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Research Article

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Prebriefing in Nursing Simulation: Does the Use of Concept Mapping in The Prebriefing Process Impact Clinical Competence in Nursing Students?

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Abstract

Background: *The purpose of this study was to evaluate the impact of a concept map in the prebriefing on clinical competence of nursing students in a prelicensure associated degree nursing program.*

Methods: *A prospective, quasi-experimental, comparative, post-test-only project was implemented using a concept map in the prebriefing process to evaluate the impact on clinical competence in nursing students in a prelicensure associated degree nursing program.*

Results: *The evaluation of 115 nursing students enrolled in first-year nursing courses revealed no overall increase in clinical competence using a concept map in the prebriefing process. Although not captured, students stated they felt the concept map positively impacted their critical thinking during simulation.*

Conclusions: *A concept map in the prebriefing process may impact the clinical competency of nursing students. Further evaluation is warranted to determine the impact of a concept map in the prebriefing process on clinical competence.*

Keywords: *prebriefing, concept map, Kolb's Theory, experiential learning, nursing education, simulation, C-CEI, undergraduate nursing education*

Background

The nursing shortage across the country has directly impacted the number of students enrolled in nursing education programs. The days of lecture-based classes and PowerPoint presentations are fading, and flipped classroom strategies are emerging. With the increasing number of nursing schools and nursing students, the demand for clinical space, and time for students, clinical placements are in high demand. Simulation is one area that has developed in nursing education along with the advances in educational technology. Simulation-based experiences provide a safe environment for students to learn and apply their knowledge. Although professional simulation organizations have defined many areas related to simulation, there is a lack of guidance and research on the prebriefing process, especially in the academic setting. This study aimed to implement a concept map in the prebriefing process to evaluate the impact on clinical competence.

Prebriefing

Prebriefing is defined by the International Nursing Association for Clinical Simulation and Learning [INACSL] [1] as an information session immediately prior to the session in which the scenario, objectives, and roles are determined well as an orientation to the setting and equipment. Areas not addressed in the INACSL standard include what or how much information should be given ahead of time regarding student preparation. The guidelines are general enough to cover all areas of nursing but not specific to prelicensure nursing education. Students in the early stages of their nursing education need more guidance and preparation to be successful in the simulation area.

Prebriefing enhances the students' ability to rationalize care, understand the scenario, identify patient needs, and develop a plan of expected care [2-4]. Chmil also stated that prebriefing is the beginning of student engagement (2016). A lack of standardized prebriefing activities may affect the student's clinical competency and performance in simulation. When students are unprepared for simulation, they cannot perform at the appropriate level. They become frustrated and anxious as a student nurse, which impacts the learning process. Critical thinking is an essential component of nursing education. To ensure nurses provide safe and competent care, educators need to promote critical thinking skills [5]. The prebriefing phase is instrumental in providing the student with the tools necessary to succeed in the

simulated learning environment. Prebriefing, although research is lacking, is an essential component of the simulation process as it sets the framework for the experience. Exploring the structure of the prebriefing phase is critical to ensure that the students have the appropriate tools necessary to promote critical thinking skills.

By implementing prebriefing activities such as a concept map, students begin the critical thinking process before the actual simulation. According to Park et al. (2015), learner-centered prebriefing activities that engage learners' active participation positively impact learning and problem-solving skills [6]. While many standards have been developed to influence simulation-based learning, the presimulation phase lacks development. According to Dearmon et al. (2012). The use of a concept map in the prebriefing stage may impact student knowledge and retention, learning outcomes, patient safety, critical thinking skills, and the decision-making process, all ultimately improving clinical competency [7].

Concept Mapping

Concept mapping has been utilized in nursing education as an effective tool for assisting students in applying their knowledge related to the patient and the disease process and promoting patient safety and positive health care outcomes [8]. The concept map in the prebriefing phase allows students to process information from the clinical simulation scenario provided before the actual hands-on application or active learning experience. Concept map use in the prebriefing process will assist the student in organizing and planning care for the simulation experience and positively impact the student's clinical judgment and competence [9]. Offering the opportunity to work together as a team before the simulation allows the students to look at concepts, topics, diagnoses, tasks, and skills they may be expected to perform. The concept map provides a framework for the student to process those thoughts, put them down on paper, and enhance critical thinking and decision-making. Adding this exercise to the recommended INACSL standards for the prebriefing will encourage the learner to think and plan care prior to the simulation experience [10] critically.

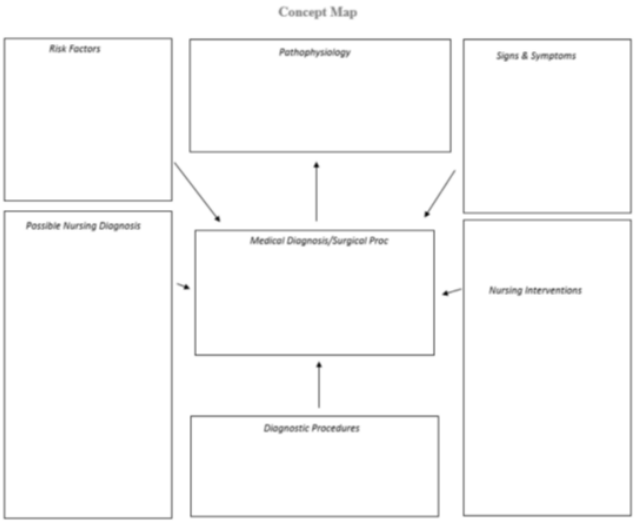


Figure 1: Sample Concept Map

Theoretical framework-Kolb's Experiential Learning Theory

Simulation is the process of applying knowledge to a situation to improve the desired outcome, which can vary with each simulation scenario. Kolb's theory of experiential learning emphasizes the student application of knowledge through a process of reflection based on a pre-existing knowledge base [11]. The cyclical pattern that this theory is based on includes an active problem-solving approach that encourages a process of thinking, planning, performing, and then debriefing or reflection [12]. The experiential learning process begins in the prebriefing phase and is carried through to the debriefing phase. The concept map in the prebriefing phase allows students to process information from the clinical simulation scenario provided before the actual hands-on application or active learning experience. Simulation activities in the nursing student population are usually conducted in small groups. Once the simulation experience has concluded, the student completes the cycle with a reflection/debriefing session. Debriefing is a valuable part of the experience as knowledge learned from this experience is now applied to the clinical setting. This approach applies directly to the nursing student in applying critical thinking skills to the clinical and simulation environments.

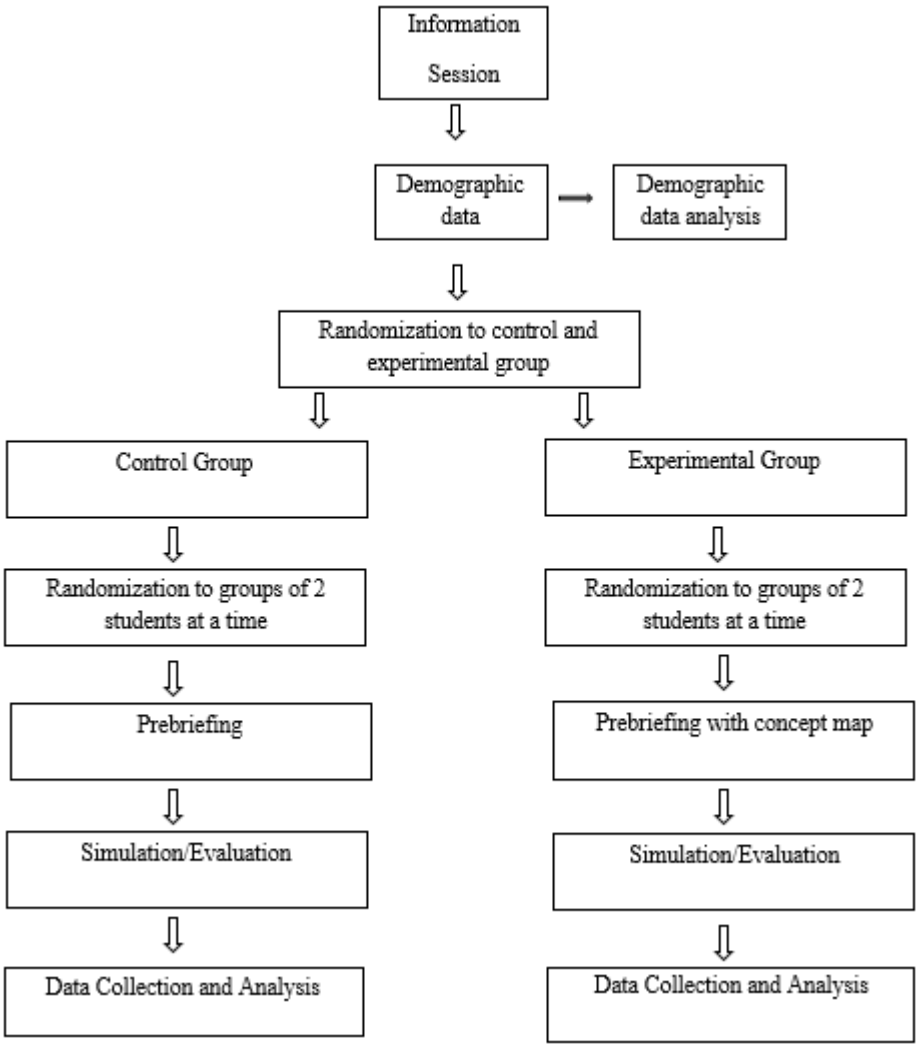
Material and Methods

This study used a quasi-experimental post-test-only design. IRB approval was obtained by the university's institutional review board (IRB # 19-001). The intervention for this project was implementing a concept map in the prebriefing session immediately before the simulation activity. The population was a sample of convenience of all students in a local prelicensure associate degree nursing program. The research project was explained to 115 students during a regularly scheduled class session. Out of the 115 students, 113 participated (n = 113). The intervention for this project was implementing a concept map in the prebriefing session immediately prior to the simulation activity. Only the experimental group experienced the concept map intervention.

The participants were blindly randomized into the control and experimental group via the excel program randomization tool and then further randomized into groups of two students at a time. Each group consisted of teams of two nursing students, both participating in the nurse's role. After the prebriefing session, each group was given a one-minute orientation of the simulation room and surroundings, including mannequin features, supplies, and equipment. A prebriefing checklist was utilized to ensure that all students received the same orientation information during the prebriefing process.

In order to prevent participants from sharing information, the control and experimentation groups were conducted at different times. Day one was selected as the experimental group (concept map), and day two was the control group with no concept map. The project took place over four days in two weeks. A fiction contract was discussed to remind students not to share any information about the simulation activity or experience with any other students. Each class had a different simulation scenario that was selected based on the level of the course.

Project Implementation Algorithm



Creighton Competency Evaluation Instrument

Determining clinical competence in nursing can be challenging for many. Utilizing a valid and reliable tool is essential to ensure the results are sound and accurate, as well as replicable. The Creighton Competency Evaluation Instrument (C-CEI), developed by faculty at Creighton University to gauge the effectiveness of clinical learning, was used to compare the two groups [13]. Used by over 190 organizations, it is a valid and reliable tool in evaluating students in simulation and clinical practice environments [14]. The C-CEI breaks down nursing content into four categories for evaluation: assessment, communication, judgment, and patient safety, as they align with the core competencies for the Essentials of Baccalaureate Education for Professional Nursing Practice (American Association of Colleges of Nursing [AACN], 2008) [15]. The C-CEI also correlates Quality and Safety for Nursing Education (QSEN) terminology and concepts with the AACN Essentials, applicable to all prelicensure nursing students [13]. The C-CEI is used to evaluate the student's individual behavior in the simulation. There are also 23 items within the four categories. The four categories were averaged together and separately compared to evaluate clinical competence. Faculty participating as evaluators in the study were required to complete the necessary training provided by Creighton University.

Simulation-based Learning Activity

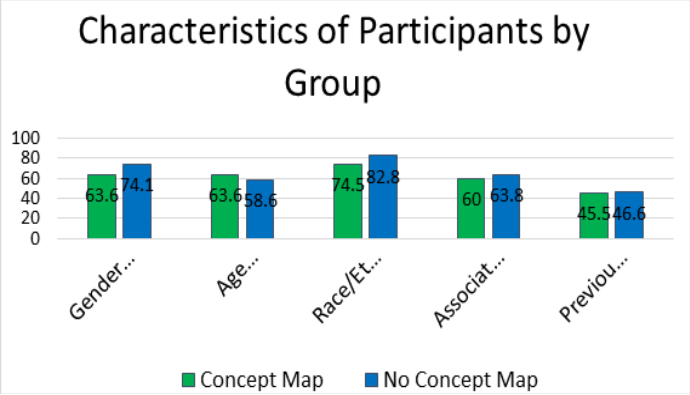
Prior to this simulation activity, all students had participated in simulation at some level during the course. Fundamental of Nursing students have participated in a minimum of one simulation session and an orientation session in the simulation lab this current semester. All Basic Medical-Surgical students have had one previous semester of simulation experience and one rotation through a simulation session this current semester.

The simulation activity and scenario were posted in the Elsevier Nursing Concepts Online (NCO) system one week before the scheduled date. Students had access to the objective, selected readings, a pre-quiz, and pre-simulation questions. On the day of the simulation activity, students were required to arrive at their designated time. Fundamental students' main objective was to assess the patient, recognize low blood sugar, and intervene. Basic Medical-Surgical students' main objectives included assessing, identifying high blood sugar, and intervening. Each group had 30 minutes for prebriefing, 30 minutes for the simulation activity, and 30 minutes for debriefing. Upon arrival, they were given access to the simulated patient electronic health record, a hard copy of the paper report, and a pre-recorded electronic, verbal report. A trained facilitator discussed instructions on accessing the information and directions on what to concentrate on,

including accessing the patient chart, reviewing patient history, orders, and medication administration records. The experimental group was also instructed in the same format, with additional instruction on completing the concept map during the prebriefing phase.

Demographics

All demographic data was collected electronically by Google Forms. Upon conclusion of the demographic data collection, the primary investigator began the process of demographic data analysis. This sample of convenience (n = 115) consisted of a majority of female students (n = 78, 69%) between the ages of 21-40 (n = 69, 61.1%), Caucasian (n = 89, 78.8%), associate degree (n = 70, 61.9%), with less than six months previous health care experience (n = 52, 46%).



Results/Major Findings-Data Analysis

No statistical significance was noted between the median C-CEI score of the concept map group (Mdn = 38) than in the experimental group, (Mdn = 39), U = 1904, z = 1.781, p = .075. (Table 1). Upon further data analysis, statistical significance was noted in the subcategory of assessment (p = .015) and clinical judgment (p = .007). (Table 2). These results suggest that although a concept map in the prebriefing process may not affect the overall clinical competency of nursing students, it did have a positive impact on specific areas such as assessment and clinical judgment.

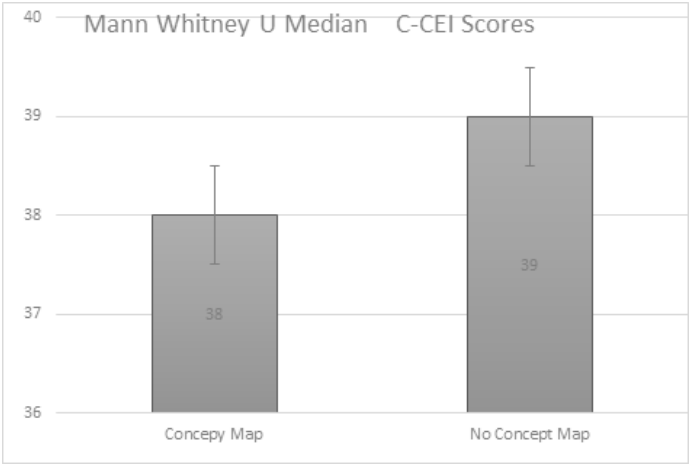


Table 1: Median Values

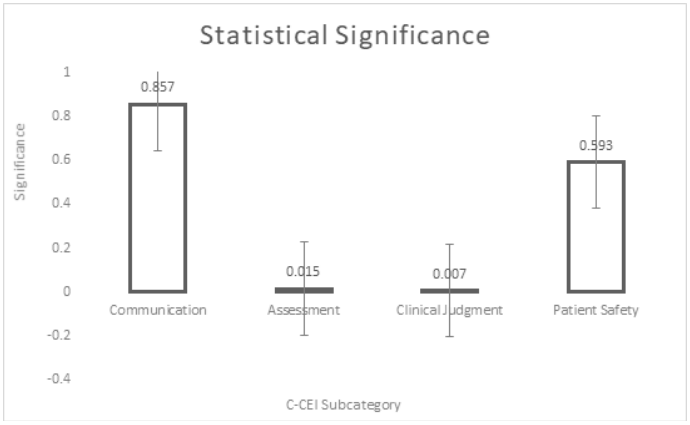


Table 2: C-CEI Statistical Significance

Discussion

Various learning activities, such as a concept map and care planning, have been identified as effective learning modalities in the prebriefing process. Developing the prebriefing process will continue to build upon students' knowledge and application to the patient's care. The use of a concept map as a teaching strategy in the prebriefing phase adds to the support that a concept map in the prebriefing process may impact nursing students' clinical competence. Although the overall results did not reflect the use of the concept map in the prebriefing process to be significant, there were specific areas identified as statistically significant; assessment and clinical judgment. Clinical judgment impacts one's clinical competence.

The results of this study are consistent with a similar study conducted by Page-Cutrara and Turk (2017). They also utilized the C-CEI as an evaluation tool and a concept map and guided reflection in the prebriefing process to evaluate the competence and clinical judgment. Competence, performance in simulation, and student experience in the prebriefing phase were measured. The study results support the use of structured prebriefing, such as a concept map during this phase [16].

A concept map, as an experiential learning tool in the prebriefing phase, can encourage the student to think about the patient information and how they will provide care. Adequately preparing to participate in simulation-based learning may also reduce feelings of stress and anxiety and increase clinical competency.

A concept map in the prebriefing process allows the student the opportunity to apply and visualize their thought process. Ensuring students are prepared for simulation is just as important as attending a clinical rotation. A concept map in the prebriefing process allows the student the opportunity to map out what nursing care they may need to provide for the simulated patient. As they apply that knowledge in the simulated setting, it will reinforce patient care in the clinical setting with the expectation of increasing clinical competence.

Recommendation for Future Research

Replication of this study through additional nursing levels would be recommended. Comparing the impact of the concept map on clinical competence across all levels of the nursing pro-

gram would be beneficial. Changes in the implementation process should be considered to allow for more time in the prebriefing process for the concept map group. As each rotation only allowed for a thirty-minute time frame, this did not allow adequate time for the group to discuss the simulation scenario, patient information and prepare a concept map. Ensuring that all participants know the proper process of completing a concept map before the simulation day is essential. Due to differences in faculty teaching assignments, some students expressed concern that they had not used a concept map previously. Adding a post-survey on self-efficacy would add to the body of knowledge as well as many students verbally stated that they felt the concept map helped them prepare, but this information was not captured.

Conclusions

This study contributes to the body of knowledge for prebriefing in simulation in nursing education. The results suggest that a concept map in the prebriefing process does not affect the clinical competency of nursing students. Although the concept map implementation in prebriefing was not statistically significant between the two groups, students reported an increased level of competence when completing the concept map in the prebriefing process.

Prebriefing in simulation is an essential component that needs to be developed to ensure student success. Replication of this study within the different levels and populations of nursing students will be helpful to determine the impact of a concept map in prebriefing on clinical competence. More research is needed to determine how a concept map implemented in the prebriefing process impacts clinical competence.

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