

Day 4

Abstract Submissions



The Use of Simulation in
Education

Improving simulation through student assessment partnerships

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Abstract

Improving simulation through student assessment partnerships

Practical simulations and mock scenarios are commonplace components of paramedic education and training. While there have been advances to simulation fidelity, the underlying theoretical approaches to student learning and assessment have changed little. The established practice requires students to demonstrate skills and reasoning before an observer, who then critiques and scores student performance in line with a pre-determined rubric. Check-box style grading requires assessors to penalise student errors, encouraging students to execute faultlessly. Meanwhile, academic frustration often is linked to students exhibiting grade seeking behaviours such as challenging results, attempting to conceal mistakes, as well as difficulties with receiving critical feedback.

While credentialing rubrics typically require an observer to apply their judgement to observed student performance, without a rich discourse these do not provide insight to the depth of student understanding, rationales, or the student's own evaluation of their performance. There is irony that a process used to develop the critical thinking, reflective practice, and self-regulation skills required of future paramedics, routinely excludes the learner from making decisions about their own work.

The student-tutor consensus approach (STCA) is an alternative method of assessment based on observed on-road practices of paramedic debriefing following a case. It requires the student and assessor to first independently evaluate practical performance using broad, flexible criteria. The 2 parties then come together in a rich discussion regarding the event. Marks are awarded to the student each time their judgement is in consensus with that of their paramedic tutor. Student's ability to identify errors or omissions is rewarded (instead of being associated with a penalty), and students have a major partnership role in determining their own grades during high stakes assessments.

Over a number of years, we have been expanding the use of STCA approaches across undergraduate paramedic education, post-graduate nursing, and medicine. Recently the STCA method was introduced and evaluated with a beginning paramedic student cohort, with no prior paramedic training or experience.

Methods: Paramedic students commencing undergraduate paramedic practice studies were invited to complete an anonymous paper-based questionnaire regarding their learning experiences following undergoing a semester of practical learning using STCA.

Results: 88 participant responses were obtained. 98% indicated broad agreement for recognised importance of paramedic self-assessment skills, 84% broad agreement that STCA was an effective learning method, 83% felt they had obtained skills for future use.

Conclusion: Beginning students readily embraced the STCA approach and were able to effectively demonstrate critical thinking and reflective practice skills.

Presentation

Oral - live

Biography

Dr James Thompson

James is a senior lecturer and teaching specialist at Flinders University in South Australia. He teaches extensively across the paramedic curriculum, as well as contributing to clinical education, nursing, and medicine programs. For over 15 years he has been a leading driver of paramedic teaching and learning innovation within South Australia, and the influence of his scholarship of teaching is evidenced broadly across multiple disciplines and institutions nationally. His research has contributed to new education theory in the areas of work-readiness, assessment design, and authentic learning. James's teaching draws heavily on his extensive clinical background within ambulance and nursing, both in Australia and the United Kingdom, where he worked as a nurse practitioner and an emergency care lecturer practitioner. James has a PhD in medical education and is a regular reviewer for higher education and paramedic journals and conferences.



Dr Don Houston

Don has spent his career in tertiary education in Australia and New Zealand as a manager, lecturer, academic developer and researcher. His main areas of interest are curriculum development, assessment and feedback, evaluation, research higher degree supervision and quality in higher education. He has extensive experience in action research and educational evaluation.

Don has a PhD in educational systems. He has (co-)authored over 30 refereed articles in journals including Quality in Higher Education, Higher Education Quarterly, Assessment and Evaluation in Higher Education and the Journal of University Teaching and Learning Practice and over 50 refereed conference papers and presentations.



SCRIPTING OF DOMESTIC VIOLENCE SIMULATIONS TO IMPROVE PREHOSPITAL EMERGENCY CARE DIAGNOSTIC PROBITY AND HEALTH CARE RESPONSIVENESS IN LMICS

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Abstract

The global occurrence of domestic violence is a wicked problem which leaves both victims and interventionists with a sense of helplessness. Emergency Care providers have been identified as a critical contact point for victims. The interlude between the act of violence and victim hospitalisation provides opportunities for screening, medical care and appropriate referral (primary, secondary and tertiary prevention). The calibre of both the current emergency care provider training and research on domestic violence response is unjustifiably minimal. Simulation training is not foreign to prehospital emergency care, however, the use of domestic violence related scripted scenarios (to promote diagnostic probity) is novel. Therefore, the primary research question was: How does the scripting of evidence-informed simulations of domestic violence cases enhance practitioner responsiveness and patient safety among prehospital emergency care students?

The paradigm and methodology for this qualitative study was social constructivism and grounded theory respectively. Data collection was comprised of a literature review, focus group discussions and participant observation during patient simulations. The data was analysed through the method of constant comparative analysis.

It was found that the scripting of simulations with the use of peer-based training may be an effective method of achieving improved responsivity to domestic violence. Traditional EMS training with expensive manikins may not be as effective for this purpose as students require a level of feedback and fidelity through which they can convey their empathy and history-taking skills. Further research should be conducted to determine the most effective methods for assessing standardised domestic violence patient simulations.

Presentation

Oral - pre-recorded

Biography

Mr. Wesley Craig is an Emergency Care Practitioner and lecturer at the Western Cape Government College of Emergency Care in South Africa. He has a Bachelors of Emergency Medical Care and Master

of Emergency Medical Care (Cum Laude) from Cape Peninsula University of Technology. His post-graduate work was focused on improving the response to domestic violence victims in the prehospital environment using simulation training.

Dr Navindhra Naidoo [National Diploma: Ambulance and Emergency Care, Bachelor of Technology: Emergency Medical Care, Higher Diploma: Education, Master of Public Health, PhD (Forensic Medicine)] is a senior academic at Western Sydney University and was most recently the Senior Lecturer at the Cape Peninsula University of Technology, Emergency Medical Sciences in Cape Town. His research and policy interest includes transformative pedagogy, gender-based violence prevention and evidence-informed decision making that intersects state and civil society interests in emergency care.

Mr. Lloyd Christopher is the HOD of Emergency Medical Sciences at the Cape Peninsula University of Technology. He has a National Diploma Ambulance Emergency Care, Bachelor of Technology and Master of Technology in Emergency Medical Care as well as a Higher Diploma in Education. He has 33 years of experience in EMS, most of which has been in education and training. He is a current serving member of the Professional Board for Emergency Care.

Engaging students through the virtual environment: introducing the 'puppet master' online practicals

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Abstract

Introduction:

Paramedicine is viewed as a practical discipline with a focus on 'hands-on' application of skills which can be challenging to facilitate through the virtual environment. The transition to online education due to COVID-19 presented a number of challenges for paramedicine undergraduate students, particularly when undertaking clinical skills subjects. The academic team were keen to develop strategies to engage the students in interactive learning activities to provide context for the new material they were being taught each week.

Purpose:

In order to address the key challenges, academics took a creative approach to promoting opportunities for the consolidation of knowledge through the development of the 'puppet master' online practicals. The academic had a full set of equipment including a manikin and they staged a different scenario each week related to the topics covered during lectures and tutorials. The students were allocated numbers when they joined the Zoom session and they each took it in turns to 'run the call' in real time. Each session covered the assessment, diagnosis and management of the patient and concluded with a hospital handover or equivalent followed by a full debrief.

Relevance to paramedic education:

The online practicals allowed students to continue with experiential 'hands-on' learning in a collaborative and inclusive environment and provided the opportunity to consolidate their knowledge and learn from their peers. Students reported "being able to see and talk through the process of treating different conditions made learning the material easier since we were able to see it in action." The online practicals were very popular with students, especially those identifying as kinaesthetic and visual learners.

Debriefing is an essential part of any simulation and was identified as being a crucial part of the learning experience which enabled them to consolidate their knowledge and gain insight into how their peers interpreted information (1). "When mistakes were made they were discussed as a group. I found this reflective learning especially useful in consolidating knowledge, and highlighting where my own understanding was lacking - as mistakes were generally universal in the group" (2).

This peer to peer learning was invaluable, especially for students trying to grasp difficult concepts without the usual in-classroom interaction. Additional benefits were allowing students the opportunity

to maintain social connections which helped to combat the negative impact of social isolation felt by many during lock-down.

Implications for paramedic education:

Distance students have less 'hands-on' time to practice skills and contextualise their knowledge than internal students (3) and online practicals are an effective way to combat this (4). They also encourage critical thinking and reflective practice, both essential for novice practitioners.

The 'puppet master' practicals were adopted by colleagues who found them easy to implement and highly effective in encouraging student engagement. They were cost-effective and dynamic enough to be tailored to the learners' scope and to allow revisions to be made throughout the scenario as needed (5).

Student feedback was overwhelmingly positive: "the 'puppet' method was the most useful for me to learn. It was the closest thing to being hands-on."

Presentation

Oral - pre-recorded

Biography

Clare is Senior Lecturer and Program Lead for paramedicine at Charles Sturt University (CSU), NSW Australia. Prior to joining CSU in 2015, she was employed as Senior Lecturer and Practice Education Lead for the University of Northampton. She has over twenty years' clinical experience working as a paramedic and clinical mentor with East Midlands Ambulance Service (EMAS) and as an Emergency Care Practitioner (ECP) with various organisations in the primary healthcare environment.

Clare's PhD focus relates to emotional resilience and strategies to develop resilience in student paramedics. Her research interests also encompass the promotion of health and wellbeing in emergency service workers, student paramedics and volunteer responders. She is an active member of the CSU Workforce Wellness Research Unit (WWRU) involved in several ongoing research projects investigating the mental health, wellbeing and resilience of human service workers. She is also Chair of the Mental Health and Wellbeing Special Interest Group for the Australasian College of Paramedicine (ACP).

A simulated paramedic night shift for undergraduate students: The challenges and perceived benefits of innovative experiential learning in paramedic university education

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Abstract

Objective: The aim of the study was to develop, trial and undertake a preliminary evaluation of an immersive simulated night shift learning experience, designed specifically for undergraduate paramedicine students, making use of live patient actors as well as realistic simulation scenarios, pre-hospital settings and equipment.

Methods: A total of 24 undergraduate paramedic students were recruited to participate in a simulated 13-hour paramedic night shift held on university campus. Student satisfaction and perceived value towards learning was measured using an online survey the day after the simulation.

Results: 23 of 24 participants completed the online survey. Survey data suggested 22 participants felt the simulated night shift to be realistic of real-life paramedic practice, provided a valuable learning experience and should be made a mandatory component of undergraduate paramedicine curricula.

Conclusion: Given the difficulties associated with providing clinical placement opportunities for students and the perception among health professionals that on entering the workforce many graduates often lack the adaptability required to undertake shift-work and the professional role of a paramedic, educators should consider the merits of providing overnight simulated experiences to undergraduate students to better prepare and acclimatise students to overnight shift work.

Presentation

Oral - live

Biography

Alecka Miles is the Course Coordinator of the Master of Paramedic Practitioner course at Edith Cowan University and works as a Paramedic at a GP clinic in Perth, Western Australia. She is a long-suffering Melbourne Demons (AFL football) fan and proud 'Mumma' to Poppy (4 years) and Hamish (3 years), a career highlight and her greatest achievement so far. Despite expressing her concerns about research being a 'waste of time' as an Ambulance Victoria graduate paramedic, she has since changed her tune and developed research interests in Paramedic education and Paramedics working in non-traditional roles including the emerging role of the Paramedic Practitioner in Australia/New Zealand. She has a Masters degree in Emergency Health and is currently undertaking her PhD and looks forward to dressing like a professor from Harry Potter when she graduates.

Paramedics International Educational Conference 2021

The use of simulation in Education, The innovative use of simulation in Paramedicine Education.

George Amolo. (3rd year student paramedic)

Cynthia Morara (4th year student paramedic)

Ndambuki Marvyn Muia (4th year student paramedic)

MASINDE MULIRO UNIVERSITY OF SCIENE AND TECHNOLOGY.

ABSTRACT

Developing innovative teaching methods by using simulation in teaching paramedicine education requires the most improvement in educational infrastructures, strategies and a shift from teacher-centered to student-centered learning. Using simulation technology promotes critical thinking and clinical reasoning skills in paramedic education. Although most countries especially developing countries like Kenya value teacher-centered learning. Most institutions often rely on familiar teaching strategies and methodologies that are focused on teacher-centered learning. Identifying the challenges with simulation in paramedic education can lead to the development of a framework for the design and implementation of newer methods to improve learning outcomes. Evaluating these methods will validate the effectiveness of simulation technology.

KEY WORDS: simulation technology, teaching methods, student-centered learning

The function of a simulation experience in paramedicine education is to use innovative teaching methods to create a shift from teacher-centered to student centered learning. Activities that are learner centered encourage the student to participate in the design of learning tasks while acquiring the knowledge and skills needed to meet the curriculum outcomes. Teacher-centered learning is a form of passive learning, where information is presented to the student in a lecture format and evaluated using formal testing.

Simulation technology is a teaching method based on student-centered learning activities, where the learner is allowed to function in an environment similar to the real world of healthcare. As paramedic department integrate simulation technology into the curriculum, the advantages and challenges of this approach are considered to evaluate whether learning outcomes are being met. Thus, this article seeks to (1) identify challenges with simulation technology in paramedic education in achieving learning outcomes; (2) discuss innovative teaching methods using simulation technology to promote student-centered learning; and (3) explore methods of evaluating the efficacy of student learning in a simulated environment.

Paramedic lecturers use patient simulation as an innovative teaching method to reinforce healthcare concepts and adaptation to technology. The goal is to transform paramedicine education by moving away from traditional methods of teaching to active learning that is student-centered. Simulation provides an opportunity for the learner to think critically and problem-solve using clinical reasoning in an environment that is non-threatening. The teaching and learning methods used in the simulation lab are intended to improve student learning outcomes and patient safety in the clinical setting.

There are various types of simulators, ranging from low fidelity simulators with body parts, such as an arm, to learn intravenous insertion, to high fidelity human patient simulators with technologically advanced interactive.

Mechanical simulation mannequins. Patient Simulation Lab with modern simulation technology should provide a sophisticated means of practice-based instruction using high fidelity mannequins to enhance student learning. The purpose of the laboratory is to provide for practice in a safe, non-threatening environment, where errors can be detected without harm to students. Integrating simulation into the curriculum provides an opportunity for Masinde Muliro University of Science & Technology to be competitive in paramedicine education by demonstrating a working knowledge of current trends in the delivery of innovative teaching methods and active learning strategies. Simulation as a learning activity in paramedicine education allows the facilitator to provide scenarios that mimic the reality of the clinical environment. Unlike the traditional classroom setting, where instruction is teacher-centered, simulation is student centered, with the teacher in the role of facilitator in the student's learning. Simulation encourages the student to develop psychomotor, cognitive, and affective skills prior to entering the real-world clinical setting. The paramedic educator becomes the facilitator and has the opportunity to assess and evaluate the student's skill level and ability to meet learning outcomes. Remediation of the student can occur almost immediately, potentially leading to decreased errors in the real world.

Scenarios can be developed by the paramedic lecturer or purchased from a company that develops scenarios specifically for the human patient simulator. Scenarios provide an opportunity for the learner to implement psychomotor skills such as vital signs, health assessments, wound care, intravenous therapy, tracheostomy care, and so much more. The student is also exposed to cognitive and affective domains of learning such as patient safety, mental illness, therapeutic communication, documentation, grieving, death and dying. Depending on the type of simulation, the student may receive the scenario ahead of time to review and prepare for the simulation. The scenario will consist of a brief synopsis of the client's condition along with a list of objectives. The mannequin and the environment will complement the scenario, thus requiring the student to reflect on the patient holistically and not just focus on the diagnosis. To be successful, each student must be self-motivated and self-directed to learn during the simulation once the rules have been discussed. As stated, the paramedic lecturer is the facilitator of learning and the responsibility for learning lies with the student.

The framework utilized by The Masinde Muliro University for simulation includes the following:

1. Preparation stage, when the simulation begins with a discussion of the scenario, a review of the roles of each student, and review of the skills the students need to perform during the simulation.
2. Implementation stage, when the student completes the scenario by performing the skills and achieving the objectives.
3. Debriefing, a crucial stage, where the facilitator provides an opportunity for guided reflection of the simulation.

Evaluation of the simulation has multiple components, as each phase from design to debriefing must be reviewed to ensure that the simulation reflects the students' performance, is effective, and that learning outcomes have been met. When evaluating students, it is important to assess whether learning has taken place, and assess the students' ability to demonstrate critical thinking by identifying the knowledge and skills needed to achieve the objectives during the scenario. Simulation offers the paramedic lecturer methods of instruction to meet the needs of the student by providing interactive, practice-based instructional strategies. However, these methods can be a challenge to paramedic lecturer who is not familiar with the design, implementation, and evaluation of the instructional strategies used to improve student learning outcomes.

The challenges include: (1) paramedic lecturers relying more on teacher centered learning methods; (2) difficulty with creating scenarios for simulation; (3) developing an appropriate framework for simulation instruction; (4) student perceptions of simulation; and (5) using an appropriate tool to effectively evaluate the instructional methods and student outcomes.

For simulation to be effective as a student-centered learning activity, paramedic lecturers must adapt to this teaching style and instructional method. Student centered learning promotes independence in learning, problem-solving skills, critical thinking, and lifelong learning. Although the teachers value the concept of student centered learning, they actually employ more teacher-centered strategies. The implications for practice include providing interventions to improve the climate of learning, paramedic lecturers sharing effective teaching methods that are student-centered, and balancing the faculty with lecturers.

Writing, designing, and implementing clinical scenarios using complex technology are tasks unfamiliar to some paramedic lecturers. Clinical scenarios

should be based on researched evidence with clearly written objectives and guidelines using a template to help implement the teaching/learning methodology.

Thus, simulation is a vital teaching tool for educating paramedics in the complexities of paramedicine practice. Additionally, the increased focus on patient safety and lack of clinical site availability make simulation a crucial resource for clinical education and learning. The design of the simulation scenario must be appropriate and support the goals, competencies, and outcomes of the course, with specific attention to objectives, planning, fidelity (authenticity), complexity, cues, and debriefing.

Another challenge with using simulation is developing a framework design that will operate across the curriculum and meet the learning outcomes for each paramedic program. The lower level course outcomes may require a basic health assessment, and the upper level course may require the student to analyze patient data to resolve a complex issue. The student should be responsible for the learning and the paramedic lecturer remains the facilitator, providing a few prompts to maintain the momentum of the scenario during the implementation phase. Students are placed in roles as the registered paramedic, part of the healthcare team, or a family member and must demonstrate psychomotor, communication, and critical thinking skills. Placing students in these roles may be a challenge for the paramedic lecturer, who may not have the experience with evaluation of students during simulation.

To address the problem of paramedic lecturers struggling to evaluate the effectiveness of simulation, an extensive literature review regarding mannequin based simulations in undergraduate paramedic education to provide evidence of student evaluation of simulation activities should be done.

When evaluating the students individually, there are various tools such as checklists, rubrics, rating scales, or any form of scoring that is used to align with the clinical outcomes. Video-recording or using a Smartphone video camera to record the simulation and for playback allow for immediate feedback regarding the students' actions, knowledge, and skills. Simulation software may allow the paramedic lecturer to type comments and provide feedback as the scenario progresses, keeping track of the student's actions, which can be reviewed during debriefing. Quantitative and statistical analysis and evaluation can include a pretest and post-test, asking the same questions prior to the simulation and after completion.

Simulation in paramedicine education is certainly an innovative teaching method used by paramedic lecturers to inspire student-centered learning, while increasing the student's knowledge, skills, and abilities regarding patient care. Future implications for simulation will depend on evaluation and research methods to analyze statistical data to validate each phase of the simulation process from design to debriefing and how it impacts student learning outcomes. The results of the statistical analysis will assist in improving the standards for simulation in all paramedicine programs and ultimately influence improvements in patient care and safety.