

INTRODUCTION

BACKGROUND/PROBLEM

The Association of American Medical Colleges (AAMC) estimates a projected doctor shortage of 90,000 by 2034 in the United States (AAMC, 2024), a shortage of 67,000 in nursing by 2030 (AACN, 2024), and similar shortages in pharmacy, physical therapy, podiatry, dentistry, mental health, & many others (HRSA, 2024). Such shortages are particularly marked in underrepresented and rural populations, which affects disparities in health outcomes for several health conditions.

A career in the health professions is based on science, technology, engineering, & math (STEM). Learning is the process whereby knowledge is created through the transformation of experience (Kolb, 1984). Simulation is a form of experiential learning that takes place in a controlled environment with role-playing actors, mannequins, & equipment to better replicate the clinical context of each case & has been effective in increasing both knowledge & skills. Traditional lectures alone are insufficient for preparing pre-health students to handle complex emergency scenarios.

Mean=10.4/20 (52%) average on pretests demonstrate a baseline knowledge gap that the intervention aims to address.

AIM:

to increase pre-health students' knowledge & confidence regarding treatment scenarios by 25% following clinical simulation, as measured by written tests & surveys.

METHODS

•**Plan:** Our team planned a single-session simulation from March-May 2025 as an innovative teaching method to supplement traditional lectures. We developed a series of four emergency scenarios for students to practice clinical roles.

•**Do:** We implemented the simulation with 43 pre-health students. The scenarios covered malignant hyperthermia, opioid overdose, stroke, and coronary artery disease with cardiac arrest.

•**Study:** We used multiple measures to assess the impact of the simulation:

•**Measures of Improvement:**

○**Written Assessments:** Compared pre-simulation test scores and post simulation scores with 3 month follow up scores. (20 item knowledge test).

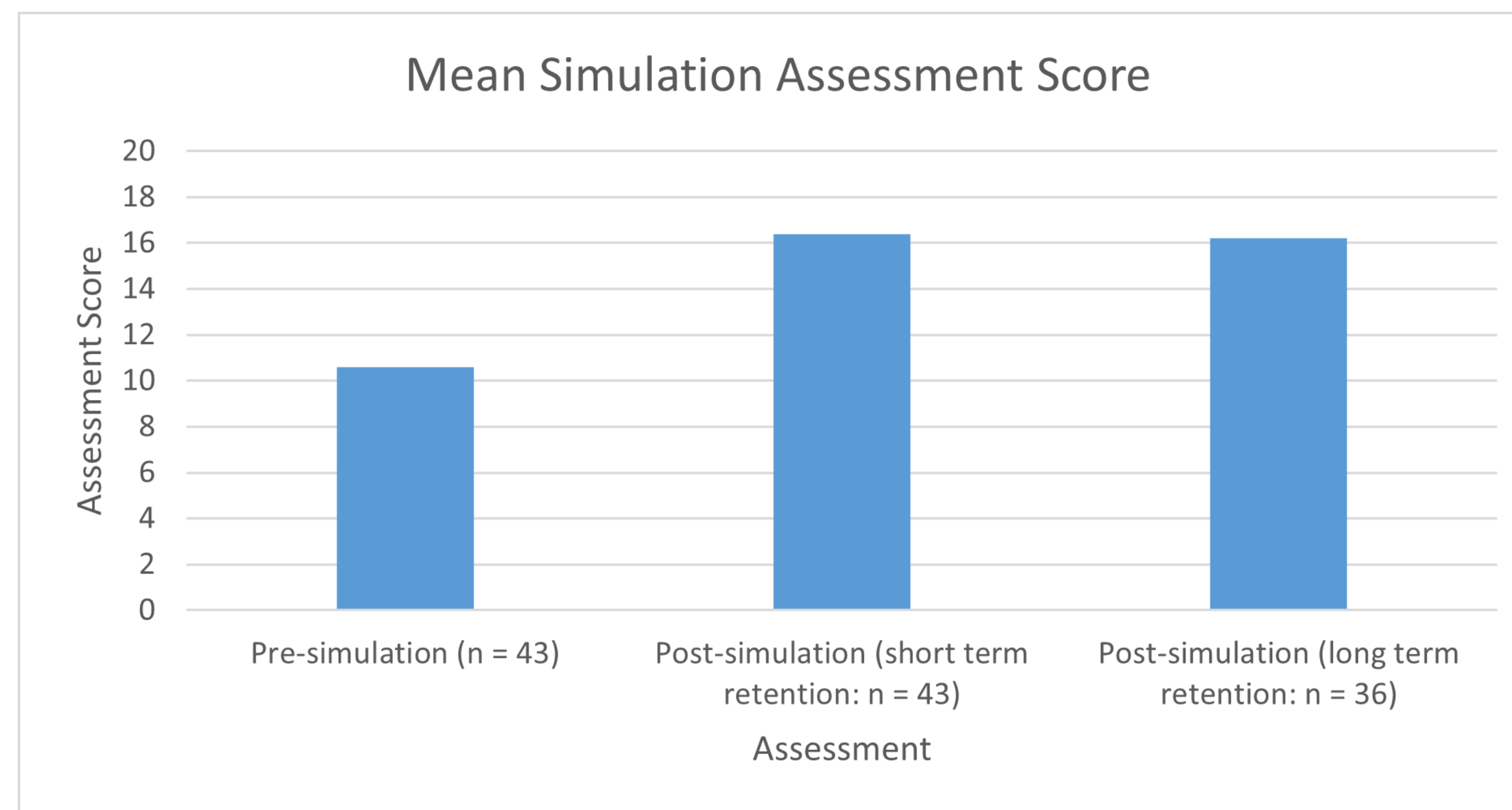
○**Confidence Surveys:** Assessed student confidence levels before and after the simulation.

○**Qualitative Comments:** Analyzed participant feedback for acceptability and feasibility.

•**Act:** Based on the positive results (significant score increases and high participant satisfaction), we plan to make clinical simulation a regular and standardized component of our pre-health curriculum.



RESULTS



RESULTS

•**Key Findings:**

•**Knowledge Acquisition:** Written test scores significantly improved immediately after the simulation **at 82%** (M = 16.4 +/- 2.22, p<0.001) and were retained at 3 months **with 81%** (16.2 +/- 2.57;p<0.001).

•**Confidence Increase:** Student self-reported confidence also significantly increased, (p<0.001), especially for understanding stroke, heart attack, intraoperative emergency, cardiopulmonary resuscitation (CPR), opioid overdose, and administering naloxone

•**Positive comments:**

•they preferred the “hands on learning” and the opportunity to “apply what was learned in lecture.”

•Several participants liked “learning to intubate” and desired “more opportunities to intubate.”

•They “liked doing the exam and getting to ask questions” in communicating with the patient and family.

CONCLUSIONS

. Clinical simulation is a highly effective educational tool for improving both knowledge acquisition and confidence in pre-health students regarding high-acuity medical scenarios.

Implications:

. The results support integrating clinical simulation into the standard curriculum for pre-health education.

Next Steps/Spread:

◦ Train additional faculty to facilitate the simulation scenarios.

◦ Conduct further studies on long-term knowledge retention and correlation with on-the-job performance.

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