

Content Specific Simulation-Supported Learning and High-Stakes Exams: Longitudinal Outcomes

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Disclosures & Objectives

- Disclosures:
  - No conflicts of interest
  - Sponsorship/commercial support by Elsevier
- Learner Objectives:
  - Discuss trajectory of scores on high-stakes exams over three post-test times points
  - Compare and contrast groups (content specific simulation versus usual course simulation)

Background

- Human Patient Simulation (HPS)
- High-stakes standardized exams
- HPS reinforces didactic learning
  - may increase standardized exam scores
- Minimal longitudinal research
  - Lasting effectiveness of HPS demonstrated by high-stakes standardized exam scores?

Purpose

- Examine trajectory of scores on high-stakes after content specific simulation
- Compare trajectory of scores
  - Experimental group (content specific simulation) versus control group (usual simulation)

Research Questions

- How do students who experience a human patient simulated clinical experience perform on content specific standardized high-stakes exams?
- How do scores on high-stakes exams differ by group (experimental versus control)?

Methods

- Quantitative, experimental, longitudinal, repeated measures design
- Traditional baccalaureate nursing students (n=94) enrolled in adult health nursing course
- Didactic cardiovascular content with subsequent cardiovascular specific standardized exam (pre-test)

Methods

- Randomize, didactic material, pre-test (T1)
- Dyads completed simulated clinical experience
  - Experimental – cardiovascular simulation
  - Control – usual course simulation
- Comparisons of high-stakes exams scores
  - Completion of simulation (T2)
  - End of course (T3)
  - End of program (T4)

Pre-test Comparison

- 94 students completed all waves of testing
- Pre-test (T1)
  - Control group scored significantly higher

    $(F(1,93) = 21.54, p < .000)$

Groups	Mean	Standard Deviation
Control	977	157
Experimental	823	156

Post-test 1 Comparison

- Post-test (T2) (simulation completion)
  - Experimental group scored significantly higher

    ($F(1,93) = 5.04, p = .027$)

Groups	Mean	Standard Deviation
Control	900	184
Experimental	982	171

Post-test 2 & 3 Comparison

- No significant differences at T3 and T4

Group	Time	Mean	Standard Deviation
Control	T3	955.38	143.81
Experimental	T3	1002.26	161.59
Control	T4	938.10	89.76
Experimental	T4	947.74	104.62

T-test for T3 and T4 Scores by Groups

Percent Change

- Percent change
  - Significant differences existed between groups in percent change from T1 to T2 and T1 to T4

    ($F(1,92) = 38.185\ 21.54$, $p = < .001$), ($F(1,77) = 19.158$, $p = < .001$)

Time		Mean	Standard Deviation
T1- T2		Control -6.91 HPS 20.65	Control 19.865 HPS 23.167
T1- T4		Control -2.41 HPS 18.09	Control 15.970 HPS 24.825

Discussion

- Targeted simulation may result in greater short-term knowledge
  - Yet, differences in scores did not persist
- Percent change and mean scores increased in experimental group from T1 to T4
  - While control group mean scores decreased
- Unexplained
  - Why control group scored higher on T1

Conclusion

- Positive short-term effects of targeted simulation experiences on high-stakes exams
- More research may discover additional variables contributing to results

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