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Featured Article

# Veterans Receive High-Fidelity Simulation Education Preoperatively

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## KEYWORDS

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Kolb;  
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length of stay;  
CABG;  
coronary;  
artery;  
bypass;  
graft

## Abstract

**Background:** Patients receiving coronary artery bypass graft (CABG) surgeries have expressed anxieties in the postoperative period over a lack of understanding of postoperative care and expectations. The study aimed to evaluate the influence of simulation education on veterans undergoing CABG surgeries knowledge, satisfaction, anxiety, and length of stay.

**Methods:** An experimental pre–post test design was used with 20 veterans scheduled to receive CABG surgery.

**Results:** There was no significant improvement in length of stay in veterans in either educational group. However, use of a high-fidelity simulation education intervention revealed a significant increase in veteran knowledge group ( $t(10.25) = 7.09; p = .0001; d = 3.19$ ) and satisfaction ( $t(9.24) = 2.66; p = .03; d = 1.20$ ) compared with the control usual pre-CABG education sessions. Veterans also had a significant decrease in State anxiety scores in the intervention simulation education group over the control usual pre-CABG groups ( $t(18) = -2.61; p = .02; d = 1.17$ ).

**Conclusions:** Simulation education is an effective educational tool for educating CABG patients preoperatively. The findings of the study indicate a benefit to veteran knowledge, satisfaction, and anxiety levels when utilizing high-fidelity simulation education.

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Coronary artery bypass graft (CABG) surgery accounts for the largest number of open heart surgeries performed in the United States (U.S. Department of Health and Human Services [USDHHS], 2011). Patients receiving CABG surgeries have expressed anxieties in the postoperative period

because of their lack of understanding of postoperative care and unmet expectations. In 2006, The Joint Commission mandated that each patient receive education specific to their care and treatment; however, few facilities have focused on various educational methods. Most educational experiences for patients have included verbal and written handouts. It has been identified that an absence of diverse teaching methods can lead to a lack of patient understanding

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(Hahn, Fish, Dunn, & Halperin, 2005; Harless et al., 2009; Kolb, 1984; Mikulaninec, 1987).

Studies have shown poor outcomes in surgical patients related to patient anxiety levels and favorable outcomes when preoperative education was provided (Brunges & Avigne, 2003; Pignay-Demaria, Lesperance, Demaria, Frasure-Smith, & Perrault, 2003; Shuldham, 2001).

### Key Points

- Use of diverse teaching methods have demonstrated an improved understanding in patient education.
- The concept of utilizing simulation education should expand beyond aviation, military and healthcare providers to include patients and families.
- Simulation education increased patient knowledge and satisfaction while decreasing patient anxiety.

In the last decade, new research has emerged incorporating advanced technology into patient education sessions that provide an advantage over usual teaching methods. Examination of the literature further reveals that simulation has been utilized as an effective educational tool (Army Modeling & Simulation, 2010; Baumann, 1993; Cooper & Taqueti, 2004; Fitch, 2007; Sears, Goldsworthy, & Goodman,

2010; Shinnick, Woo, & Evangelista, 2012; Virginia State Board of Nursing, 2013). One such patient education simulation study was completed by Siwe, Bertero, Pugh, and Wijma (2009) who formulated a pelvic examination simulation education scenario for laywomen. The laywomen were educated in the physical anatomy and pelvic examination. Before the education preknowledge and anxiety were measured; postmeasures were also obtained after the intervention. The education was offered to improve understanding and expectations for the participant's next physical examination and was not offered in conjunction with a physical examination or preoperative procedures. Baseline global anxiety scores did not reveal high anxiety. However, those who rated themselves with high anxiety had the greatest decrease in anxiety after the course. A more recent study by Tofil et al. (2013) examined ventilator caregiver education through the use of high-fidelity simulators for parents of children on ventilators. The simulation classes were added to an existing curriculum, given 1 week before discharge. Participants were contacted 3 to 6 months after completing the educational intervention to assess confidence and satisfaction with the sessions. It was identified that participants were confident in the skills taught, and 86% agreed that the simulation session increased their confidence in providing better care for their child. All participants recommended the use of simulation education to other parents.

There has been a dearth of published research in the last 5 to 7 years on evaluation of CABG education and preoperative anxiety. Nevertheless, the literature has identified

numerous successes of simulation use as an educational tool for use with diverse professions (Baumann, 1993; Cooper & Taqueti, 2004; Fitch, 2007; Sears et al., 2010; Shinnick et al., 2012). Given the high number of CABG surgeries performed annually, this research supports the need to explore high-fidelity simulation use as a preoperative patient educational intervention. The purpose of this study was to evaluate high-fidelity simulation education for veterans receiving CABG surgery and its effectiveness related to knowledge, satisfaction, anxiety, and length of stay.

## Conceptual Framework

The conceptual framework utilized in the study was Kolb's Experiential Learning Theory, which focuses on meeting the learning needs of individual learners by incorporating diverse learning methods into educational experiences. Incorporation of Kolb's Experiential Learning Theory into health care education will guide staff in trying to effectively reach all learners, increase patient knowledge of the health care stay, and improve expectations of care and health care outcomes. Explained by Kolb and Kolb (2011), the purpose of the Experiential Learning Theory is to make learners the center of their experience and to make the experience their own. The theory characteristics allow educators the opportunity to try to reach all learners by using a variety of teaching techniques. The theory by Kolb (1984) views each experience as learning and relearning. Kolb (1984) found that knowledge occurs as a result of transforming and grasping the lived experience. According to Kolb, Boyatzis, and Mainemelis (1999), experiential learning was accomplished through the four Learning Cycle methods. The Learning Cycle consists of a concrete experience and abstract conceptualization that represent the grasping and experience methods. Two methods that relate to transforming experiences are reflective observation and active experimentation. The theory found that concrete experiences are the basis for observations and reflections. Reflections guide the learner to explore the abstract concepts, which then lead to actions that are actively tested, all while creating new experiences.

## Methods

### Design

An experimental pre–post test design was selected for this pilot study to evaluate the influence of high-fidelity simulation patient education intervention on learner knowledge, satisfaction, anxiety, and length of stay for veterans preparing to undergo CABG surgery. Study approval was obtained from the Institutional Review Boards of Sacred Heart University and Veterans Administration Connecticut Healthcare Systems (VACHS).

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