Efficacy of a Simulation/Clinical Evaluation Process in a Baccalaureate Undergraduate Nursing Program

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ANCC

• Continuing Nursing Education

• INACSL is an accredited ANCC provider.
OBJECTIVES

• Upon completion of this presentation, participants will be able to:

1. Discuss the importance of assessment within the clinical and simulation setting in determining nursing student’s pattern of behavior.

2. Discuss the role of the Creighton Competency Evaluation Instrument when assessing student performance within the simulation and clinical setting.

3. Compare C-CEI data when assessing and evaluating student’s competencies within the simulated and clinical setting.
DISCLOSURES

• Conflict of Interest
  • Janice A. Sarasnick reports no conflict of interest
  • Julia Greenawalt (INACSL Conference Administrator & Nurse Planner) reports no conflict of interest
  • Leann Horsley (INACSL Lead Nurse Planner) reports no conflict of interest

• Successful Completion
  • Attend 90% of session
  • Complete online evaluation
Introduction

• What I do?
• What is simulation?
• What is clinical?
• Why is change needed?
• Facilitators of change
Population

• Define Cohorts
  • Traditional – Fall of 2014
    • Younger
    • 4-Year University Experience - BSN
  • Second-Degree Students – Spring of 2015
    • Typically older
    • Degree in another field
    • 18 month program for BSN
Population

• Define Educators

• Clinical Instructors
  • 6:1 ratio
  • Traditional Clinical Experience

• Simulation Educators
  • 1:1 ratio with assessment
  • 2:6 ratio in groups
Tools Used

• Creighton Competency Evaluation Instrument (C-CEI©)
• End of Semester Survey
  • Educators
  • Students
Creighton Competency Evaluation Instrument (C-CEI©)

• 23 Item Dichotomous Tool

• Hayden, Keegan, Kardong-Edgren, and Smiley (2014) found the “content validity ranged from 3.78 to 3.89 on a four-point Likert-type scale. Chronbach’s alpha was > 0.9 when used to score three different levels (10%, 25%, and 50%) of simulation performance” (p. 244).
C-CEI©

- Developed by faculty from Creighton University
- Provide a FREE training in-service via the computer

https://nursing.creighton.edu/academics/competency-evaluation-instrument
Critical Objectives

Out of the 23 items – 6 were deemed most important as rated by faculty, simulation educators, and clinical instructors.

These 6 objectives were known as the “critical objectives.”
Critical Objectives

• 1. Assesses patient in a systematic and orderly manner using correct anatomical placement for stethoscope and hands.

• 2. Communicates effectively with intra/interprofessional team using TeamSTEPPS SBAR at end of shift report to nurse or instructor.
Critical Objectives

• 3. Communicates effectively with patient and significant other:
  • Fall of 2014 – Formulated higher level thinking questions.
  • Spring of 2015 – Clarified to read – Observed providing education to patient and/or family regarding diagnosis or medication.
Critical Objectives

• 4. Documents clearly, concisely, & accurately using data, action, and response format. Activity to be reviewed using the electronic health record, clinical report form, or simulation activity.

• 5. Prioritizes appropriately: Using either Maslow’s Hierarchy or A, B, C algorithm.

• 6. Administers medications safely as per protocol/textbook and using Skyscape.
Purpose of the Study

The aim of this study was to further define the clinical evaluation process, as it related to using the C-CEI© to measure student’s weekly growth (formative) and final findings (summative) within both the clinical and simulation setting and to explore the perceptions of students and clinical/simulation educators on using the C-CEI© as an overall evaluative instrument.
Statement of the Problem

The nursing medical surgical course required an updated valid and reliable tool that would measure nursing student’s competencies while in the clinical and simulation setting. The use of the C-CEI© tool may be beneficial in assisting with the incorporation of simulation and clinical assessment data to meet the evaluation needs of the clinical component of the nursing course.
Research Questions

• 1a. How do mean scores for the C-CEI© critical objectives for traditional nursing students compare competency between clinical and simulation settings?

• 1b. How do mean scores for the C-CEI© critical objectives for second degree nursing students compare competency between clinical and simulation settings?
Research Questions

• 2a. How do the highest score means for the C-CEI© critical objectives for traditional students compare competency between clinical and simulation settings?

• 2b. How do the highest score means for the C-CEI© critical objectives for second-degree nursing students compare competency between the clinical and simulation settings?
Hypothesis

The research used a null hypothesis ($H_0$) and declared no differences between the simulation and clinical C-CEI© scores.

BUT

There was statistical differences between the simulation and clinical C-CEI© scores.
Literature – Simulation National Study


Literature – Clinical Education


Eventually, students will require the real-world experience; however, using valid and reliable evaluation tools and simulation faculty as external raters (O’Connor, 2015), educators may be better able to determine students’ progression of professional growth and see patterns of behavior that indicate that the student is understanding the needed clinical competencies.

Methodology

Participants

• Traditional Nursing Students
• Second-Degree Nursing Students

Tools Used

• C-CEI©
• Student Survey
• Educator Survey

Methods of Collection

• C-CEI© - Weekly assessment in the Simulation and Clinical Environment
• Survey’s – End of the Semester Email
Orientation

• Prior to both semesters, clinical and simulation educators were asked to attend orientation.
• Orientation was not mandatory.
• Two of the 5 clinical instructors attended orientation.
• Others were oriented to the tool face-to-face with the lead faculty.
Table 7
Critical Objectives Versus Instructional Setting on Overall C-CEI© Performance

• See handout.

• *Statistically Significant* $p < 0.05$

• As seen in table 7, the presence or absence of each critical objective was significantly related to overall C-CEI© performance and overall student achievement for both cohorts of students.

• Students overall competency increased when the core objectives were present.
Simulation educators were more likely to grade students more critically when compared to the clinical educators.

Passing for the class is 75% (pass/fail).

$t(414.904) = 9.880, p < 0.001$

Table 8
C-CEI© Percentages

<table>
<thead>
<tr>
<th>Instructor</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simulation Educators</td>
<td>247</td>
<td>78.51%</td>
</tr>
<tr>
<td>Clinical Instructors</td>
<td>194</td>
<td>93.73%</td>
</tr>
</tbody>
</table>

Table 8 is labeled as such as the table correlates with the table within my dissertation.
<table>
<thead>
<tr>
<th>Critical Objective</th>
<th>Present</th>
<th>CCEI Percentage M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assesses the environment in an orderly manner: Completes a systematic head-to-toe assessment</td>
<td>No</td>
<td>62.11</td>
<td>18.26</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>91.87</td>
<td>12.33</td>
</tr>
<tr>
<td>Communicates effectively with intra/interprofessional team using Team STEPPS SBAR at end-of-shift report to nurse or instructor</td>
<td>No</td>
<td>64.65</td>
<td>20.75</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>93.53</td>
<td>11.15</td>
</tr>
<tr>
<td>Communicates effectively with patient and significant other: (Fall 2014) Formulates higher-level questions (Spring 2015) Observed providing education to patient and/or family regarding diagnosis or medication.</td>
<td>No</td>
<td>60.39</td>
<td>19.42</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>89.34</td>
<td>14.87</td>
</tr>
<tr>
<td>Documents clearly, concisely, and accurately: Uses data, action, response format</td>
<td>No</td>
<td>65.25</td>
<td>20.70</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>92.88</td>
<td>13.13</td>
</tr>
<tr>
<td>Prioritizes appropriately: Uses either Maslow's hierarchy or ABC algorithm</td>
<td>No</td>
<td>57.57</td>
<td>19.65</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>90.81</td>
<td>13.42</td>
</tr>
<tr>
<td>Administers medications safely as per protocol/textbook using Skyscape</td>
<td>No</td>
<td>69.50</td>
<td>21.03</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>92.47</td>
<td>12.24</td>
</tr>
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</table>
Research Question 1a/1b – Mean Scores

• When rating the mean scores between the clinical and simulation setting, the mean scores were lower in the simulated setting (78.5% vs. 93.7% - Table 8).

• The average score for students was above passing (75%) when factoring in the critical objectives (Table 9).
Table 11
C-CEI© Overall Total Items Scored

- Out of 23 items to score, simulation educators were more likely to score less items when compared to the clinical instructors.
- $t(301.209) = 15.068$, $p < 0.001$

<table>
<thead>
<tr>
<th>Instructor</th>
<th>N</th>
<th>M</th>
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<tbody>
<tr>
<td>Simulation Educators</td>
<td>247</td>
<td>15.38</td>
</tr>
<tr>
<td>Clinical Instructors</td>
<td>194</td>
<td>19.74</td>
</tr>
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</table>
Table 12
C-CEI© Sum of Scored Items

• Simulation educators were more likely to score lower using the C-CEI tool when compared to the clinical instructors.

• $t(439) = 17.161, p < 0.001$

<table>
<thead>
<tr>
<th>Instructor</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simulation Educators</td>
<td>247</td>
<td>12.10</td>
</tr>
<tr>
<td>Clinical Instructors</td>
<td>194</td>
<td>18.47</td>
</tr>
</tbody>
</table>
Rating the C-CEI©

Training on the use of the C-CEI© tool stated that not all objectives must be assessed at every encounter (Todd et al, 2014) and that raters must come to an understanding as to what will be assessed.

Sum of Scores and Items Rated

• The clinical setting is a complex and busy environment with a 6:1 instructor to student ratio. Expected to see less items scored. On average 20 out of the 23 items were scored when compared with the simulated setting, 15 out of 23 items scored (Table 11).

• Simulation had a 1:1 ratio and use of digital recording to assess student competencies. On average the sum of the scored items were 12 (simulation) vs. 18 (clinical) items scored (Table 12).
Research Question 2a/2b – Highest Mean Score Improvement

There was no statistical difference when comparing the highest score means for the C-CEI® critical objectives in either cohort and between environments.
Research Question 2a/2b Simulation

- C-CEI scores were low when in the simulation setting and therefore an increase in the score mean would be expected, however after reflection...

- Simulation setting offered variety. Each simulation experience was a new experience. Increase in score may not be expected because each experience was new to the participant.
Research Question 2a/2b Clinical

• Clinical setting already scored high means, therefore there was no place for improvement.

• Clinical setting had a consistent patient population.

• Example - nursing students on the neurological floor did exceedingly well with neurological scenarios, however struggled with cardiovascular and pulmonary patients.
Additional Tag Added at the End of the Tool Spring of 2015

• The student is progressing well and will meet competency status.

• The student would benefit from additional clinical support. Initiate a performance improvement plan (PIP).

• This selection option was added to help educators determine and begin student support as soon as an issue was detected. Approved by the authors of the tool via email.
Outlier

Outlier – remediated one student based upon findings within simulation. By conducting an assessment in various environments, the simulation educator and the clinical instructor were better able to define the issues using the C-CEI© tool. Also, the triangulation of data helped support remediation plans for the student and support faculty findings.
FINDINGS

Simulation may allow for a more critical assessment of student performance than clinical assessment alone.
FINDINGS

• Effective tool for weekly formative, individual assessment.
• Effective summative tool that will allow for differentiation in student performance.
FINDINGS

• Provided multiple assessments from various raters.
• Clinical instructor remained unchanged, however the simulation educators rotated students.
• Allowed for an overall view of patterns of behavior.
C-CEI Tool Strengths

Using Bloom’s Taxonomy verbs to observe student’s performance.

We utilize multiple choice tests to measure cognitive, however, we need to use the simulation and the clinical environment to measure performance (competencies) and attitudes while practicing the art of nursing.
Recommendations

• Recommend using the tool within the Medical Surgical Course.

• May be beneficial in other nursing clinical courses as a standardized assessment tool.
Limitations

Purposeful sampling was limiting in that the students were not randomized to the treatment group.
Limitations

The generalizability was limited due to the sample being restricted to a single training program. The research attempted to investigate the use of the C-CEI© within a small, private university and may not be generalized to other school of nursing institutions.
Future Research

• Identifying best practices in orientation and training of clinical and simulation educators collaboratively in the use of assessment tools that can be used within both environments.

• Methods of finding data collection approaches through the use of technology, such as software that is capable of distinguishing between quality and poor student performances, should be explored.

• Address budgetary issues, such as determining the effect that increasing simulation from 10% to 30% had on the budget, curriculum issues, and future planning of simulation/clinical assessment (Banta & Palomba, 2015).

Future Research

• Determine when to collect individual assessment versus group activities in order to maintain a feasible work schedule and still obtain relevant student competency data throughout the semester.

• Explore the impact that the competency assessment had on translational research. Translational science investigates the impact that the clinical and simulation learning had on patient outcomes within the actual healthcare setting. (U.S. Department of Health and Human Services, n.d., p. 1).

Questions