Empowering Nurse Education on Prone Position

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Capstone

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Abstract

Problem: In staff nurses, does education on prone positioning in ARDS patients increase awareness of nursing practice over six weeks? **Intervention:** This project was designed to bring awareness and empower registered nurses in the unit to safely initiate and utilize prone position through educational training. An online pre-and post-test was used to evaluate the nurse's knowledge before and after the implementation of the educational intervention. These tests were used to gather data regarding known and/or available knowledge about pronation. **Measures:** To increase staff nurse awareness, a pre-test was emailed to all staff nurses in the intensive care unit. These test results were evaluated. An educational PowerPoint presentation was delivered to the staff nurses on the unit. A post-test designed with the same questions as the pre-test was emailed to evaluate the given education on prone position. **Results:** Descriptive statistics were utilized on the Likert scale questions for both the pre and post-test questions. Participants had to complete both the pre and post-test for data analysis. The small number of participants resulted in project limitations. **Conclusions:** Educating nurses on critical care topics such as prone position can lead to nurse empowerment and better patient outcomes.

Keywords: registered nurse, prone position, pronation, education, acute respiratory distress syndrome.

Empowering Nurse Education on Prone Position

Acute respiratory distress (ARDS) is a fatal respiratory diagnosis that occurs when a patient does not have an adequate oxygen supply due to an increase of fluid in the lungs (Malhotra & Kacmarek, 2020). Research suggests that the implementation of prone position can promote lung hygiene and increased perfusion-ventilation ratio (Malhotra & Kacmarek, 2020). Prone position is when the patient lies with their chest down and elbows at a fixed position at or above the head (Medical Dictionary, 2009). This position promotes gas exchange, by reducing lung compression and improving lung perfusion (Malhotra & Kacmarek, 2020). According to Parcha et al. (2020), "acute respiratory failure (ARF) related mortality increased at approximately 3.4% annually, and ARDS-related mortality showed a lack of decline in the last 5 years" (p. 1460).

Overview

Problem Description

Despite evidence supporting prone position with ARDS patients, it is not widely practiced in acute care settings. Little to no education or training for staff nurses is available to guide safe initiation of prone position on the unit. Respiratory distress occurs when a patient cannot maintain sufficient oxygen supply, leading to hypoxemia (Caputo et al., 2020). In ARDS the lungs become full of fluid and sustain damage to the type II alveolar cells that produce surfactants in the lungs. Therefore, there is a decreased ability of the alveoli to sufficiently exchange carbon dioxide for oxygen that is needed for the body's internal organs (Han & Mallampalli, 2015). ARDS is a medical emergency and can be life-threatening if left untreated. If nurses are required to complete educational training on prone position, this can ensure safety and comfort for patients placed in this position.

The implementation of prone position is a simple and effective intervention. According to Malhotra and Kacmarek (2020), a patient is diagnosed with severe ARDS when their partial pressure of arterial oxygen: fraction of inspired oxygen (PaO_2/FiO_2 or P/F) ratio is less than 150 mmHg. A normal P/F ratio for a healthy patient is greater than 400mmHg. Research suggests that the implementation of prone position should occur when a patient's P/F ratio is less than 300mmHg. To initiate prone positioning in a timely manner, nurses need to be educated and trained on the subject. The project statement guiding this project was, in staff nurses, does education on prone positioning in ARDS patients increase awareness of nursing practice over six weeks?

Several clinical research trials conducted show low complication rates and increased oxygenation status when implementing the use of pronation (Pugliese et al., 2018). Reassuring nurses that prone position is safe in practice included defining the patient population most likely to benefit from the outcomes of the intervention (Pugliese et al., 2018). The expected outcomes included increasing critical care nurse awareness of prone position through education. It was expected that education and training would create change or motivation within the unit. Specifically, empowering nurses to assess eligible patients for prone position, understanding mechanics of the position, and exclusion criteria and/or need to stop proning.

Available Knowledge

Intervention

Education is essential for health care workers to maintain not only their professional license but to keep up to date on new evidence-based practices and interventions (Chaghari et al., 2017; Sobrepeña Palma et al., 2020). Through educational training, nurses on the unit would be able to confidently identify patients who were candidates for prone position. According to Parcha

et al. (2020), ARDS does not discriminate between sex, ethnicity, or age. Therefore, respiratory distress can occur in a variety of diverse patient populations and environments. Through education, nurses were able to identify patients at risk for a respiratory injury requiring further intervention.

According to Chaghari et al. (2017), there are a variety of barriers related to the in-service education of staff nurses, these can include but are not limited to, poor management of education, organizational struggles and challenges, unsuccessful mandatory education, scheduling, cost, and educational occupational resiliency. Although there are a variety of barriers to providing education for nurses, it is considered a core function of the nursing profession. A top priority in nursing is providing safe patient care. The education provided to staff nurses was research-based. Education promotes nurses to practice learned skills safely or instrumentalize in the development of honing new skills.

Outcomes

As acute respiratory distress syndrome (ARDS) continues to have high mortality rates, nurses need to be properly educated on the utilization of safe prone positioning to reduce unnecessary adverse events from occurring (Ding et al., 2020; Parcha et al., 2020). Nurses in the intensive care units are more likely to work with complex patient populations therefore education can decrease safety and complication rates (Amiri et al., 2018). Through dissemination, nurses gained a better understanding of the benefits related to placing ARDS patients in prone positions.

Rationale

The Iowa Model is a research guide utilized to improve healthcare outcomes and translate research (Iowa Model Collaborative, 2017). The Iowa Model was used to guide the steps in this project through evidence-based practice (EBP) research (Iowa Model Collaborative, 2017). The

first step of the model was to determine if the EBP research is problem-focused or knowledge-focused. The research conducted for this project was knowledge-focused because it was reviewing philosophies of care and/or organizational standards and guidelines of care. The next step of the model was reviewing the current processes in the organization regarding education. This step included collaboration with the unit manager and education management. Education can result in improved nursing awareness and patient safety. Education can be delivered through a variety of frameworks. The framework behind this education incorporates knowledge testing, presentation, open discussion, and dissemination.

Purpose

The purpose of this project was to educate critical care nurses on the education of proning in patients with ARDS. The outcome of this project was to increase the knowledge of participants.

Methods

Context

Implementation of this capstone project was in a Midwest urban hospital setting. The organization is one of the fastest-growing research centers and leading academic health networks within the country. Within the hospital, there are seven critical care units, each having diverse and specialized patient populations. The participants in this project include critical care registered nurses specifically assigned to one intensive care unit. These nurses are highly trained through critical care fellowship programs provided by the organization and develop specific skills to care for the unit's patient population.

Intervention

The intervention for this project was to bring awareness to the registered nurses in the unit on safe initiation and utilization of prone position through educational training. Education provided on the unit is delivered through a variety of methods such as open discussion, in-service classes, fellowship, online, and more.

In this project, registered nurses were provided educational training through a presentation at a unit-based council meeting. Consent from participants was completed before nurse participation in the project. A pre-test designed on Survey Monkey was emailed by the project facilitator, to all staff nurses on the unit a week before the unit-based council meeting. The presentation at UBC discussed current policy, patient indicators, unsafe patient conditions, safe initiation through collaborative teamwork, patient management, and care while prone. One week after the presentation, staff nurses were emailed the post-test consisting of the same questions to assess the education provided to staff nurses regarding prone position. Post-presentation followed with an open discussion to answer nurse questions or concerns about the potential utilization of prone position on their patients.

The time frame to implement the educational information was four weeks. Week one consisted of the pre-test, weeks two and three consisted of UBC presentation and analysis of the test, the final week consisted of collection and analysis of the post-test. There was no cost to the organization or participants involved in the project.

Study of the Intervention

The project facilitator designed an online pre-and post-test to evaluate the nurse's knowledge before and after the implementation of the educational intervention. The data was collected and analyzed by the project facilitator and stakeholders involved in the project. During

the first week of the project implementation, a pre-test was emailed to each nurse on the unit, allowing for one week's time to take the small eight-question pre-test. These tests were used to gather data regarding known and/or available knowledge about pronation. The pre-test revealed what information was misunderstood about the positional maneuver.

After the presentation, a post-test was sent to the attending nurses to evaluate what was learned from the educational presentation. This allowed the project facilitator to evaluate the outcomes of the proposed intervention. To ensure participant protection each nurse chose a unique identification number. This four-digit pin number was used for both the pre-and post-test to allow the project facilitator to compare results. If both tests are not completed by the nurse, these results were not included in the final analysis.

Measures

The pre-and post-test measured the unit nurse's known and acquired knowledge on prone position for ARDS patients. Both tests consisted of a series of eight multiple-choice questions. The pre-test was designed to gauge what is known, on the unit, about the prone position maneuver and the current hospital-wide policy. The post-test had the same questions, allowing the project facilitator and stakeholders to assess the learned and/or gained knowledge from the presentation. The tool developed by the project facilitator was specifically used to measure the outcomes of the project. Due to the development of this tool by the project facilitator and key stakeholders, validity and reliability cannot be appropriately measured.

Analysis

To analyze the collected data, Microsoft Excel was utilized for the quantitative data of the pre-and post-test. The project facilitator collected the pre-and post-test with de-identification markers to properly code the statistical outcomes of the test. Descriptive statistics were utilized

to help summarize variability. The inferential data was used to analyze the relationship between the matching pre and post-test, therefore, analyzing what information was learned or gained from the educational presentation on prone positioning. The intended statistical methodology to be used in this project was paired t-tests, but due to the small sample size, this analysis was not conducted. The t-test was going to be utilized to compare the data and to measure the significance of the education provided to intensive care unit staff nurses. The intended outcome was for critical care nurses to utilize the education to increase an understanding of the benefits of prone position.

Ethical Consideration

For the purposes of the project implementation, conflict of interest and ethical aspects were considered. The data was collected and analyzed without any participant identifiers and saved in an excel spreadsheet with restrictive access. Participants were not at risk of harm during the project implementation time. Before the nurse participated in the conduction of the pre-test, an informative message was shared via email with the details and goals of the project. The message informed participants that no staff nurse names were utilized in the conduction of the data collection and analysis. Participants could withdraw at any time during the process. The project facilitator is a current registered nurse working in the Neuroscience Intensive Care Unit (NSICU). The project facilitator worked closely with the key stakeholders, including the unit manager and educational manager. A letter of approval was granted the project facilitator access to complete the project within the facility.

Before the project implementation, approval from the Institutional Review Board (IRB) from Nebraska Methodist College was obtained. Both the project facilitator and the mentoring faculty members had certification in the Collaborative Institutional Training Initiative (CITI).

Results

The intervention was delivered to all staff registered nurses in the intensive care unit. Only two nurses completed both the identical eight-question pre and post-test. Demographic data were not collected for the purposes of this project. The excel spreadsheet was coded in ordinal data with de-identifying numerical numbers to keep participants anonymous but allowed for comparison testing to be conducted. Question one asked participants for their identification pin number.

Survey questions three through seven covered topics specific to policy and procedure related to proning. Question three stated, "Can the staff registered nurse initiate prone position?" On both the pre and post-test both nurses correctly selected "no." Question four stated, "How many assists are needed to properly prone a patient?" On the pre-test, one nurse responded correctly and one incorrectly. On the post-test, both nurses answered correctly. Question five stated, "Often neuromuscular blockades and/or sedation are utilized in proning. What is the target RASS goal?" On the pre-test, one response was correct and one was incorrect. On the post-test, both nurses responded correctly. Question six stated, "When assessing ICP when should a patient be excluded from pronation?" On both the pre and post-test one nurse answered correctly and one incorrectly. Question seven stated, "What staff is necessary for implementing prone position?" On the pre-test, both nurses responded correctly and only one responded correctly on the post-test.

Question two and eight were specific to the nurses' comfort related to proning. Descriptive statistics were utilized on Likert scale questions for both the pre and post-test questions. Question number two stated, "Do you, as the nurse, feel comfortable assessing patient eligibility for prone position?" On the initial pre-test, one nurse agreed and the other disagreed (*M*= 1); see figure 1. On the post-test, the same nurse agreed and the other strongly agreed (*M*= 1); see figure 2. Question number eight stated, "Do you, as the nurse, feel comfortable assessing for complications related to prone position? On the pre and post-test, both nurses agreed (*M*= 2); see figure 3.

Figure 1

Pre-Test Question 2

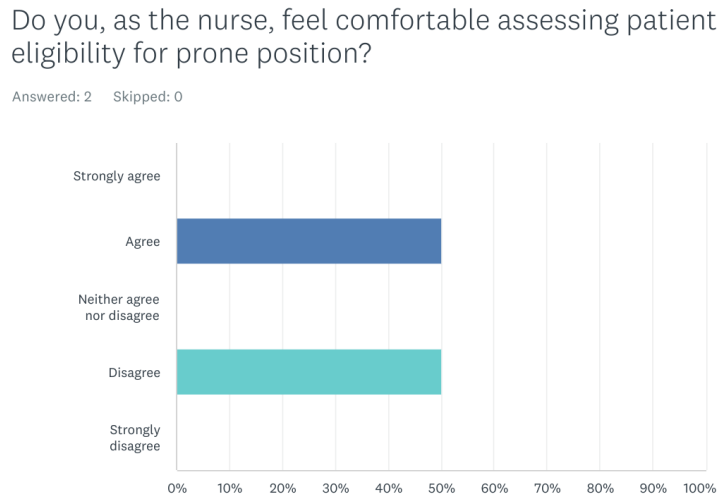


Figure 2

Post-Test Question 2

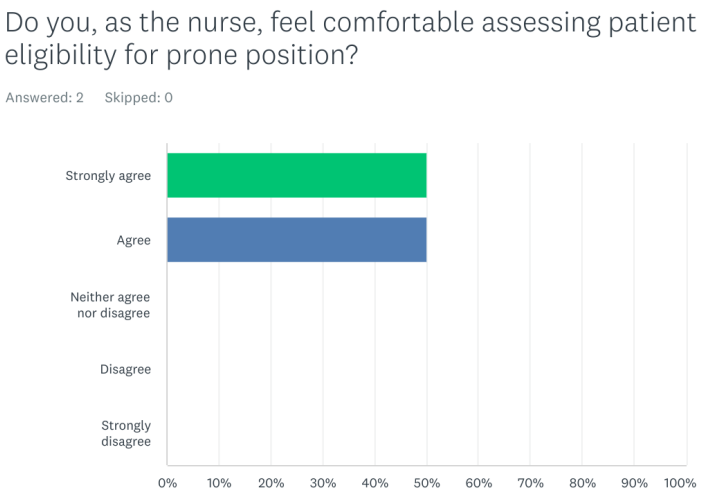
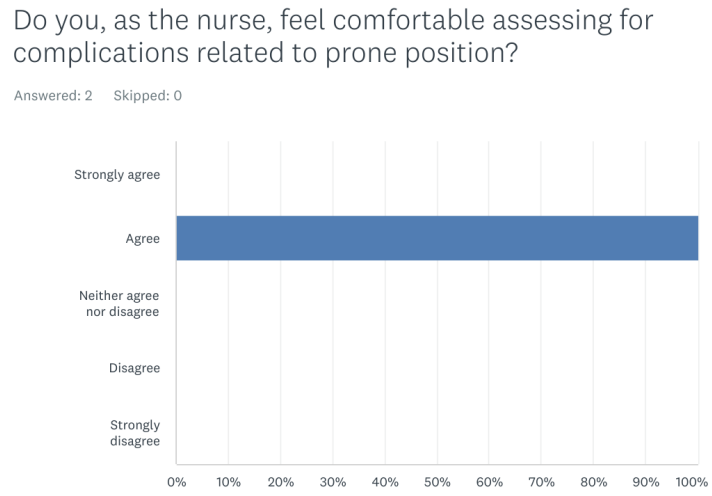


Figure 3

Pre-Test Question 8



Discussion

Summary

The finding suggests that educational training provided was inconclusive. Education can be used as an appropriate intervention in developing awareness on the topic of prone position in critical care nurses. There are a variety of ways to complete educational training, the pre and post-test did determine the known versus gained knowledge from the education provided in this intervention. Interestingly, the nurses completing the surveys were not sure on the assessment of prone, but confident on the complications of prone. The results were to be utilized to evaluate if there was an increase knowledge or understanding on prone position education. Due to the small number of participants who completed both the pre and post-test the results are inconclusive.

Interpretation

The method of delivery of education was done through presentation and pre and post-testing to be able to gauge each participant's understanding of prone position. The testing allowed the project facilitator to determine what areas of the topic in prone position needed more educational guidance. Education is essential in the profession of nursing in particular to better patient outcomes (Chaghari et al.,2017). There are a variety of methods to deliver education and each individual is unique in which they learn. Therefore, delivering education can be difficult. Chaghari et al. (2017), discuss the barriers or unsuccessful delivery of education are related to mandatory education, resiliency, and poor management. Empowering nurses or raising morale on education can create a successful learning environment (Chaghari et al., 2017). Through education, nurses can become more confident in providing safe patient care.

Limitations

The low number of participants limited the intervention outcomes. Participants had the option to take the pre and post-test. A sample size of a greater index could have shown potentially different results on the intervention of empowering nurses' education on prone position. Going forward with this intervention, it could be potentially beneficial to deliver an in-person presentation, completion of one test or utilize a written test, or email reminders to complete the educational test and presentation viewing. Nurses on the unit are already subject to monthly mandatory education. The selection of delivery of the intervention through education can be done in a variety of manners. In the future, key stakeholders should keep this in mind when empowering nurse education.

Conclusion

The revised standards for quality improvement reporting excellence (SQUIRE 2.0) was used as a framework for reporting this project. Staff nurses trained on critical care interventions provide safe patient care outcomes (Amiri et al., 2018). Not only does adequate training and education provide better patient outcomes, but it also leads to nurse empowerment (Amiri et al., 2018). Critical care nurses must be able to communicate and collaborate on the needs for critical care interventions such as proning. Identifying eligible patients leads to quicker intervention and better patient outcomes overall.

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