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Comparing the effectiveness of video-assisted oral debriefing and oral debriefing alone on behaviors by undergraduate nursing students during high-fidelity simulation

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ABSTRACT

Complex healthcare, less resources, high-level medical equipment, and fewer available clinical settings have led many health professionals to use simulation as a method to further augment educational experiences for nursing students. While debriefing is recommended in the literature as a key component of simulation, the optimal format in which to conduct debriefing is unknown. This pre- and posttest two-group randomized quasi-experimental design compared the effectiveness of video-assisted oral debriefing (VAOD) and oral debriefing alone (ODA) on behaviors of 48 undergraduate nursing students during high-fidelity simulation. Further, this study examined whether roles (e.g., team leader, medication nurse), type of scenarios (i.e., pulmonary and cardiac scenarios), and student simulation team membership (i.e., VAOD and ODA groups) influenced these behaviors. Behaviors observed in this study related to patient safety, communication among team members, basic- and problem-focused assessment, prioritization of care, appropriate interventions, and delegation to healthcare team members. Both human patient simulator practice and guidance using video-assisted oral debriefing and oral debriefing alone appeared to be comparable regarding behaviors, regardless of roles, type of scenarios, and student simulation team membership. These findings suggest that nurse educators may use either video-assisted oral debriefing or oral debriefing alone to debrief undergraduate nursing students during high-fidelity simulation.

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Introduction

Nurses have a critical role in recognizing subtle signs of patient deterioration and responding quickly to adverse events to improve patient outcomes (Liaw et al., 2011). This pivotal role has often fallen to new graduates who must be prepared to make high-consequence decisions as part of their clinical practice (Purling and King, 2012). Unfortunately, this transition for graduates can be overwhelming in caring for these complex patients while further learning complexities of the healthcare work environment. Unfortunately, empirical literature suggests that nursing students are inadequately prepared to identify and manage deteriorating patients (Bogossian et al., 2014; Cooper et al., 2010). Evaluating healthcare quality is impossible without the use of clinical indicators. They create the basis for quality improvement in the delivery and prioritization of nursing care. Clearly, nursing faculty and health professionals need clinical indicators that suggest how well prepared students are to care for these complex patients.

Studies have suggested that complex clinical situations involving simulation using high-fidelity human patient simulators (HPSs) may enhance students' ability to manage these complex patients in clinical practice (Purling and King, 2012). Debriefing or feedback about these complex clinical situations may be done by

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instructors either orally or with the assistance of a video (Levett-Jones and Lapkin, 2014). While debriefing is recommended in the literature as a key component of simulation (Dreifuerst, 2009; Neill and Wotton, 2011), the optimal format in which to conduct debriefing is unknown. While video-assisted debriefing is widely used in simulation training, very few empirical studies have compared the effectiveness of video-assisted oral debriefing and oral debriefing alone on behaviors of undergraduate nursing students during high-fidelity simulations (Dufrene and Young, 2014; Reed et al., 2013) and results are mixed. Given the complex healthcare, fewer resources, sophisticated medical equipment, and limited quality clinical placements available to nurse educators, an adequate body of knowledge that evaluates the effectiveness of various methods of debriefing is essential to better prepare nursing students and future nurses who care for complex patients.

Therefore, the purpose of this study was to compare the effectiveness of video-assisted oral debriefing (VAOD) and oral debriefing alone (ODA) on behaviors by undergraduate nursing students during high-fidelity simulation. Further, this study examined whether roles (i.e., team leader, airway and crash cart manager, recorder, and medication nurse), type of scenarios (i.e., pulmonary and cardiac scenarios), and student simulation team membership (i.e., VAOD and ODA groups) influenced these behaviors.

Research questions for the study were the following: 1) Is there a difference in behaviors of undergraduate nursing students assigned to video-assisted oral debriefing (VAOD) and oral debriefing alone (ODA) during high-fidelity simulation? 2) Do roles, type of scenarios, and student simulation team membership influence behaviors of undergraduate nursing students during high-fidelity simulation? Behaviors observed in this study related to patient safety, communication among team members, basic- and problem-focused assessment, prioritization of care, appropriate interventions, and delegation to healthcare team members. Roles played in this study were team leader, airway manager, crash cart manager, recorder, and medication nurse. Scenarios concerned patients with pulmonary (e.g., pulmonary embolus, pneumothorax) and cardiac (e.g., chest pain and associated dysrhythmias) problems. Simulation team membership consisted of those students assigned to either the VAOD or ODA group.

Literature

Simulation experiences provide opportunities for students regarding clinical situations they either may not encounter during their clinical rotations or which are unavailable to them due to overcrowding at clinical sites. Communication and organizational skills, prioritization, and adaptability to changes in patients' conditions are only a few of the skills to be acquired through these high-fidelity simulation scenarios (Miller and Bull, 2013). More important, students can participate in these believable clinical scenarios without risks to actual patients). HPSs also provide for student practice in problem-solving, critical thinking, and psychomotor skills in a safe environment (Hawkins et al., 2008).

Debriefing includes verbal feedback or video-assisted feedback that ideally immediately follows the simulation exercise to assist students in assessing their performance (Chronister and Brown, 2012). Facilitators identify simulation components that are pertinent to course objectives and facilitate evaluation of scenario performance in a non-threatening and organized way. The group discusses the simulation process, outcomes, and how to apply the simulation to clinical practice (Rauen, 2001). Points of concern, prioritization, and problem-solving issues are addressed (Jeffries, 2008). Desired educational outcomes are increased knowledge, improved skill performance, satisfaction, enhanced critical thinking, and greater self-confidence in the clinical setting (Reese

et al., 2010). Reviewing videos of the simulation experience during the debriefing allows students to recognize their own strengths and weaknesses and to correct mistakes (Kuehster and Hall, 2010). Further, videos document achievement of outcomes and readiness for progression to the next level (Rothgeb, 2008).

Empirical studies related to video-assisted feedback primarily used anesthesia residents, anesthesiologists, physicians, and physical therapists and sample sizes were most often small, ranging from 30 to 252 participants (Borges et al., 2010; Byrne et al., 2002; Savoldelli et al., 2006; Seif and Brown, 2013; Weidman et al., 2010; Welke et al., 2009). Sample size in one study was not reported (Geis et al., 2011). Designs used to examining the effectiveness of video-assisted debriefing included pre- and post-test designs as well as stronger, randomized quasi-experimental designs and experimental designs. While the majority of these studies either compared video-assisted debriefing with oral debriefing alone (Bryne et al., 2002; Chronister and Brown, 2012; Reed et al., 2013), a few designs compared these two methods with a control group (Savoldelli et al., 2006; Weidman et al., 2010). The majority of the studies examined performance behaviors during a simulation (Byrne et al., 2002; Chronister and Brown, 2012; Geis et al., 2011; Sawyer et al., 2012; Borges et al., 2010) while a few measured student perceptions (Reed et al., 2013; Seif and Brown, 2013), response times (Borges et al., 2010; Chronister and Brown, 2012), and knowledge retention (Chronister and Brown, 2012).

Findings also are mixed regarding the usefulness of video-assisted debriefing when compared to oral debriefing alone. While most of these studies found no differences between VAOD and ODA (Byrne et al., 2002; Reed et al., 2013; Savoldelli et al., 2006; Sawyer et al., 2012; Weidman et al., 2010; Welke et al., 2009), some found differences between a control group receiving no debriefing and a group receiving oral and video-assisted debriefing. These differences in study findings often related to performance behaviors and response times (Borges et al., 2010; Chronister and Brown, 2012; Grant et al., 2010; Savoldelli et al., 2006). Methodological issues were present in some of these studies regarding the lack of psychometrically sound measures to examine participant performance. Further, the studies were cross-sectional rather than observing patterns of behaviors over time.

Only one randomized quasi-experimental study of 40 nursing and nurse anesthetist participants was identified that compared the effectiveness of human patient simulator video-assisted oral debriefing ($n = 20$) and oral debriefing alone ($n = 20$) in examining the effect of roles, type of scenarios, and simulation team membership on performance behaviors. Study findings indicated that roles students played in the simulation significantly impacted their performance of behaviors. For example, when scores of both the intervention and control groups were combined, team leaders, airway managers, and nurse anesthetists had significantly higher mean total performance scores than crash cart managers, recorders, or medication nurses. However, there were no significant differences between either student simulation team memberships or simulation scenarios regarding total performance behavior scores (Grant et al., 2010).

In conclusion, in examining the effectiveness of VAOD and ODA, findings are mixed regarding the usefulness of video-assisted debriefing when compared to oral debriefing alone. Further, research is very sparse and too limited to draw conclusions regarding the effectiveness of VAOD and ODA and the effect of roles, type of scenarios, and simulation team membership on behaviors.

Research design

This study builds upon a previously cited study that used a sample of students enrolled in a nurse anesthetist and an