Impact of high fidelity simulation experiences on nursing students’ anxiety and self-confidence: a systematic review

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Role of Clinical Nursing Education

Development of **nursing, caring, and cultural competencies**

Translation of theoretical knowledge to **nursing practice**

Development of **critical thinking, communication, and interpersonal skills**

Development **ethical reasoning and decision making skills**
Nursing Education Challenges

- **Limited** clinical placement
- **Nurse faculty shortage**
- **Increasing** complexity of healthcare system
- **Increasing** nursing student admission
Alternative teaching approaches such as **SIMULATIONS** are essential to enhance the preparation of nursing students to assume professional nurse roles.

- National Council of State Boards of Nursing (NCSBN)
- National League of Nursing (NLN)
- confidence (Leigh, 2008)
- communication skills (MacLean et al. 2016)
- clinical judgement (Yuan et al. 2012a)
- critical thinking (Goodstone et al. 2013)
- motivation (Fawaz & Hamdan-Mansour 2016)
- knowledge (Gates et al. 2012)
- clinical competence (Foronda et al. 2013, Yuan et al. 2012b)
- clinical reasoning (Lapkin et al. 2010)
<table>
<thead>
<tr>
<th>confidence</th>
<th>anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Yuan et al. (2012a) review, HFS did not sufficiently enhance confidence and competence in nursing students.</td>
<td>Several studies were reported examining the effects of HFS on students’ anxiety.</td>
</tr>
<tr>
<td>In Weaver (2011) review on HFS simulation, the findings were inconclusive with regards to knowledge, confidence, and student learners’ satisfaction</td>
<td>Studies on the impact of HFS on students’ anxiety has not been appraised.</td>
</tr>
</tbody>
</table>
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The learner will be able to understand the influence of high fidelity simulation experiences on students' outcomes (self-confidence and anxiety).

The learners will be able to understand the methodological challenges of the current HFS literature.
Methods

Findings

Future Research Directions

Conclusion and Implications
Review Aim

- To explore peer-reviewed publications on the influence of HFS utilization on nursing students’ anxiety and self-confidence during nursing education.
- To identify gaps in the existing literature to inform future research.
Review Question

- Does high-fidelity simulation experience reduce anxiety and enhance self-confidence among nursing students when performing nursing skills or managing patients?
**Methods**

- Systematic Review
- SCOPUS, MEDLINE, PubMed, CINAHL and PsychINFO
- 1) peer-reviewed articles which primary objective of the research was to evaluate the effects of using HFS on nursing students’ anxiety levels and self-confidence, (2) published in English language and (3) published between 2006 and 2016.
Flow Diagram

- CINAHL, MEDLINE, PsycINFO and PubMed: 582 titles
- 356 papers excluded (title not relevant to the subject)
- Abstract Screening: 226 papers
  - 76 papers excluded (abstract irrelevant to the subject)
- Full Text Screening: 150 papers
  - 45 papers excluded (full text irrelevant to the study)
- 105 articles
  - 69 papers with methodological problem (design, response rate)
- 9 articles included in quantitative synthesis (meta analysis)
- 27 articles included in qualitative synthesis

- 50% were conducted in USA
- Sample size ranged from 10-219
- Clinical scenarios using human patient simulators were used
- Control group used LFS, MFS, and traditional lectures
HFS was found to increase confidence among nursing students when managing patients or performing nursing skills.


Qualitative Studies (Reilly & Spratt 2007; Kaddoura 2010; Reid-Searl et al. 2012, Najjar et al. 2015; Sundler et al. 2015; Fawaz & Hamdan-Mansour 2016)

HFS did not enhance confidence in among students in three studies (Brannan et al. 2008; Megel et al. 2012; Wang et al. 2013b)

HFS was found effective in reducing anxiety in students (Reid-Searl et al. 2012; Szpak & Kameg 2013; Khalaila 2014; Hollenbach 2016)
### Review Findings

#### Outcomes
- **Confidence**
- **Anxiety**

#### Study
- Scherer et al. (2007)
- Tawaldeh (2016)
- Shinnick & Woo (2014)
- Cobbett & Snelgrove-Clarke (2016)
- Liaw et al. (2012)
- Butler & Veltre (2009)
- Gore et al. (2011)
- Megel et al. (2012)

#### Experimental Group

<table>
<thead>
<tr>
<th>Study</th>
<th>Mean± SD(n)</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scherer et al. (2007)</td>
<td>27.48 (5.9) (13)</td>
<td>31.20 (3.6) (10)</td>
</tr>
<tr>
<td>Tawaldeh (2016)</td>
<td>4.41 (0.89) (35)</td>
<td>4.21 (0.78) (34)</td>
</tr>
<tr>
<td>Shinnick &amp; Woo (2014)</td>
<td>2.47 (0.86) (89)</td>
<td>2.08 (0.97) (72)</td>
</tr>
<tr>
<td>Cobbett &amp; Snelgrove-Clarke (2016)</td>
<td>115.25(21.95)(28)</td>
<td>104.89 (17.52) (27)</td>
</tr>
<tr>
<td>Liaw et al. (2012)</td>
<td>24.53 (6.56) (15)</td>
<td>20.63 (6.05) (16)</td>
</tr>
<tr>
<td>Butler &amp; Veltre (2009)</td>
<td>61.87 (2.23) (15)</td>
<td>55.33 (7.19) (15)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>115.25</strong></td>
<td><strong>104.89</strong></td>
</tr>
</tbody>
</table>

#### Control Group

<table>
<thead>
<tr>
<th>Study</th>
<th>Mean± SD(n)</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scherer et al. (2007)</td>
<td>31.20 (3.6) (10)</td>
<td>32.40 (3.9) (9)</td>
</tr>
<tr>
<td>Tawaldeh (2016)</td>
<td>4.21 (0.78) (34)</td>
<td>4.26 (0.82) (35)</td>
</tr>
<tr>
<td>Shinnick &amp; Woo (2014)</td>
<td>2.08 (0.97) (72)</td>
<td>2.04 (1.00) (74)</td>
</tr>
<tr>
<td>Cobbett &amp; Snelgrove-Clarke (2016)</td>
<td>104.89 (17.52) (27)</td>
<td>104.25 (17.30) (26)</td>
</tr>
<tr>
<td>Liaw et al. (2012)</td>
<td>20.63 (6.05) (16)</td>
<td>20.80 (6.10) (17)</td>
</tr>
<tr>
<td>Butler &amp; Veltre (2009)</td>
<td>55.33 (7.19) (15)</td>
<td>52.80 (7.05) (15)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>104.89</strong></td>
<td><strong>104.25</strong></td>
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</table>

#### SMD (95% CI)

<table>
<thead>
<tr>
<th>Study</th>
<th>SMD (95% CI random)</th>
<th>Overall Effect</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scherer et al. (2007)</td>
<td>-0.71 (-1.56, 0.14)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tawaldeh (2016)</td>
<td>0.24 (-0.24, 0.71)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shinnick &amp; Woo (2014)</td>
<td>0.43 (0.11, 0.74)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cobbett &amp; Snelgrove-Clarke (2016)</td>
<td>0.51 (-0.02, 1.05)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liaw et al. (2012)</td>
<td>0.60 (-0.12, 1.32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Butler &amp; Veltre (2009)</td>
<td>1.20 (0.42, 1.97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>0.40 (0.05, 0.75)</strong></td>
<td><strong>Z=3.05</strong></td>
<td><strong>0.03</strong></td>
</tr>
<tr>
<td>Gore et al. (2011)</td>
<td>-0.36 (-0.74, 0.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Megel et al. (2012)</td>
<td>-0.36 (-0.74, 0.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>-0.36 (-0.74, 0.08)</strong></td>
<td><strong>Z=-1.91</strong></td>
<td><strong>0.06</strong></td>
</tr>
</tbody>
</table>
Methods

Findings

Future Research Directions

Conclusion and Implications
Future Research Directions

Future studies utilizing **larger sample size** and rigorous sampling method

Future research using **established instrument**

Simulation research using **RCT design**

**Multi-country study** to achieve international perspective

**Consideration of factors** such as clinical experience, level of education, personality, and students’ characteristics
Conclusion & Implications

- HFS enhances confidence in nursing students
- Mixed contribution of HFS to anxiety
- Inclusion of simulation activities to all nursing courses
- Provision of adequate simulation supplies and equipment
- Simulation trainings to faculty


Hollenbach PM (2016) Simulation and Its Effect on Anxiety in Baccalaureate Nursing Students. Nursing Education Perspectives 37, 45-47.


References


Tawalbeh LI (2016) Effect of Simulation on the Confidence of University Nursing Students in Applying Cardiopulmonary Assessment Skills: A Randomized Controlled Trial. Journal of Nursing Research Research Advanced Online Publication, DOI: 10.1097/jnr.0000000000000170


Thank you!