SmartSIM

A multicenter prospective randomized trial of 3D virtual reality versus live patient simulation

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Patient Population

- 83 Total Students
- 5 Absent
- 2 Experienced motion sickness
- 15 Declined to participate
- 61 Total Students Particpated

Study Design

- Paramedic Program opts to participate
- Individual Student consent
- Student Demographic Form
- Stratified Random Assignment
- Traditional Simulation (2hrs)
- 3DVR Simulation (2hrs)
- Cognitive Post-Test

Objective:

To explore the difference between 3D virtual reality simulations (3DVRS) and traditional in-person simulations

Methods:

Participants

- Convenience sample of 5 accredited paramedic programs geographically distributed across the United States
  - Randomized into two groups using a stratified random sampling technique
- Exposure to six NAEMT Advanced Medical Life Support (AMLS) scenarios over the course of two hours.
  - 30 potential differential diagnosis
- Critical thinking exam comprised of 50 previously psychometrically validated multiple-choice items provided by Fisdap
- The Mann-Whitney U test (due to skewed data) was used to compare the mean average exam scores of the groups

Zip Code Plot of Schools

Analysis:

Histogram for Group= Traditional Simulation
Mean = 69.38
Std. Dev. = 7.748
N = 29

Histogram for Group= Virtual Reality
Mean = 68.77
Std. Dev. = 6.422
N = 31

Group Statistics

Simulation Type	N	Mean Grade	Standard Deviation	Standard Error Mean
Live Simulation	29	69.38	7.748	1.439
Virtual Reality	31	68.77	6.422	1.153

Independent-Samples Mann-Whitney U Test
Type of Simulation

Traditional Simulation: N = 29, Mean Rank = 31.86
Virtual Reality: N = 31, Mean Rank = 29.23

Independent-Samples Mann-Whitney U Test Summary

Total N	60
Mann-Whitney U	410.000
Standard Error	67.241
Standardized Test Statistic	-.587
Asymptotic Sig.(2-sided test)	.557

Conclusion:

- No significant difference between traditional in-person and 3DVRS was found
- Larger studies are needed across the entire curriculum
  - With pre and post exams
- 3DVRS use could provide programs alternatives in high fidelity simulation without increasing the need for staffing or facilities

Limitations:

- Limited Sample Size
- Sample of Convenience
- Limited intervention exposure