Featured Article

Learning High-Energy Trauma Care Through Simulation

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Abstract: Simulation provides the opportunity to learn how to care for patients in complex situations, such as when patients are exposed to high-energy trauma such as motor vehicle accidents. The aim of the study was to describe nurses' perceptions of high-energy trauma care through simulation in prehospital emergency care. The study had a qualitative design. Interviews were conducted with 20 nurses after performing a simulated training series. Data were analyzed using a phenomenographic method. The result indicates that simulation establishes, corrects, and confirms knowledge and skills related to trauma care in prehospital emergency settings. Trauma knowledge is readily available in memory and can be quickly retrieved in a future trauma situation.

This study highlights nurses' perceptions of high-energy trauma care through simulation in prehospital emergency care at an ambulance station. High-energy trauma is defined as open or closed injuries caused by forces such as motor accidents or falls from heights, inducing extensive damage by transferring a high amount of kinetic energy to the tissue. Trauma care is time sensitive depending on the often complex condition of the patient. As such, it demands well-educated and trained nurses. It requires the ambulance staff to have theoretical knowledge and practical clinical experience (Colleague of Paramedics, 2015). To increase the level of patient safety in the prehospital emergency care, there is a need for formalized training (Suserud & Haljamäe, 1999). This could be done through simulation.

Background

Patients exposed to high-energy trauma are relatively uncommon in Sweden (Suserud, Bruce, & Dahlberg, 2003a). High-energy trauma care in the ambulance is, according to nurses in prehospital emergency care, performed on average six times a year (Abelsson & Lindwall, 2012). This low frequency means that the nurses may have difficulty obtaining and maintaining adequate experience in all kinds of traumas. At the same time, Swetrau (2015) points out that appropriate and up-to-date skills and knowledge of trauma care are crucial for patient safety.

In prehospital emergency care of patients, the caring relationship is a prerequisite for the nurse to perceive the patient as a human being and not focusing solely on the injury (Arman, Dahlgren, & Ekebergh, 2015). Assessment and care are therefore always founded on a balance between medicine and care (Suserud, Dahlberg, & Dahlberg, 2003b). In Swedish prehospital emergency care, there are three separate professions: basic emergency medical technicians, registered nurses with a three-year bachelor degree at the university level, and specialist ambulance nurses with one-year additional prehospital specialist education. In addition, specialist intensive care nurses and anesthesia nurses may work in the ambulances. A physician may be available to assist in larger cities. In this study, all nurses working in the ambulance are referred to as nurses in prehospital emergency care.

The experienced nurses in prehospital emergency care possess an understanding of an overall pattern across trauma situations. The experienced nurse will be able to quickly create a complete picture of the scene of an accident (Benner, 2001). Experienced nurses, therefore, have the ability to adjust their behavior according to the situation. The prerequisite for inexperienced nurses in prehospital emergency care to perform high-quality trauma care will not be the same as for the experienced nurses.

Knowledge acquisitions for nurse students are, according to Lapkin, Levett-Jones, Bellchambers, and Fernandez (2010), improved by simulation. Through simulation, a theoretical knowledge can be obtained and maintained while, at the same time, clinical skills are acquired and practiced (Lapkin et al., 2010). Earlier studies show that simulations are successfully used when training in how to manage a complex situation, such as caring for trauma patients (Garvey, Liddil, Eley, & Winfield, 2016; Hagiwara, Kängström, Jonsson, & Lundberg, 2014; Johnson, Ramos-Alarilla, Harilal, Case, & Dillon, 2012). One way for nurses in prehospital emergency care to learn trauma care is to use simulation conducted at ambulance stations. The aim of the study was to describe nurses in prehospital emergency care perceptions of learning high-energy trauma care through simulation.

Methods

The study had a qualitative design. The method used was phenomenography, which describes peoples' conceptions of the specific phenomenon as opposed to describing the phenomenon in itself (Marton, 1981, 1986). Phenomenography distinguishes between the first-order perspective "What" explaining the different phenomena and the second-order perspective "How" describing people's various conceptions of a phenomenon (Marton, 1981). The area of knowledge and the phenomenon under study were the nurses' perception of prehospital emergency care in learning high-energy trauma care through simulation.

Participants

The sample consisted of 20 nurses in prehospital emergency care in two counties in central Sweden (Table). The inclusion criteria were nurses in prehospital emergency care who had participated in an intervention consisting of series of four sessions of trauma simulation during a six-month period. They were all asked to participate in the study during the first simulation and again after the fourth simulation when the interviews took place. All nurses accepted to participate and had previous simulation experience. The participants were in no way dependent on the researcher and were informed of the aim of the research.

Setting

A simulation model according to Dieckmann (2009) was used consisting of the seven steps; setting introduction, simulation briefing, theory input, scenario briefing, scenario, debriefing, and ending (Figure 1).

The scenarios were simulated by the participants in pairs. The trauma care was based on the Prehospital Trauma Life Support (2014) (PHTLS®) mnemonic concept *Airway, Breathing, Circulation, Disability, and Exposure* (ABCDE), used in the clinical prehospital setting in Sweden. The team received an emergency call regarding the current scenario and was informed about the fictional driving time to the patient. A bystander or relative, impersonated by the facilitator, met up at the scene of the accident, and the participants were shown a picture of the accident site. The patient was represented by a Resusci Anne Basic

Key Points
- Simulation establishes, corrects, and confirms knowledge and skills related to trauma care in prehospital emergency settings.
- Simulation reinforces a systematic approach to assessment and care and provides insight into alternative care actions.
- Simulation and debriefing ensure that trauma knowledge is readily available in memory and can be quickly retrieved in a future trauma situation.