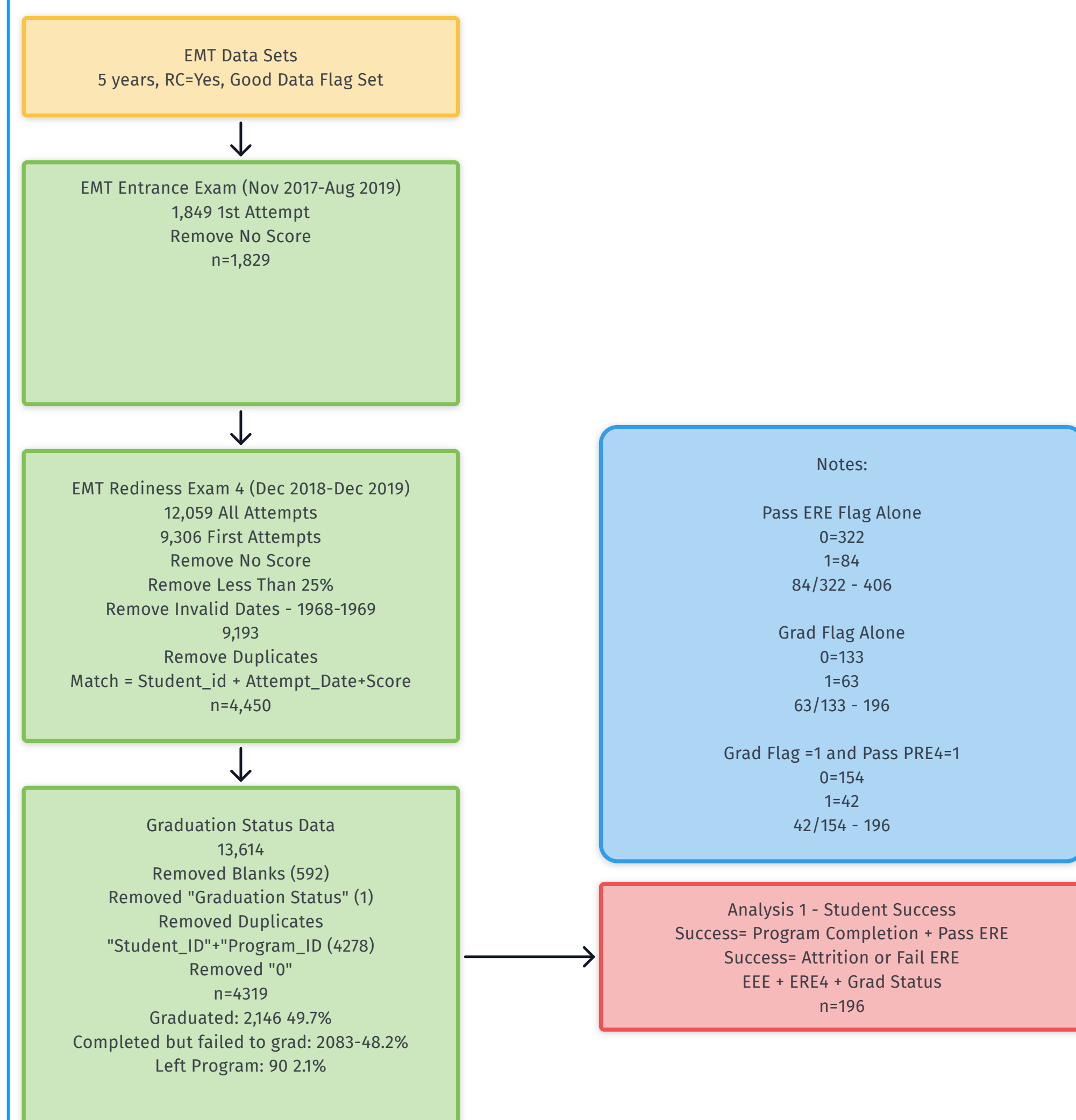
Objective

To determine if there is an association between scores of the FISDAP EMT Entrance Exam and student success.

Methodology

This project was conducted on an open IRB approval from Inver Hills Community College for the use FISDAP database. FISDAP is a database of a prospectively collected EMS student data retrospectively analyses for this project.

Figure 1: Inclusion Criteria



Methodology

EMT data, from a retrospective cohort, was collected from FISDAP, an online EMS student tracking system, between 2017 and 2019. Participants were included if they completed a FISDAP EMT Entrance Exam, a FISDAP EMT Readiness Exam ver. 4 at the end of the program, and had a graduation status assigned by the program. The outcome variable was class success, as determined by the student graduation status and the ERE4 score, dichotomized as pass/fail. The ERE4 score was used as a surrogate marker for passing the NREMT exam. The data was analyzed using a Wilcoxon Rank-Sum test and a univariate logistic regression.

Results

196 students from 11 unique EMT programs met the inclusion criteria.

The median scores on the EEE were a composite of 86, A&P 16, biology 4, Math 7, Med-Term 8 and Self-Efficacy 47.

The overall EEE, A&P, Biology, Med-Term, and Self-efficacy scores were statistically significant predictors of success. While these scores were statistically significant, the odds ratios for success varied from 1.014 to 1.517

No significant difference was associated with math scores.

Table 1: Association between EMT Entrance Exam Scores and EMT student success

EEE Scores by Section	Odds Ratio (95% CI)	p-value
Anatomy & Physiology Score	1.28 (1.173-1.396)	<0.001*
Biology Score	1.236 (1.021-1.496)	0.030*
Math Score	1.132 (0.942-1.361)	0.186
Medical Terminology Score	1.517 (1.274-1.805)	<0.001*
Self-Efficacy Score	1.014 (1.001-1.028)	0.034*
EMT Entrance Exam Score	1.023 (1.010-1.036)	<0.001*

Figure 2: Program Zip code

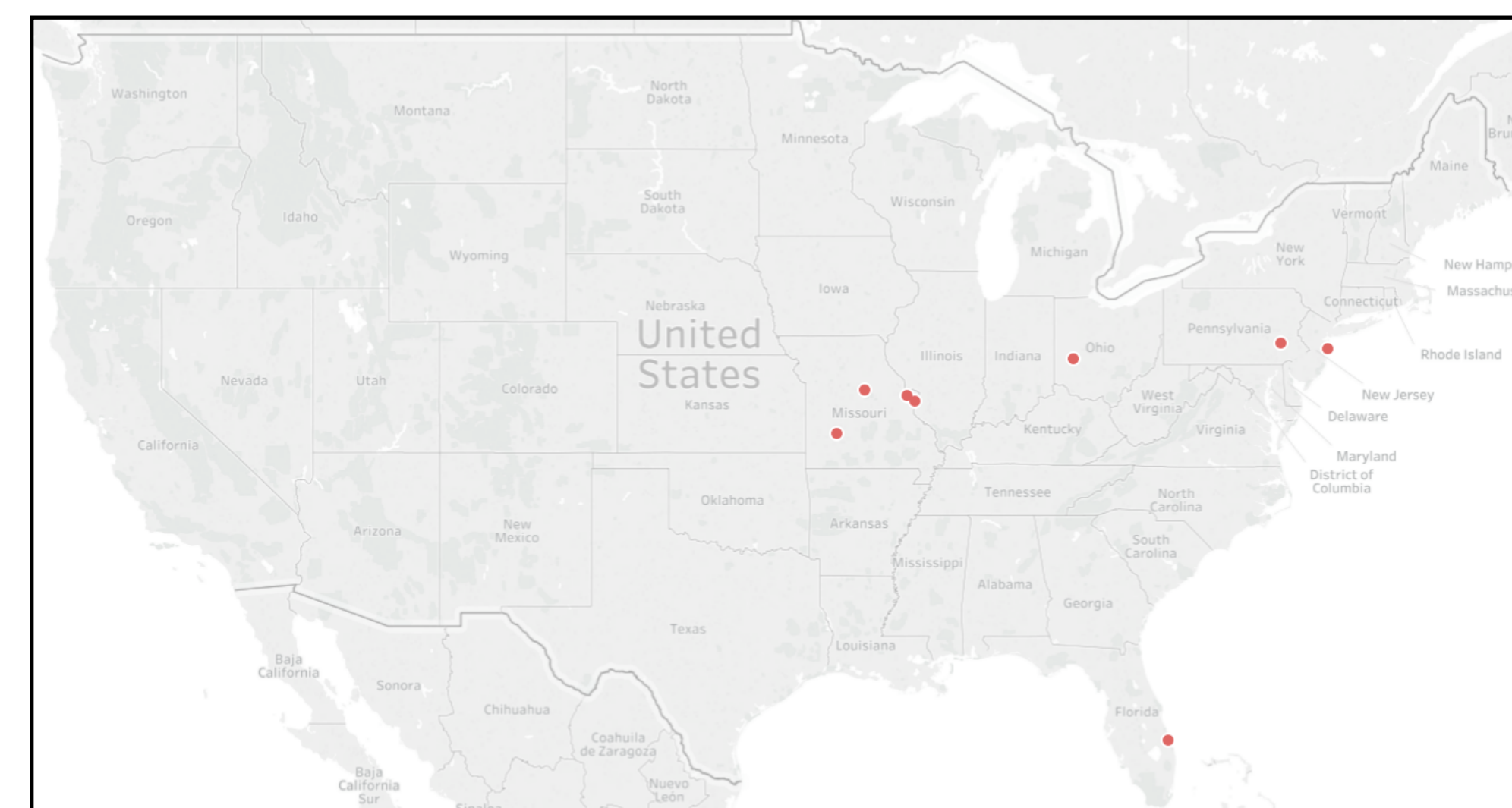
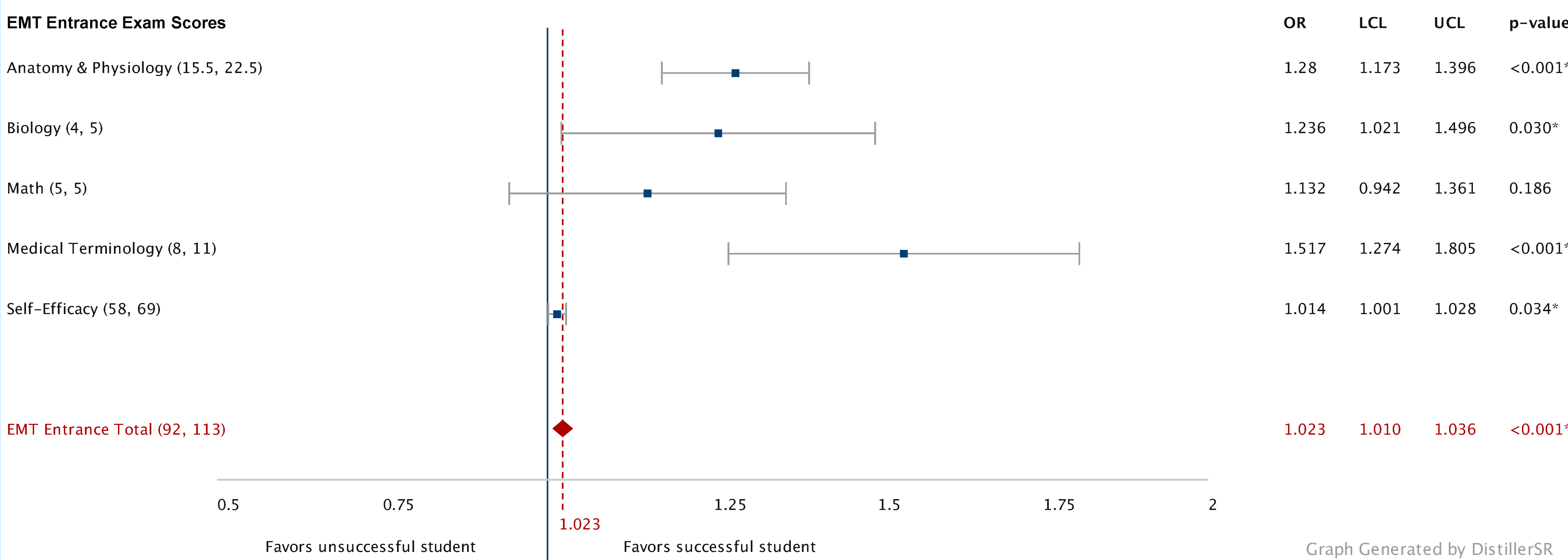


Figure 3: Forrest Plot Odds Ratios

Association between EMT Entrance Exam Scores and student success



Discussion

The EMT Entrance Exam measures five variables. The combination of all five variables produces a composite or overall score.

Achieving an A&P score of 22.5 was associated with higher odds of success OR=1.28 (95% CI 1.173-1.396 p=<0.001*), this translates to a 28% increased chance of success. Achieving a Biology score of 5 was associated with higher odds of success OR=1.236 (95% CI 1.021-1.496 p=<0.030*), this translates to a 23.6% increased chance of success. Achieving a Med_Term score of 11 was associated with higher odds of success OR=1.517 (95% CI 1.274-1.805 p=<0.001*), this translates to a 51.7% increased chance of success. The A&P, Biol, and Med-Term scores were statically and practically significant predictors of success. The Med_Term score was most predictive of overall success.

Achieving a composite EEE score of 113 OR=1.023 (95% CI 1.010-1.036 p=<0.001*) was statistically significant; however may not be practically significant with only a 2.3% increased chance of success. Achieving a Self-efficacy score of 69 OR=1.014 (95% CI 1.001-1.028 p=<0.034*) were statistically significant; however may not be practically significant with only a 1.4% increased chance of success. The math scores OR=1.132 (95% CI .942-1.361 p=<0.186) did not reach the threshold for statistical significance.

Conclusions

The EMT Entrance Exam can predict EMT student success. Using this tool may allow programs identify students who need supplemental instruction before the class; however, it may be a more complicated than simply using the EEE composite score. The use of the A&P, Biol, and Med-term scores may identify those students with a statistically significant and practically significant higher likelihood of success. The use of the composite EEE score and Self-Efficacy were statistically significant; however, it may not be a practically significant predictor of success.

Limitations

Retrospective cohort design. Only 196 students from 11 programs met the inclusion criteria.