Clinical Simulation in Nursing (2016) 12, 260-267

Clinical Simulation in Nursing

www.elsevier.com/locate/ecsn

Featured Article

The Effect of Videoconferencing on Code Blue Simulation Training

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KEYWORDS
videoconferencing;
cardiac arrest;
simulation;
mock code;
interprofessional education

Abstract

Background: Acquisition of cardiopulmonary resuscitation skills is vital for cardiac arrest survival. Thus, it is important to train code teams for safe and efficient delivery of such care.

Method: A quantitative design compared performance of two groups related to outcomes of basic life support/advanced cardiac life support resuscitation skills, and perception of learning and confidence. The control group utilized in situ training, and the experimental group trained using videoconferencing.

Results: The experimental group had statically significantly higher skills performance scores and reported greater perceived learning and confidence.

Conclusions: Incorporating videoconferencing into simulation practice may be an effective strategy to enhance learning.

Cite this article:
Sprehe, J., March, A. L., Wilson, C. B., & Park, H. S. (2016, July). The effect of videoconferencing on code blue simulation training. *Clinical Simulation in Nursing, 12*(7), 260-267. http://dx.doi.org/10.1016/j.ecns.2016.02.013.

Sudden cardiac arrest, the leading cause of death worldwide, occurs when the heart malfunctions or stops beating and accounts for >60% of sudden deaths (American Heart Association, 2014). In the United States alone, >500,000 cardiac arrests occur yearly, and <15% of people survive such events (Meaney et al., 2013). Basic life support (BLS) is a simple lifesaving technique and required training for all direct health care providers (American Heart Association [AHA]). Unfortunately, it may be thought that in a hospital with trained interprofessional health care personnel, survival rates are better. Yet, in-hospital cardiac arrest survival rates continue to remain low despite regular training (Leeper, 2009).

Understanding how cardiac function and perfusion changes during a cardiac infarction affirms the need for responders to be competent in providing BLS skills, thus optimizing blood flow, preserving tissues, and saving lives. In 2010, the AHA placed more emphasis on BLS as being the first approach in responding to a critical event when a

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1876-1399/$ - see front matter © 2016 Published by Elsevier Inc. on behalf of International Nursing Association for Clinical Simulation and Learning.
http://dx.doi.org/10.1016/j.ecns.2016.02.013

cardiac insult is suspected (Meaney et al., 2013). This emphasis was integrated into the advanced cardiac life support (ACLS) guidelines after examining cardiac arrest outcomes demonstrating that care by first respondents had a positive effect on survival rates (Berg et al., 2010). High-quality ACLS is a complex process with many steps, requiring both effective mental focus and expert psychomotor skills.

Key Points

- Videoconferencing can be very effective in simulation trainings as posited by Bandura's Social Learning Theory.
- Videoconferencing is foreseen to be the future in tomorrow's professional education.
- Continuous mock code simulation trainings lead to increased performance, self-confidence and competency.

Interestingly, in studies examining response times, preparedness of the organization, and formal and repeated training of key providers, it was found that performance of those skills was the salient component in sustaining life when a person experienced a sudden cardiac arrest (Lunz et al., 2013). Nurses, respiratory therapists, and physicians who participate in mock codes simulation training must be comfortable in their roles and have the ability to collaborate with all team members (Hill, Dickter, & Van Daalen, 2010; McGregor, Paton, Thompson, Chandratilake, & Scott, 2012). Regrettably, skills performance among all interprofessional team members disappears before cognitive skills wane (Alspach, 2012).

Quality BLS skills during resuscitation have the greatest impact on survival (Berg et al., 2010; Hazinski, 2015; Meaney et al., 2013), yet a gap exists between current knowledge and efficient performance of BLS/ACLS skills during code situations. An effective code team restores lives quickly, efficiently, and safely, thereby reversing clinical death and limiting disability (Prince, Hines, Chyou, & Heegeman, 2014). Lives can be saved when code teams communicate effectively, become proficient in knowledge and skills, and provide care in an organized manner. Thereby, for effective lifesaving intervention, it is essential that code team leaders and members recognize and acquire effective resuscitation skills and team dynamics (Meaney et al., 2013; Prince et al., 2014; Yeung, Ong, Davies, Gao, & Perkins, 2012).

High-fidelity simulation training recreates sudden cardiac arrest situations and allows code teams to identify and correct poor BLS/ACLS performance without patient harm. To optimize ideal BLS/ACLS quality and skills, frequent simulation training in this unique skill set is needed to produce increased skill efficiency, self-confidence, and timeliness of skill deliverance (Ackermann, 2009; Blewer et al., 2012; Lunz et al., 2013). In particular, participants in cardiac emergency simulation training had higher scores for BLS knowledge and skills at both the immediate acquisition and 3-month follow-up when compared with participants who did not have the simulation learning experiences (Ackermann, 2009). Mock code team training (simulation) increases technical skills, communication, and clear role identity (Hunziker et al., 2011; Meaney et al., 2013). In addition, an association between leadership and technical skills in sudden cardiac arrest simulations is evident (Hunziker et al., 2011; Prince et al., 2014; Yeung et al., 2012).

Bandura's Social Learning Theory

Social learning theory posits that people have the capacity to learn by observation, enabling a person to acquire large integrated units of behavior by seeing an example without having to build patterns gradually by tedious trial and error. In addition, emotional responses can be developed observationally by witnessing the affective reactions of others undergoing experiences (Bandura, 1977). Behavioral reactions can be improved by observing actions performed correctly, without inducing distress in the simulated atmosphere when students switch roles from observer to participant (Ertmer et al., 2010). Using Bandura's observational learning constructs as a foundation for the observer role and verifying motor reproduction based on observations during a simulation scenario, regardless of role (observer or participant) during simulation, students may obtain similar achievement of learning outcomes (Berthards, 2014).

Social learning theory posits that modeling during observational learning is directed by four processes: attention, retention, reproduction, and motivation (Bandura, 1977). Attention processes concentrate on the modeled behaviors; thus, it is expected that the observer will direct attention to influential preferences of major importance (Bandura, 1977). Attention is channeled by interpersonal attraction seeking to model interesting and constructive qualities, whereas interactions lacking pleasing characteristics are ignored or rejected (Bandura, 1977). Retention processes help the participant remember the observed behavior in a representational form. When exposed to a situation, modeling stimuli produce retrievable images using verbal and imaginable sequences. After modeled activities have been transformed into mental images, verbal stimuli, matched with these images, serve as guides to reproduce responses. In the reproduction process, motoric reproductions ensure that desired behaviors occur. Motivational processes are guided by extrinsic factors, such as praise and favorable outcomes, or by intrinsic factors, such as individual desire (Bandura, 1977).

By using external factors such as videoconferencing, observed symbolic representations may guide actions and solve problems cognitively utilizing these four processes. Higher mental processes may evolve during live interactions among participants at different locations using