Evaluation of High Fidelity Simulation Debriefing Methods for Nurse Anesthesia Students

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Executive Summary

Introduction of the Problem

According to the U.S. Bureau of Labor Statistics (2020), job growth for CRNAs is projected to be 26% between 2018 and 2028. As nurse anesthesia educational programs plan to meet this demand and the changing needs of healthcare, simulation has become an educational tool that provides valuable learning experiences that integrate problem-solving, prioritization, and critical thinking skills. New graduates must be prepared to enter the workforce with competence and skills to manage difficult situations that may only be otherwise encountered through simulated scenarios throughout their educational program.

Faculty members delivering the simulation curriculum at a midwestern university, with over 75 nurse anesthesia students, sought education regarding simulation debriefing. After conducting a literature review for the best evidence supporting debriefing methods, faculty education was implemented in the form of an interactive computer-based learning (CBL) module. The goal aimed to establish continuous quality improvement in nurse anesthesia simulation education at the university. The recommended debriefing methods in the CBL have been shown to enhance student learning during high fidelity simulation (HFS) and are supported by the International Nursing Association for Clinical Simulation and Learning (INACSL).

A debriefing occurs after a simulation session and is led by a facilitator to guide feedback and transfer learning to future similar clinical situations (Meakim et al., 2013). The debriefing period allows the debriefer to direct the students' self-reflection and provide individualized feedback. If the simulation experience lacks a consistent debriefing process, there are missed opportunities for student learning (Shinnick, Woo, Horwich, & Steadman, 2011; Ryoo, & Ha, 2015). Nurse anesthesia students have a chance to enhance their education through deliberation

and discussion on how their actions during the simulation would impact clinical performance. A safe learning environment encourages and fosters critical thinking and clinical judgment skills.

The utilization of simulation creates challenges for educators. A significant challenge is ensuring the simulation experience, specifically debriefing the post-simulation experience, meets the standard of simulation best practice and provides students with a valid learning experience (Decker et al., 2013; INACSL Standards Committee, 2016). As stated in criterion one of the *Standards of Best Practice: Simulation Standard VI: The Debriefing Process,* debriefing should "validate competence through the use of an established instrument" (Decker et al., 2013, pg. S27). We sought to provide debriefing education for anesthesia faculty via an interactive CBL and identify faculty members' preferences for a specific method.

Literature Review

The results of this literature review indicate that there are numerous educational benefits from a structured debriefing process during a healthcare simulation experience. Among these benefits is the ability to encourage the learner to conduct an individualized academic reflection of knowledge and clinical skills. There is clear evidence supporting the effectiveness of debriefing during simulation to enhance education (Cheng et al., 2014; Decker et al., 2013; INACSL Standards Committee 2016; Meakim et al., 2013; Morgan et al., 2009; Shinnick et al., 2011; Ryoo & Ha, 2015; Levett-Jones & Lapkin, 2014). Specifically, in two-level I systematic reviews by Cheng et al., (2014) and Levett-Jones & Lapkin (2014), the researchers found similar results in positive learning outcomes for debriefing during healthcare simulation. Morgan et al. (2009) conducted a randomized controlled trial in the facilitated debriefing of practicing anesthetists after HFS. The researchers found an improved performance of the debriefed group compared to those without any debriefing.

With limited research supporting any single specific debriefing model, numerous debriefing options meet the debriefing criteria defined by the INACSL. Each debriefing model contains strengths and weaknesses ranging from ease of use to education level to conduct appropriately. The consensus within the literature was that a debriefing model should be chosen per INACSL standards, the debriefer's education, and the ability to accurately execute the model and the educational needs of the institution.

Project Methods

This project was a non-experimental posttest design for nurse anesthesia simulation faculty at a mid-sized midwestern university. Participants were assessed after completing an educational CBL module to evaluate the module's effect on faculty knowledge of HFS debriefing standards and methods. The CBL was designed using the most recent literature on the debriefing process and debriefing methods recognized by the INACSL. Additionally, a brief survey was to be taken after the assessment to explore whether the faculty foresee any barriers or learning curves regarding the debriefing process described in the CBL module. Participants were asked to rate each debriefing method on a numerical Likert scale. Results were compiled and made accessible to the primary investigators, maintaining the anonymity of individual participant results.

Purpose and goals. The goal of this DNP project was to develop and implement a CBL module for nurse anesthesia simulation faculty, utilizing the most recent evidence-based literature and HFS debriefing standards. The CBL module set out to educate nurse anesthesia simulation faculty on the current knowledge surrounding HFS debriefing. The benchmark for successful completion of the CBL module was defined by 90% of participants achieving an 85% or greater on the post-test. By doing so, participants would be able to identify debriefing as a

standard of HFS, better understand the debriefing process, identify INACSL recommended debriefing strategies, and identify both strengths and limitations of each debriefing method.

This projects' long-term objective is to utilize the HFS debriefing CBL by all anesthesia simulation faculty on an annual basis for continuing education to facilitate student learning and enhance the simulation experience for both the students and faculty.

Setting. This project was implemented at a mid-sized midwestern university. Participants in this study included all faculty within the nurse anesthesia program. Upon request, current and future faculty may utilize the CBL module as a self-study educational tool.

Institutional review board. This project received an exempt Institutional Review Board (IRB) approval from the University. There were minimal ethical threats to human subjects that chose to participate in this project. Consent to participate was validated by a brief statement preceding the CBL module in which participants acknowledged that they agreed to proceed. Participation in this project was voluntary.

Evaluation

Participants were asked to complete a 10-question assessment after a computer-based learning (CBL) module. The post-implementation evaluation was followed by a 12-question survey, which included nine Likert scale rating items and three open-ended comments for qualitative data collection. The assessment results were analyzed to gather information about the participants' knowledge gained after completing the CBL module. In contrast, the surveys were analyzed to collect information related to faculty perceptions of the various debriefing techniques and to identify faculty members' preference for a specific method.

The CBL proved to be an effective educational tool based on an average score of 86.6% on the post-assessment questions. Of the faculty who participated, one hundred percent

completed the survey, with one additional faculty member completing the survey without fully completing the CBL. Of the eight faculty members who completed the CBL in its entirety, all scored above 80% on the post-test — above the benchmark score set by the primary investigators before implementation. The educational effectiveness was also reported in the participants' perceptions, with 8 of the 9 participants (88.9%) saying they were moderately to extremely satisfied with the CBL (mean score = 6.3).

Given the variety of individual debriefing methods covered, the CBL and Likert Scale for Individual Debriefing Methods provided insight on faculty members' preference for a specific method. When assessing specific debriefing methods, 55.6 percent (n=5) of participants stated they were extremely likely to utilize the Plus-Delta model of debriefing (mean score = 6.1). In comparison, 44.4 percent (n=4) stated they were moderately unlikely to use the OPT (Outcome Present State-Test) Model of Clinical Reasoning (mean score = 3.1). Finally, participants were asked to select one preferred debriefing method among those discussed in the CBL. The Plus-Delta model received the most responses, with 44.4 percent (n=4) of participants preferring the Plus-Delta model. The GAS (Gather, Analyze, Summarize) and the Debriefing with Good Judgement models were both selected as the preferred method by 2 participants each.

The opportunity for free text comments allowed participants to freely express ideas about barriers and general ideas concerning a debriefing method for the anesthesia program. When commenting on the rationale for selecting their preferred debriefing method, common themes among faculty responses were ease of use, simplicity, less formal training, versatility, and flexibility. The faculty's common concerns included training, evaluation, student participation, time, and lack of standardization. Lastly, anesthesia faculty were asked to provide insight into their overall perceptions related to the creation of a standardized debriefing process. Overall, the

comments were positive and open to the concept of a standardized debriefing process. However, it was also mentioned that it was unlikely that all faculty members would agree on one specific method for use.

Perceived limitations included sampling bias and limited participation of staff, resulting in a small sample size. Several faculty members began the CBL but did not complete it entirely. Among participants who fully completed the CBL, those who scored poorly on the post-assessment did not view one hundred percent of the content. Due to the utilization of a limited size, this post-test and survey results may not be generalizable to a larger population. An improvement to the project in the future would be to implement the project at more than one institution to sample from a larger group.

Impact on Practice

The outcomes measured reflect the level of knowledge and perceptions of HFS debriefing and its recommended methods established by the INACSL among program faculty. The immediate impact of the CBL provided effective education on the INACSL recommended debriefing methods for HFS. The post-survey also offered insights into the participants' thoughts and preferences between the different debriefing methods. In the long-term, simulation faculty can use this information to select and adapt a preferred standardized debriefing method identified by the survey and conduct a more in-depth educational experience on selected debriefing methods. The university could also use the CBL to educate new simulation faculty who have not yet participated in the module. Educating faculty on a structured debriefing process can foster critical thinking and clinical judgment skills by enhancing the learner's simulation experience and may ultimately lead to better clinical performance during patient care.

Conclusion

Positive outcomes were found after the collection of data from the CBL, post-quiz, and survey. Faculty quiz scores were above the goal set by the authors. Overall, comments from the post-survey were positive and receptive to applying one or more of the debriefing methods outlined in the CBL. When assessing faculty preferences, the Plus-Delta and GAS (Gather, Analyze, Summarize) models were the most favored by the participants.

An improvement to the project in the future would be to implement the project at more than one institution to sample from a larger group. As research develops, the effectiveness of specific debriefing methods should be explored. The educational and training requirements for any recommended debriefing method should be considered before implementing an institution's standardized debriefing process.

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