Title:
Simulation for Clinical Preparedness for Pediatric Emergencies

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Session Title:
Simulation in Emergency Situations
Slot:
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9:50 AM

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Nursing, Pediatric Emergencies and Simulation

References:


Abstract Summary:
The outcomes for children who sustain an in-hospital cardiopulmonary arrest remains poor. The purpose of this pilot study was to determine if pediatric simulation affects nurses’ knowledge, practices, and confidence when managing a pediatric code.

Learning Activity:

<table>
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<tr>
<th>LEARNING OBJECTIVES</th>
<th>EXPANDED CONTENT OUTLINE</th>
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<tbody>
<tr>
<td>The learner will be able to discuss the issues surrounding outcomes in pediatric emergencies in the acute care setting.</td>
<td>1. Background and significance of the problem to the pediatric patient population. 2. Why simulation is a good alternative to teaching practicing nurses about pediatric emergencies.</td>
</tr>
</tbody>
</table>
3. Discussion on simulation as a teaching-learning strategy in the practice environment.
4. Gaps in the literature and evidence on education and training for pediatric emergencies.

The learner will be able to describe the purpose and methods for the study.

| The learner will be able to discuss the results of the study, as well as implications for nursing education. |
| 1. Results of the study will be explained. 2. Implications for nursing education will be explored including future research. 3. Participants will be able to engage in discussion about the project, and opportunities for further studies. |

Abstract Text:

**Purpose:** The outcome for children who sustain an in-hospital cardiopulmonary arrest (CPA) remains low (Girotra, Spertus, Li, et al, 2012). In the United States (US), morbidity and mortality associated with pediatric cardiopulmonary arrests have remained essentially the same for the last three decades; with mortality rates of 70-85% in non-intensive care unit hospital resuscitations (Auerbach, Kessler, and Foltin, 2011). Unfortunately, recall of both guidelines and skills such as bag-valve-mask (BVM) ventilation, chest compressions, and defibrillation decays quickly; therefore, there is no guarantee that they have retained the skills necessary to deliver high-quality resuscitation efforts (p. e34). Didactic instruction does not provide adequate learning support for these adult learners who want to implement the lessons learned and refine their skills, as identified in Kolb’s Model of Adult Learning (Auerbach, Kessler, and Foltin, 2011). The purpose of this pilot study was threefold. The first objective of this study was to determine whether simulation exercises affected nurses’ knowledge and competency when managing a pediatric code. A second purpose was to explore whether nurses had an increase in self-confidence after participating in a series of simulation-based mock codes. A third purpose was to validate the simulation scenarios and tools used in the study.

**Methods:** A prospective, pretest/posttest design was used to measure knowledge, self-confidence, and competency. Knowledge was measured using a 25-question researcher developed multiple-choice assessment. Self-confidence was measured by a researcher developed 10-item Likert Scale questionnaire. And Competency was measure by a researcher developed Critical Element Checklist. All three instrument were sent to experts for content validity and has a CVI of > .90. The intervention and control group completed the knowledge assessment and the self-confidence survey related to pediatric emergencies at baseline prior to the intervention, and at month eleven, one month after the final scenario for both groups. The sample included an intervention group that participated in 3 mock codes with structured debriefing. The control group completed one mock code without the debriefing at the 10-month time period. Data analysis included paired t-tests to determine differences in knowledge assessment scores and self confidence between the intervention and control groups, and independent t tests to determine differences in the Critical Element Checklist scores between the intervention and control groups on the final scenario. Cronbach’s alpha reliabilities were conducted, and inter-rate reliability was established for the Critical Element Checklist.

**Results:** There was a statistically significant difference in knowledge between the intervention and control group on the knowledge assessment, with the intervention group scoring higher than the control group (p = .016). There were no statistically differences in self-confidence between the groups. Cronbach’s alpha
reliability was: .88 for the knowledge pretest was: .96 for the knowledge posttest. Reliabilities for Self-Confidence Pretest $r = .76$, and Posttest $r = .95$. Independent $t$ tests comparing group means on the Critical Elements Checklist showed no statistically significant differences between and within groups for all simulations. Interrater reliability for the Critical element checklist was .85 overall. A limitation of this study was the small number of participants, due to low enrollment. Of the 300 potential nurses eligible to participate, only 25 responded and were consented. Of the 25 participants, 7 were lost due to attrition. A second limitation was the lack of follow up by participants in completing the final survey. Despite multiple attempts to get the participants to complete the posttest surveys, several that participated in all three interventions still failed to complete the final survey.

**Conclusions:** Despite the small sample size, nurses in the intervention group did have statistically significant higher scores on the knowledge test. Additionally, the investigators were able to confirm the validity and initial reliability of the knowledge test, self-confidence survey, and Critical Element Checklist. The recommendation for future research is to conduct a replication study with a larger sample in order to determine in whether of the educational design of simulation and debriefing has a significant influence on nurses’ knowledge, self-confidence, and competency with pediatric emergency preparedness.