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

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

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)

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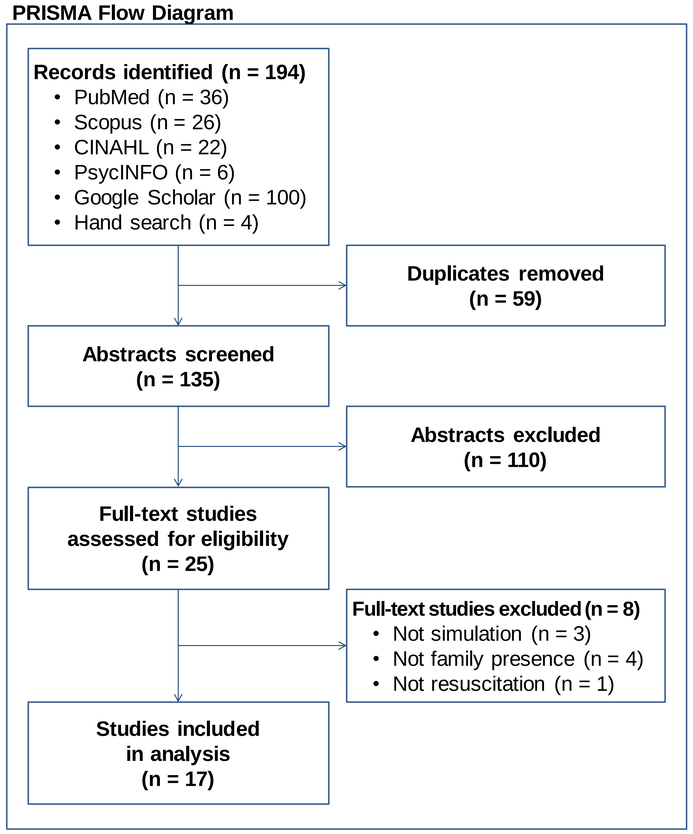
Methods, contd.

Search Outcomes

PRISMA Flow Diagram



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 from 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 (Llow 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

Results

FPDR Simulation Modality & Quality and Study Evidence Level & Quality Rating (n = 17)

Study	*Simulation Modality*			*Simulation Quality Rating*			*Evidence & Quality*
Author (year)	Human Patient Simulator	Simulated Participant	Case-Based Learning	Development	Implementation	Feedback/ Debriefing	Evidence Level*-Quality Rating**
Ayub et al. (2017)	✓	✓		1	2	3	3-A
Deacon et al. (2020)	✓	✓		2	4	3	3-A
Itzhaki et al. (2012)			✓	1	2	0	3-A
Kane et al. (2011)	✓	✓		3	3	1	3-B
Kantrowitz-Gordon et al. (2013)	✓	✓	✓	3	3	3	3-A
Pontin et al. (2016)	✓	✓		0	1	0	3-B
Powers & Candela (2016)			✓	1	2	1	2-A
Pye et al. (2010)	✓	✓		1	1	2	3-B
Tripon et al. (2014)	*NS*	*NS*		0	0	0	3-B
Bjørshol et al. (2011)	✓	✓		1	3	0	1-A
Fernandez et al. (2009)	✓	✓		0	2	1	1-B
Kenny et al. (2017)	✓	✓		2	2	0	1-B
Krage et al. (2014)	✓	✓		2	3	0	1-A
Curley et al. (2012)	✓	✓		1	1	0	2-B
O'Connell et al. (2007)	*NS*	*NS*		0	0	1	2-B
Eggenberger et al. (2012)	✓	✓		3	1	0	3-A
Lizotte et al. (2020)	✓	✓		2	2	1	3-A

*Note. NS = Not specified in study; *1-3; **A, B, C*

- 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)

Simulation Outcome Categories

1. Clinician competencies (13 studies)
   a) Knowledge outcomes (4 studies)
      i. Simulation interventions improved short-term knowledge of FPDR (4 studies)
      ii. Sustained improved knowledge at one year (2 studies)
   b) Affective outcomes: attitudes, beliefs, perceptions related to FPDR (12 studies)
      i. Simulation interventions improved clinician attitudes, perceptions, comfort, and support for FPDR
      ii. Potential barriers/solutions identified (e.g., need for designated family support person)
   c) Technical Performance outcomes: skill or ability to perform resuscitation activities with simulated FPDR (4 studies)
      i. 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)
      ii. 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)
   a) FPDR simulation facilitated more clinician offers and more family choices for FPDR in practice
   b) Clinicians and families perceived that FPDR resulted in improved communication and patient care
3. Resource Development (2 studies): instrument design and psychometric testing
   a) Use of a caring efficacy scale is useful for evaluating caring during FPDR simulation
   b) 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