Outcomes of Simulation-based Experiences Related to Family Presence During Resuscitation: A systematic review

Katherine M. Schafer MSN, CHSE & Michael J. Kremer PhD, CHSE

Background
- Family presence during resuscitation (FPDR) aligns with clinical practice guidelines and family-centered care
- Clinician-reported barriers including lack of knowledge, experience, and confidence result in inconsistent offers of FPDR in practice
- Simulation-based experiences (structured activities that represent actual or potential situations in education, practice, and research) may address barriers and help close the practice gap
- Simulation requires significant resources and should be used strategically

Evidence for FPDR simulation needs to be appraised and synthesized to provide guidance for clinicians, educators, and researchers.

Methods

Design
- PRISMA (Preferred Reporting Items for Systematic Review and Meta-analysis) guidelines followed

Inclusion criteria
- Research-based
- Published in English
- Included simulation (any modality) related to FPDR,
- No exclusions set on publication date, study design, population, or setting

Search Strategy
- Search performed in PubMed, Scopus, CINAHL, PsycINFO, and Google Scholar
- MeSH: “Simulation Training” AND (“Health Personnel” OR “Attitude of Health Personnel” OR “Professional-Family Relations”) AND “Resuscitation” AND “Family”
- Search string first included simulation, followed sequentially by clinician, resuscitation, family, and presence
- Search results compiled in Covidence (online review platform)

Search Outcomes

PRISMA Flow Diagram

Records identified (n = 194):
- PubMed (n = 36)
- Scopus (n = 26)
- CINAHL (n = 22)
- PsycINFO (n = 6)
- Google Scholar (n = 100)
- Hand search (n = 4)

Duplicates removed (n = 59)

Abstracts screened (n = 135)

Abstracts excluded (n = 110)

Full-text studies assessed for eligibility (n = 25)

Studies included in analysis (n = 17)

Data Extraction and Synthesis

- Author-developed data collection tool to describe study variables

Analytic Strategies

- Simulation quality: Fey et al. Simulation Research Evaluation Rubric
  - Three elements: Simulation development, description of simulation implementation, description of feedback or debriefing
  - Each element scored 0 (Unsatisfactory) to 4 (Excellent)
  - Study evidence level and quality rating (including risk of bias): Johns Hopkins Level of Evidence and Quality Guide
  - Evidence Level: Level 1 (experimental), Level 2 (quasi-experimental), Level 3 (non-experimental)
  - Determined from study methodology
  - Quality Rating: A (high quality), B (good quality), C (low quality or major flaws)

  - Determined from study characteristics of sample size, control, results, conclusions, recommendations, and literature review
  - Due to heterogeneity of studies, a narrative approach used to synthesize outcomes examined and findings
  - Studies reviewed, results coded, cross checked for coding inconsistencies, consensus obtained
  - Study findings sorted and categorized into outcome categories

Search Studies

Performance of interventions on clinician attitudes, perceptions, comfort, and support for FPDR

Simulation outcomes examined and findings

- FPDR simulation facilitated more clinician offers and more family choices for FPDR in practice
- Technical performance scores lower with FPDR simulation
- Clinicians and families perceived that FPDR resulted in improved communication and patient care

Simulation Outcome Categories

1. Clinician competencies (13 studies)
   a) Knowledge outcomes (4 studies)
   b) Affective outcomes: attitudes, beliefs, perceptions related to FPDR (12 studies)
   c) Technical performance outcomes: skill or ability to perform resuscitation activities with simulated FPDR (4 studies)
   - Delayed time to first shock and calling for help, fewer shocks given, technical performance scores lower when the simulated family member was distracting (3 studies)
   - Providers with regular life support training showed no differences in technical performance when simulated family member was quiet versus distracting (1 study)

2. Practice Changes (2 studies)
   - FPDR simulation facilitated more clinician offers and more family choices for FPDR in practice
   - Clinicians and families perceived that FPDR resulted in improved communication and patient care

Resources (3 studies)

- Resource Development (2 studies): instrument design and psychometric testing
  - Use of a caring efficacy scale is useful for evaluating caring during FPDR simulation
  - Parents and clinicians identified simple behaviors that optimized communication during simulated FPDR

Conclusion

- Evidence suggests the benefit of simulation related to FPDR for overcoming clinician competency barriers (knowledge and affective) and increasing implementation of FPDR in practice
- Inconsistent evidence regarding the effect of FPDR on technical performance competencies
- Need for increased simulation quality and transparency in FPDR simulation development and reporting
- Well-designed simulation may be used in practice, education, and research settings to address barriers to offering FPDR as part of family-centered care and to improve outcomes

Methods, contd.

Purpose

To systematically examine use of FPDR simulation, including:
- Simulation modality and quality (alignment with best practices: development, implementation, feedback/debriefing)
- Study evidence level and quality rating
- Simulation outcomes

Results

<table>
<thead>
<tr>
<th>Study</th>
<th>Simulation Modality &amp; Quality</th>
<th>Study Evidence Level</th>
<th>Quality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Patient</td>
<td>Simulated Case-Based</td>
<td>Development</td>
<td>Implementation</td>
</tr>
<tr>
<td>Patient</td>
<td>Participant Learning</td>
<td>(n = 17)</td>
<td>(n = 17)</td>
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<td>Ayub et al. (2017)</td>
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<td>✓</td>
<td>2</td>
</tr>
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</table>

Note: NS = Not specified in study; *1; 2; **A, B, C

Evidence & Quality

- Majority of studies (12) used both human patient simulators and simulated participants
- Majority scored ≤2 for simulation quality development (14), implementation (12), and debriefing (14)
- Majority of studies (10) were non-experimental (Level 3)
- All studies were “high quality” (A) or “good quality” (B)