Neonatal Resuscitation Program Cognitive Knowledge Acquisition Validation after Change in Instruction Method

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Introduction and Purpose
Emerging evidence supported changes in instructional methods for Basic Life Support (BLS), Advanced Cardio Life Support (ACLS), Pediatric Advance Life Support (PALS), and Neonatal Resuscitation Program (NRP) courses from instructor-led to computer-based with instructor facilitated methods. The BLS, ACLS, and PALS courses employed a computer-based, interactive progressive program with video scenario followed by an instructor-facilitated skills and content review, and testing process. The NRP training course employed self-directed reading, optional skills and content DVD videos, followed by the instructor-led skills review and testing. The purpose of this research was to investigate whether there was a difference in NRP participant knowledge acquisition between the instructor-led and computer-based methods.

Research Question and Hypothesis
Data was collected to answer the Research question “With the change to a computer-based teaching method for Neonatal Resuscitation Program training, is the student’s cognitive knowledge acquisition of the course content, as demonstrated by the test score, the same as with an instructor-led teaching method?”

The research hypothesis was that no statistical difference would exist in Neonatal Resuscitation Program participant cognitive knowledge acquisition between instructor-led and self-directed computer-based instruction methods.

Materials and Methods
A quantitative, retrospective, data review of NRP course test scores from 2010 to 2013 was conducted to compare nurse content knowledge acquisition following the instructor-led and self-directed computer-based courses. De-identified data were extracted from a repository of NRP course test scores kept by the regional NRP instructor. Data from a total of 709 nurse participants was collected. Of the total target population n=709, 327 nurses (46%) participated in NRP course test scores from nurses who care for neonates in one intensive care unit. No data was gathered on nurse years of experiences, age, academic preparation and times re-certified using these instruction methods. Such demographic data would further define participants who might do better with one instruction method compared to another. There was lack of available data to compare the BLS, ACLS, and PALS computer-based, interactive progressive scenario content instruction method with the two NRP content instruction methods used in the project.

Methods

Data analysis comparing mean cognitive content knowledge acquisition test scores between the instructor-led (94.08) and self-directed computer based (93.21) teaching methods demonstrated a statistically significant difference p = 0.002.

These findings suggested that there is only a .2% chance that the statistical differences between instructor-led compared to self-directed computer-based teaching methods were found by chance causing a Type I error. These findings rejected the null hypothesis. Data from this study demonstrated that the NRP course participants’ cognitive knowledge mean scores were greater than with the instructor-led teaching method.

Results

Conclusion
To date this is the first study that compared nurse participants’ cognitive knowledge scores between different instructional methods in the NRP course. Data indicated a significant retention in cognitive knowledge content acquisition using the instructor-led traditional method of NRP teaching over the self-directed computer approach. The role of instructor engagement with participants during the course, particularly during the skills review and integrated skills testing component likely contributed to these findings. Instructor’s engagement also provided a face-to-face, just -in-time feedback mechanism that likely helped to reinforce learning. Further study is recommended to determine the impact of instructor involvement on content knowledge and translation of knowledge into clinical competence and achievement of desired patient outcomes.

Study Limitations
This research was a focused single centered project using one time sampling of NRP scores from nurses who care for neonates in one intensive care unit. No data was gathered on nurse years of experiences, age, academic preparation and times re-certified using these instruction methods. Such demographic data would further define participants who might do better with one instruction method compared to another. There was lack of available data to compare the BLS, ACLS, and PALS computer-based, interactive progressive scenario content instruction method with the two NRP content instruction methods used in the project.

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