SSH Presents:

SIMULATION ARTICLES OF INFLUENCE

July 2022 – June 2023

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On behalf of the SSH Research Committee

WELCOME

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DISCLOSURES

Serkan Toy
- Associate Editor, *Advances in Simulation*

Michelle Kelly
- Associate Editor, *Advances in Simulation*
- Assistant Editor, *Clinical Simulation in Nursing*

Gabriel Reedy
- Editor in Chief, *Advances in Simulation*

Cathy Smith
- Associate Editor, *International Journal of Healthcare Simulation*

Learning Objectives

- Identify the range of journals where simulation-focused research and scholarship are regularly published.

- Discuss how a different research approach, identified from one of the articles, might inform your future work.

- Identify how the broad range of articles presented in this session might impact on your own practice.

Building a Research Culture in Simulation

- Developing and celebrating excellent research in simulation

- Highlighting significant work in the field

- Exploring articles you may have missed

- Common in other learned society meetings

- A complex task even in a narrow range

- Influencing simulation practice and research (rather than ranking)

- Refining the process and methodology that is repeatable and builds

  year-on-year

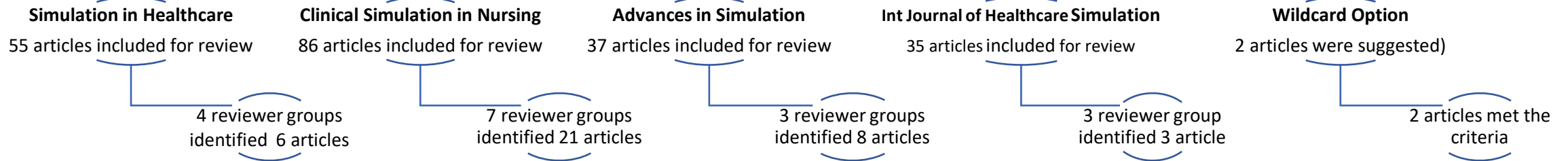# Process

215 articles sent for review

up from 213 last year

Published research, review, and conceptual articles
July 2022 through June 2023

A total of 45 reviewers included in 17 reviewer groups

2 to 3 individuals reviewed ≤ 15 papers each and used a **5-point scale** to rate them

Simulation in Healthcare

55 articles included for review

4 reviewer groups identified 6 articles

Clinical Simulation in Nursing

86 articles included for review

7 reviewer groups identified 21 articles

Advances in Simulation

37 articles included for review

3 reviewer groups identified 8 articles

Int Journal of Healthcare Simulation

35 articles included for review

3 reviewer group identified 3 article

Wildcard Option

2 articles were suggested)

2 articles met the criteria

rated ≥ 4 by at least 2 reviewers

40 articles were selected

31 will be featured today

Featured articles

Simulation in Healthcare (6)

Clinical Simulation in Nursing (12)

Advances in Simulation (8)

International Journal of Healthcare Simulation (3)

Wildcards (2)

Tsang KD, Ottow MK, van Heijst AF, Antonius TA. Electronic Decision Support in the Delivery Room Using Augmented Reality to Improve Newborn Life Support Guideline Adherence: A Randomized Controlled Pilot Study. Simulation in Healthcare. 2022;17:293-298.

Background and Methods

- Gap in adherence to the Newborn Life Support (NLS) guideline during neonatal resuscitation.

- Utilized a novel augmented reality electronic decision support tool (Microsoft HoloLens) to enhance adherence.

- A randomized controlled pilot study: 18 in the intervention, 11 in the control group.

- Standardized neonatal resuscitation scenarios were recorded and assessed for adherence by independent reviewers.

- Secondary outcomes: error classification for algorithm deviation and time analysis for critical steps execution.

Findings

- The intervention group had higher median scores (34) compared to controls (29) (P = 0.004). (Max possible score: 40)

- Less frequent errors of commission in the intervention group (2) vs. control (4) (P = 0.029).

- No significant differences in time to initiation or completion of key steps.

- The electronic decision support tool showed improved adherence to the NLS guideline during simulated neonatal resuscitation.

Reviewer comments

Using Halolens to assist with learning Newborn Life Support education as a decision support tool has vast implications in the clinical environment

As augmented reality gives a different edge to the simulation experience, this article has influenced and improved my knowledge towards its use in simulation.

Simulation in Healthcare (2 of 6)

Calhoun AW, Gross IT, Mallory LB, Shepard LN, Adler MD, Maa T, Auerbach MA, Cheng A, Kessler DO, Whitfill TM, Duff JP.
From Concept to Publication: Effectiveness of the International Network for Simulation-Based Pediatric Innovation, Research, and Education Project Development Process at Generating Simulation Scholarship. Simulation in Healthcare. 2022;17:385-393.

Background and Methods

- Need for developing pathways for researchers in simulation.

- Low conversion rate between abstract and journal publications.

- Analyzed scholarly products associated with ALERT Presentations by the International Network for Simulation-based Pediatric Innovation, Research, and Education.

- Surveys to ALERT Presentation first authors from 2011 through 2020.

- Information collected on abstracts, grants, journal publications, and book chapters related to ALERT Presentations.

- Literature search for presentations without survey responses.

Descriptive and correlational analyses of the resulting database.

Findings

- 165 new ALERT presentations over 10 years resulted in 361 scholarly works (170 conference abstracts, 125 journal publications, 65 grants, and 1 book chapter).

- 61% (101 of 165) of ALERT Presentations led to at least one scholarly product.

- 59% (34 of 58) of ALERT Presentations with at least one abstract led to at least one journal article.

- Presenter gender (male) was associated with the likelihood of journal publication.

- The ALERT Presentation process effectively facilitates project development, leading to disseminated scholarship.

Reviewer comments

Demonstrating that specific presentation methodologies leads to a conversion of work from presentation to scholarship is immensely valuable for educators, administrators, and clinicians.

As directly linked to research and publication process, this article will not only influence mine but others research practices as well.

Vemuri S, O'Neill J, Hynson J, Gillam L. Informing Simulation Design: A Qualitative Phenomenological Study of the Experiences of Bereaved Parents and Actors. Simulation in Healthcare. 2023;18:75-81.

Background and Methods

- Sim scenarios in pediatric healthcare communication skills can involve parents in character development for psychological fidelity.

- Limited research on involving bereaved parents in simulations related to a child's end-of-life.

- Explored the impact and experiences of bereaved parents and actors in simulation design.

- Qualitative phenomenological study with five bereaved parents and two actors in a character development workshop.

- Individual interviews conducted up to four weeks post-workshop, analyzed using inductive content analysis.

Findings

- Bereaved parents found the workshop emotionally challenging but positive, worthwhile, and beneficial.

- Actors found the workshop helpful in character development, validating the importance of their work.

- Ongoing involvement of bereaved parents in simulation design deemed psychologically safe and beneficial for both parents and actors.

- Potential for higher-quality simulated experiences, enabling clinicians to enhance end-of-life care skills for children.

Reviewer comments

New knowledge in an area of simulation that is under-researched and difficult to study

This article's examination of the impact of involving bereaved parents provides vital information about the possible implications of working with this patient population which may help break down barriers to including patient's perspectives in healthcare simulation design efforts.

Background and Methods

- 23 focus groups involving 183 first-year medical students

- Aimed to assess perceptions of effective simulation instructors during preclinical training.

- Qualitative descriptive analysis used for interpreting focus group data.

- Students identified key areas of:

    knowledge,

    effective instructor skill categories, and

    positive instructor attributes.

Findings

- Areas of Knowledge: Schedule; Student learning goals; Tasks and checklists; Technique

- Effective Instructor Skill Categories: Setting up the learning environment; Teaching at the appropriate level; Teaching technique; Providing deeper context; Giving effective feedback

- Positive Instructor Attributes: Enthusiasm; Engaged; Prepared; Knowledgeable; Patient; Relational; Transparent; Calm

- Provided detailed descriptions and illustrative examples for each category, reflecting effective instruction from the students' perspective.

- Recommended faculty development methods based on the findings.

Reviewer comments

This qualitative study provides insight as to what constitutes an effective simulation educator, which has significant applications for quality improvement and professional development.

Faculty training and maintaining best practices is vital to the simulation environment and this research identifies opportunities from the student perspective.

Boyle TP, Dugas JN, Liu J, Stapleton SN, Medzon R, Walsh BM, Corey P, Shubitowski L, Horne III JR, O'Connell R, Williams G. Adaptation of a Simulation Model and Checklist to Assess Pediatric Emergency Care Performance by Prehospital Teams. Simulation in Healthcare. 2023;18:82-89.

Background and Methods

- Gap in simulation assessment tools for prehospital team performance and patient safety

- Adapted a simulation model and checklist initially designed for individual paramedic performance.

- Modified Delphi process to adapt three simulation cases (cardiopulmonary arrest, seizure, asthma),

- Team performance assessed with a checklist scored as complete/incomplete through direct observation or video review.

- Composite performance score as the percentage of completed steps.

- Interrater reliability through iterative rounds until composite performance scoring agreement reached 0.80 or greater.

Findings

- Very good interrater agreement in two rounds using 6 prehospital teams and 4 raters.

- Modified checklist (171 steps) demonstrated very good agreement for assessing composite prehospital team performance.

- Agreement varied across simulation cases, with lower interrater percent agreement for the seizure case.

- Most checklist items (80%) had good–very good agreement; items with fair-moderate agreement mainly related to patient assessment, equipment use, medication delivery, and cardiopulmonary resuscitation.

- The modified checklist with very good agreement is suitable for assessing composite prehospital team performance and can be employed to test the effects of patient safety interventions.

Reviewer comments

Valuable patient safety tool for training within the pre-hospital setting.

Literature in prehospital performance is currently lacking. This shows great variety in the results

This study can contribute to a population of learners less represented in SBE research promoting generalizability and further improving patient safety.

Hall AC, Silver BH, Ellis W, Manjaly JG, Utoomprurkporn N, Blencowe N, Birchall M, Patel A. The Impact of Personal Protective Equipment on Speech Discrimination and Verbal Communication in the Operating Room and the Role of Audio Communication Devices. 2023;18:64-70.

Background and Methods

- Communication challenges due to PPE use in clinical settings.

- Limited data on the effects of PPE on verbal communication.

- Assessed PPE impact on verbal communication in a simulated operating room.

- Frontline health professionals participated in speech discrimination testing.

- Testing involved standardized PPE levels, simulated OR conditions, background noise, BKB scoring, and DMTS evaluation.

- Pairwise comparisons assessed effects of PPE, distance, and DMTS use.

- Participant experiences gathered through Likert scales.

Findings

- 31 healthcare professionals tested.

- Without PPE, higher median BKB sentence scores at 2 (90%) and 4 meters (76%).

- With PPE, significant drop in median BKB sentence scores at 2 (8%) and 4 meters (4%).

- DMTS use improved speech discrimination scores at 2 (70%) and 4 meters (76%).

- PPE led to statistically significant reduction in BKB scores across all conditions.

- Overall low participant confidence in PPE clinical communication.

Reviewer comments

Considering PPE is used more than ever since the pandemic and will continue to be the case in many contexts, the impact on healthcare providers' communications could have significant negative impacts including errors.

As donning PPE is more prevalent in more clinical settings, speech and hearing discrimination are considerations for future advancements in the healthcare setting.

Background and Methods

? relationship between UG nursing student simulation performance and NCLEX-RN® success.

N=58

Multiple sims 12-20 months prior

5 obstetric sims

Creighton Competency Evaluation Instrument®

Logistic regression

Findings

3 / 5 obstetric sims stat sig ($p < .05$) in predicting exam success

Early identification of at-risk students
Targeted remediation interventions to best prepare

Reviewer comments

valuable information when integration simulation in a nursing program

Sinclair, B., & Relouw, H. (2022). Family and community nursing: The use of an unfolding simulation via zoom. *Clinical Simulation in Nursing*, *68*, 58-63. https://doi.org/10.1016/j.ecns.2022.04.003

Background and Methods

More opportunity to understand community client care needs

Unfolding simulation of four virtual visits with a family via Zoom

66 y/o male (SP) – diabetes & chronic back pain

Student pairs: client interview and assessment

Feedback about new format

Findings

Developed skills in interviewing

Improved understanding of technology in health care

Increased awareness of the impact of values and beliefs on health and illness,

Greater awareness of the role of the nurse in the community

Areas for further improvement

Community health clinical placements can be very difficult to find; this article describes an effective method of using Zoom

Reviewer comments

Background and Methods

APN students – little high-quality research

6 varied SP cases; OSCEs

Evaluate perceptions/ reflections

Longitudinal, MM

N= 23 (2019/ 2020)

Simulation Effectiveness Tool-Modified (SET-M)

another great adjunct to traditional education

Findings

Sig diff in mean scores (pre-brief & learning)

No other sig diff

FG themes: authenticity, confidence, and harmonization

- (synthesizing knowledge between students, the simulation experience itself, and debriefing with peers and faculty)

Quantitative data - simulation was effective in promoting clinical decision-making skills.

Reviewer comments

Couarraze, S., et al. (2023). Short term effects of simulation training on stress, anxiety and burnout in critical care health professionals: before and after study. *Clinical Simulation in Nursing*, *75*, 25-32.
https://doi.org/10.1016/j.ecns.2022.12.001

Background and Methods

Simulation training could help reduce stress, anxiety & burnout

Prospective, observational

Perceived Stress Score (PSS), State Trait Anxiety Inventory (STAI) and Maslach Burnout Inventory (MBI) were collected before and 1 week after the training.

N=93

Findings

Post sim training

PSS levels significantly lower (p = .008)

STAI levels (anxiety state (p < .001)

Anxious personality trait (p = .002)

Severity of burnout levels (p < .001)

Reviewer comments

highly influential for preparation of new professionals in the field of critial care and anesthesia.

Background and Methods

Innovative training strategies for emergent aerosol generating procedures in intensive care units

4 ICUs

Refining logistics using process maps, walkthroughs and simulation

Findings

Lower COVID-19 infection rates compared with general hospital

Important role for simulation training in future emerging healthcare crises.

Multiple modalities applying social education theory and targeted practical training to urgently sup-port skill acquisition and team-based system changes

highly influential for clinical practice in the process of how to develop best practices

Reviewer comments

Verkuyl, M., et al., (2022). Virtual Simulations' Impact on Clinical Practice: A Qualitative Study. *Clinical Simulation in Nursing*, *68*, 19-27. https://doi.org/https://doi.org/10.1016/j.ecns.2022.04.001

Background and Methods

Increase & uptake of virtual simulation

Relatively little known about how simulations affect clinical practice

Descriptive, qualitative

Small group interviews

Year 2 & 4 students of 4-year BN program + clin instructors

Findings

Themes:

Direct Linkage to Clinical Practice

Suitability of Virtual Simulation Design for Learning

Strategic Integration of Virtual Simulation

Facilitation Skills

In-depth information about students' perceptions of clinical learning using VS

Reviewer comments

identifies areas most helpful in learning; important aspects of VS design.

Background and Methods

Approaching diverse minority groups with cultural humility requires awareness and sensitivity.

The level to which cultural competencies that address these factors have been integrated into nursing educational systems is unknown.

Scoping review 10 databases/ platforms

N= 49

Findings

Recent literature demonstrates an increasing use and incorporation of strategies for application of cultural humility to increase DEI in health care simulation.

Effective diversification requires intentional efforts to address structural, curricular, and interactional diversity while restructuring of the educational system that prepares health care professionals

Very impactful, highlights the need to make DE&I an intentional part of everything we do

Reviewer comments

Walshe, N., et al. (2022). Cultural Simulations, Authenticity, Focus, and Outcomes: A Systematic Review of the Healthcare Literature. *Clinical Simulation in Nursing*, *71*, 65-81. https://doi.org/10.1016/j.ecns.2022.05.008

Background and Methods

Identify strategies to support culturally authentic experiences and the focus, theoretical framings, and outcomes of cultural simulations

Reference to Healthcare Simulation Standards of Best PracticeTM

11 electronic databases

30 papers to review

Findings

Empirical papers from any healthcare discipline

Low level of quality, inconsistent consideration of relevant standards, limited evidence of meaningful co-construction, some potentially negative cultural representations and a primary focus on cultural knowledge and skill.

critical to improving culturally sensitive education, acknowledging that much of what has been done previously has reinforced potentially negative cultural representations is key to making that change

Reviewer comments

Background and Methods

Mindful of cultural requirements, entire women's health clinical rotation was replaced with simulation training

96 Ultra-Orthodox male students from four student cohorts.

Six clinical settings were created, with 32 hybrid scenarios, covering 47 clinical situations.

Evaluation - student and instructor feedback; pre-post knowledge exams

Findings

Significantly improved post-course knowledge scores

Comfortable taking care of female SPs in common women's health clinical settings

Reviewer comments

Alternative clinical experiences that translate in increased knowledge are needed and may be expanded to other programs as needed.

Background and Methods

Implicit bias - unconscious collection of stereotypes and attitudes that develop toward certain groups of people

Can affect patient relationships and care decisions

Obligation to provide learners with the tools to address their own implicit biases, identify discrimination in the health care system, and advocate for health equity

Diverse group of USA experts invited to create

Findings

Processes adopted to develop a series of eight simulation scenarios for pre-licensure students that focused on implicit bias

Unknowingly embed personal biases in scenarios

Avoid reinforcing stereotypes

Determine learner & facilitator readiness for such simulations

Helpful resources and recommendations for simulationists who are designing implicit bias scenarios.

Reviewer comments

Curry-Lourenco, K., et al. (2022). Where Are We Now? A Follow-up Survey on Regulation of Simulation Use in United States Prelicensure Nursing Programs. *Clinical Simulation in Nursing*, *72*, 9-14. https://doi.org/10.1016/j.ecns.2022.06.007

Background and Methods

Findings

Approval of substitution of simulation for traditional clinical hours during COVID-19

Inconsistent between states

Variability and a return to "pre-pandemic" limits on simulation use amplify questions about consistency of learner outcomes.

Interrogation of information - USA Boards of Nursing (DC) & INACSL online regulatory map

Almost 30% of respondents indicated information is not accurate.

Some states could not confirm accuracy of simulation regulations posted.

Reverting to "prepandemic" requirements = a missed opportunity to align simulation regulation with the growing body of evidence supporting its outcomes

Remains a moving target as boards of nursing across the U.S. lack a consensus regarding what percentage of simulation can be utilized to replace clinical experience

Reviewer comments

Violato, E., et al. (2023). The Use of Simulation Best Practices When Investigating Virtual Simulation in Health care: A Scoping Review. *Clinical Simulation in Nursing*, *79*, 28-39.

https://doi.org/10.1016/j.ecns.2023.03.001

Background and Methods

Is virtual simulation being tested and implemented optimally, especially with the rapid development and enthusiasm for the modality?

Scoping review

171 initial -> 10 articles

Findings

Simulation best practices related to outcomes and objectives, simulation design, facilitation, pre-briefing, and debriefing are generally not followed or not reported when investigating virtual simulation

Ned to enhance the external validity of the research and improve virtual simulation in practice.

Reviewer comments

Our program is in the early stages of VR application in simulation and this article highly influences the amount and way in which we will implement VR into our program.

Advances in Simulation (8)

Christensen, M.D., Østergaard, D., Stagelund, S. *et al.* Embracing multiple stakeholders' perspectives in defining competent simulation facilitators' characteristics and educational behaviours: a qualitative study from Denmark, Korea, and Australia. *Adv Simul* **8**, 1 (2023). https://doi.org/10.1186/s41077-022-00240-1

Background and Methods

- Simulation is used worldwide, but should we be adapting or changing for different cultural and geographical contexts?

- This study aimed to explore how various stakeholder groups perceive what constitutes a competent simulation facilitator across three different countries.

- Semi-structured interviews with 75 learners, facilitators, and facilitator trainers focused on characteristics of simulation faculty, as well as educational behaviours.

- Transcripts were coded and individual codes between countries and stakeholder groups were compared to identify similarities and differences.

Reviewer comments

This study challenges assumptions that all aspects of simulation are generalizable across the globe.

Findings

- Competent simulation facilitator should have: (1) subject matter expertise, (2) personal approach and traits, (3) self-awareness and reflection, and (4) communication skills.

- Educational behaviours comprised (1) supporting a safe learning environment, 2) working goal-oriented with the course, (3) engaging before the course with preparation, (4) leading scenarios, and (5) facilitating debriefings.

- Comparative analysis showed similar wishes towards simulation facilitators from the different stakeholders in different countries, though the same terms might mean different details in the various settings.

- These findings offer guidance for learning needs analysis and the establishment of faculty development programmes. The study also shows that the personal characteristics are an important aspect of the facilitator role above and beyond displaying educational behaviours.

Advances in Simulation (8)

Background and Methods

- Advancing simulation practice – pushing our thinking about how and why we do what we do in simulation

- In situ simulation (ISS) programs deliver patient safety benefits to healthcare systems, however, face many challenges in both implementation and sustainability.

- Thinking like a simulation educator: prebriefing helps but is it sufficient?

- Longer-term and broader change leadership is required to engage colleagues, secure time and resources, and sustain an *in situ* simulation program.

Findings

Framework derived from the analysis of three successful ISS program implementations describing eight change leadership steps adapted from Kotter's change management theory, used to sustainably implement the ISS programs:
(1) identifying goals of key stakeholders,
(2) engaging a multi-professional team
(3) creating a shared vision
(4) communicating the vision effectively
(5) energizing participants and enabling program participation
(6) identifying and celebrating early success,
(7) closing the loop on early program successes
(8) embedding simulation in organizational culture and operations.

This article provides a meticulously structured guide to overcoming implementation and sustainablity challenges for in situ simulation programs and has the potential to be a roadmap for other types of simulation programs, extending its influence beyond in situ simulation programing promoting a culture of continuous improvement and learning.

Reviewer comments

Advances in Simulation (8)

Background and Methods

- Team training features lots of telling subordinate team members speak up to team leaders, despite the potentially great interpersonal cost.

- What about how team leaders sustain silence? Qualitative study to identify and describe the subtle behaviors and actions of team leaders that both promote and discourage speaking up.

- Simulations with embedded obstetrician who had 5 scripted challenge moments (CM) involving deliberate clinical judgment errors or professionalism infractions. Naïve participants followed sim with semi-structured interview (12). Scenarios were videotaped; debriefs and interviews were audio-recorded and transcribed verbatim. Data analyzed using an inductive thematic approach.

Findings

- Faculty participants reflected that being an approachable team leader requires more than simply avoiding disruptive behaviors.

- Team leaders must actively create the conditions in which team members perceive that speaking up is welcomed, rather than an act of bravery. Tangible actions of signaling availability through presence, uncertainty through thinking aloud, and vulnerability through debriefing.

- simulation design prompted discussion of the subtle behaviors and actions of team leaders that both promote and discourage speaking up. Faculty participants gained a new appreciation that their actions create the conditions for speaking up to through their verbal and non-verbal communication.

This study is highly applicable to research and teaching interprofessional teamwork and communication. The results showed that all team members have responsibility in shared communication - so valuable in working towards reducing medical error related to teamwork and communication.

Reviewer comments

Advances in Simulation (8)

Isaksson, J., Krabbe, J. & Ramklint, M. Medical students' experiences of working with simulated patients in challenging communication training. *Adv Simul* **7**, 32 (2022). https://doi.org/10.1186/s41077-022-00230-3

Background and Methods

- Communication skills are important for patient-centered care – but not much known about how learners experience their training with SPs

- How do medical students perceive communication training involving challenging consultations with SPs and the impact on their learning experiences.

- Intervention: deliver bad news, manage negative patient reactions, and encourage behavioral changes in reluctant patients; followed by feedback and a debriefing.

- Focus groups with 23 medical students, interviews were analyzed with content analysis.

Findings

- Actors as SPs made the simulations more realistic and let them practice communication skills for challenging consultations in a safe way and manage their own feelings, thereby promoting new learning experiences.

- Actors' flexibility in changing behaviors during sims, and exposure to different challenging behaviors, like negative emotions, were regarded as valuable. Safe space for debriefing, and feedback directly from the SP was appreciated.

- Actors as SPs were perceived as a valuable part of challenging communication training and added elements to the learning process. Future studies should include a wider range of challenging behaviors in training with SPs and evaluate the effects of such training on students' use of communication skills.

Early exposure to challenging patient communication is vital for future success and simulating the challenge give immersive practice

Reviewer comments

Advances in Simulation (8)

Background and Methods

- Advancing simulation practice – pushing our thinking about how and why we do what we do in simulation
- One teaching style cannot adequately cover the needs of each level and in each broad type of simulation learning setting. E.g., reflective debriefing is not what is needed when learning new skills.
- When to use which facilitation style?
- Bringing together SimZones and Debriefing With Good Judgment to match the appropriate facilitation style with learner needs and learning context

Findings

Framework describes:
1. what type of learning can be expected with each learning context
2. what behaviors and activities can be expected of the learners in each learning context
3. what instructional strategies are most effectively used at each stage
4. what are the implications for the teacher-learner relationship.

Reviewer comments

An excellent article highly useful for faculty development

Advances in Simulation (8)

de Castro, L.T., Coriolano, A.M., Burckart, K. *et al.* Rapid-cycle deliberate practice versus after-event debriefing clinical simulation in cardiopulmonary resuscitation: a cluster randomized trial. *Adv Simul* **7**, 43 (2022). https://doi.org/10.1186/s41077-022-00239-8

Background and Methods

- Rapid-cycle deliberate practice (RCDP) consists of repeating a simulation to become competent. A new cycle initiates with increased skill complexity.

- No previous randomized studies comparing after-event debriefing clinical manikin-based simulation to RCDP in adult cardiopulmonary resuscitation (CPR).

- EM residents randomized 1:1 to RCDP or after-event debriefing simulation prior to the first station of CPR training – cardiac arrest.

- First 5 mins same for both groups, then split into RCDP or after-event debriefing. Second scenario of CPR had there was no facilitator intervention.

- O: chest compression fraction during CPR post-intervention. O2: time - recognition of the cardiac arrest, time for first verbalization of the cardiac arrest initial rhythm, time for first defibrillation, and mean pre-defibrillation pause.

Findings

- RCDP teams had a significantly higher chest compression fraction than the after-event debriefing group (80.0% vs 63.6%; p = 0.036).

- RCDP group also demonstrated a significantly lower time between recognition of the rhythm and defibrillation (6 vs 25 s; p value = 0.036).

- Many RCDP studies have been focused on the paediatric population but show benefits, this adds to evidence

Reviewer comments

This study is an excellent example of demonstrating the value of repetition in skill acquisition.

Advances in Simulation (8)

Background and Methods

- Methodological Intersections - conceptual papers that help us think differently about simulation

- Simulation is about learning for practice – the point is not to do better in sim! But how do we do that?

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Findings

- Five general recommendations to design simulations that foster transfer: (1) emphasize whole-task practice, (2) consider a cognitive task analysis, (3) embed simulations within more comprehensive programs, (4) strategically combine and align simulation formats, and (5) optimize cognitive load

- "We must accept that a limited number of simulations is not enough to develop complex skills. It requires comprehensive programs that combine simulation sessions with workplace learning."

Reviewer comments

…provides a substantial contribution through its structured 4C/ID framework and actionable recommendations, which aim to improve transfer of learning in healthcare simulation, potentially improving educational outcomes and real-world preparedness of providers impacting patient safety.

Advances in Simulation (8)

Baliga, K., Halamek, L.P., Warburton, S. *et al.* The Debriefing Assessment in Real Time (DART) tool for simulation-based medical education. *Adv Simul* **8**, 9 (2023). https://doi.org/10.1186/s41077-023-00248-1

Background and Methods

- Feedback is needed to improve debriefing but it's usually well after the event.

- Real-time tool where observer records details about the debriefing, including times and number of questions/statements of debriefer

- Measures the conversational interactions between debriefers and learners using a cumulative scoring of discrete contributions

- Multi-method international reliability and validity study using Kane's framework.

- Enrolled raters ($n = 12$), active simulation educators, scored a mixed sample of 8 debriefings and gave reflective comments.

Findings

- Statistical analysis showed a strong reliability and validity

- User feedback showed the tool was helpful and easy to use

- Another tool for faculty developers in simulation debriefing

Reviewer comments

…a novel instrument that provides an alternative to current tools, and captures objective insights into the conversational dynamics between facilitators and learners.

Background and Methods

- Speaking up - voicing a concern for the prevention of error and/or harm to healthcare staff and patients - appears to be a relatively straightforward concept, yet the reality is that there are many barriers.

- An empirical understanding of why receivers of a speaking up message respond as they do is lacking in the healthcare literature.

- This study aimed to examine the communication behaviours of receivers responding to a speaking up message from a nurse.

- Deductive content analysis, through the application of Communication Accommodation Theory, was used to analyse observed receiver behaviour in 22 simulations involving participants (n=138) from three clinical discipline groups (nurse/midwives, allied health, medical officers)

Findings

- Nurses/midwives frequently utilized task-based questioning which inhibited their ability to promptly recognize the speaker's concern.

-In contrast, medical officers more readily provided reassurance and support to the speaker and sought clearer understanding of the situation through using more open-ended questioning techniques.

- Results demonstrated the receiver's clinical discipline influenced behaviour strategies used and the effectiveness of the strategies in accurately interpreting and effectively resolving the raised concern.

-. As different disciplines approached the same conversation in very different ways, understanding these differences is key to increasing the efficacy of healthcare speaking up training.

Reviewer comments

The research serves as a call for not only recognizing the need to speak-up for also the need to recognize how our reaction to comments can impact on the quality of patient care. The number of participants and variety of healthcare team member participants is a highlight of this study.

This article provides research to support the need to focus on "listening up" to enhance the effectiveness if we know how to receive the message from a stance of curiosity.

Background and Methods

-Premature infant thermoregulation is a critical, yet challenging, component of neonatal resuscitation.- Admission hypothermia is associated with multiple negative outcomes in very low birth weight (VLBW) infants.

-This study assessed the effect of a thermoregulation-focused simulation intervention on VLBW infant's initial admission temperatures within a level 4 neonatal intensive care unit.

- Seven multidisciplinary simulations were run in 2018 involving multiple members of the neonatal resuscitation team and led by neonatal fellows.

Admission temperatures, gestational age, birth weight, maternal chorioamnionitis, antenatal steroids, caesarian section rate and need for intubation during the initial resuscitation were compared from 2019, the year following the simulation intervention, to 2017, the year preceding the simulation.

- Simulation participant data were collected.

Findings

-Admission temperatures in VLBW infants increased from 36.0°C in 2017 to 36.5°C in 2019 following the simulation intervention (p < 0.01).

-There was no significant difference in birth weight, gestation age, antenatal steroids, caesarian section rate, or need for intubation in the delivery room.

-There was an increased occurrence of maternal chorioamnionitis in 2019 compared with 2017 (p < 0.01).

- This study demonstrated that the initiation of a thermoregulation simulation intervention has the potential to improve VLBW infant admission temperatures and supports the benefits of simulation-based training.

Reviewer comments

Not my area of expertise but makes a good link between simulation and objective patient outcomes.

Stockdale J, Best P, Birch M, Murphy P, O'Neill D. Using the ARCS Motivational Model to Design Interdisciplinary Virtual Reality Simulations. International Journal of Healthcare Simulation. 2023 Apr 18(null):1-1.

Background and Methods

-- Achieving interdisciplinary education related to perinatal mental health is often challenging.

- To overcome this challenge, a motivational design model was applied in the development of immersive video-based simulations, that aimed to expose healthcare professionals to interdisciplinary care planning for women whose perinatal mental health deteriorated.

-Three phases included conducting a learning needs analysis, implementing motivational tactics into the design of video-based simulations, and evaluating them for motivational and immersive impact.

-Students who experienced the simulations via 360° videos, flat screen and earphones versus virtual reality headsets were asked to complete a post-test measure of their level of motivation to learn and immersion into the learning experience.

-

Evaluating feasibility of the VR vs. 360 video vs. screen-based simulation is very relevant to our discipline. This study's focus on mental health outcomes in a perinatal context presents an application of emerging technology that is applicable across disciplines. .

Findings

-The evaluation demonstrated that all students experienced an optimal motivating and immersive learning experience.

- No significant differences were noted in the level of motivation or perceived immersion experienced whether using the flat screen 360° videos, or the VR headsets.

- Motivation and immersion are interconnected constructs that influence students' experience of learning via simulation.

- Motivational design, immersive technologies, such as 360° videos and virtual reality, can equally result in optimal motivation for interdisciplinary students to learn about shared care plans and decision-making related to perinatal mental healthcare.

Reviewer comments

The use of VR is becoming more prevalent in healthcare simulation. This article did a deep dive into the ARCS model of motivation to explore whether an immersive VR experience is truly needed to establish relevance, confidence, and satisfaction. Programs interested in developing VR experiences for healthcare programs should read this article. It isn't necessary for all students to use VR headsets to have an immersive experience.

Background and Methods

-Clinical simulations are complex educational interventions characterized by several design features, which have the potential to influence cognitive load, that is, the mental effort required to assimilate new information and learn.

-This systematic review and meta-analysis explored the associations between simulation design features and cognitive load in novice healthcare professionals.

- Based on the Joanna Briggs Institute methodology, a search was performed in five databases for quantitative studies in which the cognitive load of novice healthcare professionals was measured during or after a simulation activity.

- Each clinical simulation was coded to describe its design features.

- Univariate and multivariate mixed model analyses were performed to explore the associations between simulation design features and cognitive load.

Findings

- 45 studies were included and 27 provided enough data on subjective cognitive load to be meta-analyzed.

-Each repetition of a simulation using the same scenario resulted in a linear decrease in cognitive load. In contrast, technology-based instruction before or during a simulation activity was associated with higher cognitive load. (multivariate analysis)

- Other features such as feedback and instructor presence were also statistically associated with cognitive load. Simulator type, briefing, debriefing, and repetitive practice were statistically associated with cognitive load.(univariate analyses)

- This is the first meta-analysis exploring the relationship between clinical simulation design features and novice healthcare professionals' cognitive load.

-Although the findings show that several design features can potentially increase or decrease cognitive load, several gaps and inconsistencies in the current literature make it difficult to appreciate how such reciprocity influences novice healthcare professionals' learning.

Wild Card (2 of 2)

Background and Methods

-A variety of strategies are needed to train a highly competent nursing workforce.

The purpose of this article was to evaluate the ability of an interactive virtual reality (VR) platform guided by standards of best practice to provide an effective immersive learning environment.

-Specifically evaluated usability of the platform and learners' perceptions of the experience.

- Conducted a quantitative cross-sectional study to evaluate the VR experience using the System Usability Scale (SUS)® and the Simulation Effectiveness Tool-Modified (SET-M).

Findings

- Post-simulation evaluations were completed by 127 prelicensure and 28 advanced practice students.

- On the SUS scale, students found the overall VR system easy to navigate, and on the SET-M, they rated the VR experience positively.

- Immersive technology such as VR with a defined curriculum and facilitated debriefing can be valuable for student learning and may ultimately effect patient care.

Common themes

- AR / VR / online learning
- Estimating performance
- Improved human factors
- Equity, inclusion and diversity
- The role of culture
- Increasing psychological fidelity in simulation design

- Simulation-based education
  - Examining bias in scenario design
  - Interprofessional collaboration
  - Addressing age friendly heath systems for older adults
  - Simulation as a disruptive innovation
  - Faculty development

- Research
  - Mentoring
  - Pathways for advancement

- Clinical applications
  - Reducing adverse events
  - Procedural training
  - Mastery simulators
  - Cardiopulmonary resuscitation
  - Perioperative care of transgender patients
  - Holistic patient assessment

- SPs
  - Training medical students for challenging communication situations
  - Preparation for practice
  - Deliberate practice
  - Safety
  - Research
  - Involvement of real patients/ health consumers

Thanks to the reviewers!!

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- Melissa Wild
- Barbara Wilson-Keates*

*reviewer for 2 consecutive years!

Where to from here?

- Value to, and input from, members

- Articles from previous years included in SSH **Simulation Scholarship Knowledge Map**
  - https://www.ssih.org/SSH-Resources/Knowledge-Map
- SSH webpage Articles of Influence (ssih.org)

- Interested in being a reviewer?

Call for service (May 2024)

QUESTIONS

SSH Presents:

SIMULATION ARTICLES OF INFLUENCE

July 2022 – June 2023

Serkan Toy, PhD

Michelle Kelly, PhD, RN, FSSH

Gabriel Reedy, PhD, FSSH

Cathy Smith, PhD

On behalf of the SSH Research Committee