The Relationship of Self-Efficacy and Psychomotor Skill Competency

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Conflict of Interest Disclosures

Melanie Cason is the Clinical Simulation Program Coordinator at the Medical University of South Carolina Medical Center and has no financial or commercial relationships to disclose.
Background

*Prepared for safe practice*

90% Nursing academic leaders
10% Hospital nurse executives

Gap in literature regarding new graduates self-efficacy and actual performance of psychomotor skills.

(Berkow, Virkstis, Stewart, & Conway, 2009).
Research Question

What is the relationship between new nursing graduates’ perceived self-efficacy and the actual level of psychomotor skill competency in the context of a patient care scenario using high fidelity simulation?

Specific Aims:
To assess the new graduates’ beliefs in their abilities.
To measure in an objective and standardized method demonstrated abilities.
To determine if self-efficacy and abilities correlate.
Framing the Study

Benner’s Novice to Expert Model

Miller’s Pyramid of Clinical Competency

Bandura’s Self-Efficacy Theory
Conceptual Framework—Integrated Benner-Miller Framework for Simulation Evaluation with Bandura’s Self Efficacy as Underpinning

Does Expert
Simulation Shows How Competent-Proficient
Knows How Advanced Beginner Knows Novice
Self-Efficacy to Understand and Perform The Required Action Correctly
Methodology and Research Design

* Quantitative descriptive correlational design to examine the relationship between new nursing graduate self-efficacy and psychomotor skill competency.

*Clinical Competency Questionnaire

*Programmed standardized simulation with embedded steps for urinary catheterization

*Creighton-Competency Evaluation Instrument rating as competent or not competent with supporting evidence from simulation measurement.
Research Design = Descriptive Correlational

**Descriptive**
- Demographics
- Experience in healthcare
- Gender
- Highest level of nursing education
- Age range
- Frequency of simulation use in undergraduate program

**Correlational**
- Appropriate nonparametric statistical analysis
- Spearman’s correlational coefficient ($r_s$)
- Point biserial correlation
Clinical Competency Questionnaire (CCQ) for Self-Efficacy Determinations

All items are ranked on the following scale:
1. Do not have a clue
2. Know in theory, but not confident at all in practice
3. Know in theory, can perform some parts in practice independently, and need supervision to be readily available
4. Know in theory, competent in practice, need contactable sources of supervision.
5. Know in theory, competent in practice without supervision.

(Liou & Cheng, 2014)
Skill Competence: Core nursing skills (12 items)

29. Changing intravenous fluid bottle or bag
30. Administering intravenous medications
31. Administering intramuscular medications
32. Performing subcutaneous injection
33. Administering oral medications
34. Performing urinary catheter insertion and care
35. Performing sterile technique
36. Performing enema
37. Performing upper airway suction
38. Performing tracheotomy care
39. Performing nasogastric tube feeding and care
40. Performing wound dressing care
The Patient

Pre-programmed to talk, become increasingly confused, and unable to void.
Procedural steps embedded within the programmed scenario tested for interrater validity and reliability.
Major Findings—Descriptive

Experience = Less than 50%

Gender = primarily female at 89.4 %

Highest Level of Nursing Education = Majority Baccalaureate 61%

Age ranged from 18-54, with the majority in the 25-34 age range

The highest use of simulation in nursing courses occurred in every clinical course for 57.4%
Sub-research questions

What is the new nursing graduate’s level of psychomotor skills competency in the context of a patient care scenario using high fidelity simulation?

<table>
<thead>
<tr>
<th>Procedural Steps</th>
<th>Did not perform N (%)</th>
<th>Performed N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prewash</td>
<td>19 (40%)</td>
<td>28 (60%)</td>
</tr>
<tr>
<td>Hand Hygiene</td>
<td>1 (2%)</td>
<td>46 (98%)</td>
</tr>
<tr>
<td>Open Sterile Kit</td>
<td>8 (17%)</td>
<td>39 (83%)</td>
</tr>
<tr>
<td>Don Sterile Gloves</td>
<td>7 (15%)</td>
<td>40 (85%)</td>
</tr>
<tr>
<td>Spread Labia</td>
<td>4 (9%)</td>
<td>43 (91%)</td>
</tr>
<tr>
<td>Maintain position</td>
<td>15 (32%)</td>
<td>32 (68%)</td>
</tr>
<tr>
<td>Wipe front to back</td>
<td>1 (2%)</td>
<td>46 (98%)</td>
</tr>
<tr>
<td>Used new swabs</td>
<td>2 (4%)</td>
<td>45 (96%)</td>
</tr>
<tr>
<td>Discarded swabs</td>
<td>1 (2%)</td>
<td>46 (98%)</td>
</tr>
<tr>
<td>Prep aseptically</td>
<td>18 (38%)</td>
<td>29 (62%)</td>
</tr>
</tbody>
</table>
Sub-research question

What is the new nursing graduate’s perceived level of self-efficacy in performance of psychomotor skills?

<table>
<thead>
<tr>
<th>CCQ Self-Efficacy Rating</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Know in theory, not confident in practice</td>
<td>1(2)</td>
</tr>
<tr>
<td>Know in theory, can perform some independently, need supervision readily available</td>
<td>10(21)</td>
</tr>
<tr>
<td>Know in theory, competent in practice, need contactable sources of supervision</td>
<td>14(30)</td>
</tr>
<tr>
<td>Know in theory, competent in practice without supervision</td>
<td>22(47)</td>
</tr>
</tbody>
</table>
### Correlational—Spearman’s Correlation Coefficient

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Correlation coefficient</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competency Score and Self-Assessment</td>
<td>.138</td>
<td>.352</td>
</tr>
<tr>
<td>Correct Items and Self-Assessment</td>
<td>.232</td>
<td>.117</td>
</tr>
<tr>
<td>Correct Items and Competency Score</td>
<td>.859**</td>
<td>.000</td>
</tr>
</tbody>
</table>

*Note. Level of significance .05 (2-tailed), Degrees of freedom ($df$) = $N - 2$
** Correlation is significant at the 0.01 level (2-tailed).*
Point biserial correlation

$r(45) = .157, p > .05$

The point-biserial correlation coefficient indicates a non-significant correlation between self-efficacy scores for urinary catheterization and competency rating.

This result supports the null hypothesis that there is no relationship between self-efficacy and psychomotor skills competency of the new nursing graduate.
Recommendations

* More studies to evaluate the relationship of self-efficacy categories of behavioral and psychomotor skill abilities.
* Standardize simulation programming to allow for expansion of evaluation for evidence and outcomes.
* Increase the use of simulation for evaluating psychomotor skills of new nursing graduates with high fidelity simulation.
* Expand to a multi-site study of new nursing graduates to increase sample size for improved reliability and validity.
* Incorporate the use of individual evaluation in the context of a patient care simulation prior to graduation.
* Further research using a mixed methods design to increase understanding of the self-efficacy level and processing after simulation evaluation.
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