Increasing Self-Efficacy and Reducing Alarm Fatigue in Nurses Working in Critical Care

Tiffany Vo DNP(c), BSN, RN

Adjunct Faculty: Dr. Traci Bramlett, DNP, FNP-C
Young School of Nursing | Regis College

Second Reader: Dr. Celeste M. Baldwin, Ph.D., APRN, CNS

REGIS
Weston, Massachusetts
regiscollege.edu

PURPOSE

The purpose of the project is to evaluate the use of educational intervention. Also, the impact of the intervention on self-efficacy and alarm fatigue in Critical Care nurses.

STATEMENT OF THE PROBLEM

Alarms are one safety intervention used in a critical care setting, such as the intensive care unit (ICU) or step-down unit (SDU). The identification of the need for the alarm has been a well-documented issue (Seow et al., 2022). By using clinical and nursing judgment, a nurse should be able to identify the need for an alarm with a patient (Bi et al., 2020). Through education on the appropriate use of patient alarms, alarm fatigue may be minimized.

BACKGROUND

Alarm fatigue, or alarm desensitization, can be described as a sensory overload that leads to a slowed response or dismissal of the alarms (Winters et al., 2018). Overtime, nurses may find themselves silencing the alarms, or lowering the volume, or even disabling the alarms (Akturan et al., 2021). Alarm fatigue can lead to not only a delay of care to patients, or inadvertently putting the patient in harm's way, but could also lead to compassion fatigue or burnout in nurses (Winters et al., 2018; Akturan et al., 2021).

The multitude of alarms may cause stress on the nurse, leading to a negative effect on nurses' overall health. By educating nurses on appropriate use of alarms, and mitigation techniques for alarm fatigue and associated negative health effects, nurses are able to provide a higher quality of care to patients (Bi et al., 2020). Improved clinical alarm setting management can increase satisfaction in work environments for both the nurses and patients (Nguyen et al., 2019).

METHODOLOGY

- A mixed-method project that will utilize pre and post surveys to determine the success of the experiment.
- This will all be evaluated by pre-and post surveys, specifically the Confidence Scale (C-Scale), Strengths Self-Efficacy Scale (SSES) and several open-ended questions

EVIDENCE-BASED QUESTION

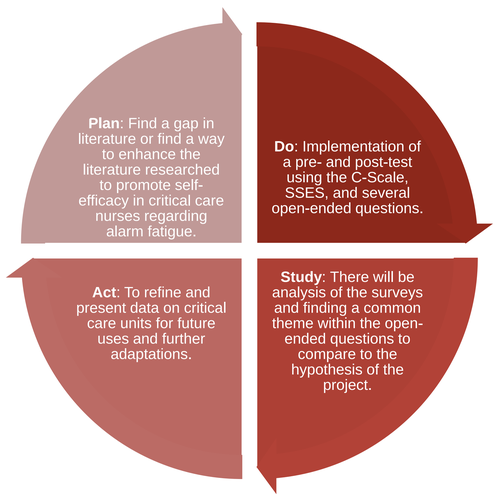
Does using a new educational intervention to increase self-efficacy and reduce alarm fatigue in nurses working in critical care settings deliver improved outcomes?

PROJECT OBJECTIVES

1. To increase the self-efficacy of nurses working in critical care settings through an educational intervention about alarm fatigue.
2. To increase self-efficacy posttest scores after the educational intervention is provided.
3. To disseminate the findings of the project through presentation of a poster or oral presentation at a conference and through publication.

EVIDENCE BASED MODEL

The Plan-Do-Study-Act (PDSA) model, or the PDSA, will be used in this project (Picarillo, 2018). The PDSA model is frequently used for quality improvement projects in a multitude of medical settings, which leads to its ease of use in both large and small projects (Picarillo, 2018).



PICO Question

(P) Population: Registered Nurses that work in the critical care environment.
(I) Intervention: An educational intervention based on national guidelines mitigation techniques for alarm fatigue.
(C) Comparison: None.
(O) Outcomes: Increased self-efficacy in Critical Care Step Down RNs regarding alarm fatigue.
(T) Timeline: This project will be implemented in Summer 2023 semester.

With nurses who work in the critical care units, what is the effect of education on alarm fatigue and associated mitigation techniques on the nurses' ability to recognize and self-manage alarm fatigue as demonstrated by pre- and post-education self-efficacy survey?

INTERVENTION

The first part of the intervention includes an educational portion, as well as the pre-test. The intervention for this SPP will be a nurse-driven protocol. Flyers were distributed throughout the unit Utilizes the American Association of Critical-Care Nurses (AACN) literature guidelines for managing alarms (Jepson et al., 2018). According to the AACN, there are two expected practices for bedside care providers: the use of technology correctly and according to the manufacturer's recommendations to minimize false and technical alarms, and to assess alarm parameter settings and customize them to each individual patient's conditions (Jepson et al., 2018). All these practices provided by the AACN will be a part of a checklist for the ECG monitors to decrease alarm fatigue.

SAMPLE & SETTING

Subjects were recruited from a Critical Care Unit in a regional medical center in the southwest United States. Surveyors were recruited via the critical care unit social media account as well as reiteration via email and flyers on the unit. There were 60 nurses that fit the criteria.
The ratio of this unit is 1:3 or 1:4 dependent upon acuity and staffing. The Critical Care Step-Down unit utilizes the Phillips IntelleVue MX450 patient monitor with the X3 Portable Patient Monitor.

THEORETICAL FRAMEWORK

Albert Bandura's Theory of Self-Efficacy

- Theory was based upon 4 main sources of influence (Bandura, 1977).
  - Mastery Experiences
    - Performance Outcomes
  - Vicarious Experiences
    - Social Role Models
  - Social Persuasion
  - Emotional States

Critical Care nurses will be educated on the evaluation of a patient and identify the needs of the patients, implement the necessary task, and reassess the situation as needed with the appropriate alarms (Davies, 2012).

DESIGN

The design that will be utilized for this project will be a mixed-method design. The Confidence Scale (C-Scale) and the Strengths Self-Efficacy Scale were the utilized scales. In addition, there were 5 open-ended questions at the end of the project to allow the participants to vocalize their opinions. These pre- and post-tests will be evaluated using IntellectusStatistics and the open-ended questions will be collected and examined by hand to find a common theme amongst them.

Tasks	Duration
Participation Consent	1 week
Pre Test	1 week
Intervention	2 weeks
Post Test	1 week

DATA ANALYSIS

IntellectusStatistics was used to provide the comprehensive statistics of the study. A substantial consensus was reached among participants, indicating concurrence on the efficacy of the American Association of Critical-Care Nurses (AACN) guidelines and a shared acknowledgment of the significant impact of alarm fatigue on critical care nurses.

ETHICAL CONSIDERATIONS

The major ethnical issues in conducting a scholarly project are informed consent, beneficence, respect for anonymity and confidentiality, and respect for privacy. The participants are informed of the potential risks and benefits of the project studies and have the right to withdraw or withhold information at any point in the project. To protect the participant's privacy, names will not be taken so that the study would be attached to the participant. Participants have the right to expect that their data will be kept in strict confidence.

NEXT STEPS

The conducted study will contribute to advancing knowledge in the assessment and utilization of alarms within Critical Care units. While the standards established by the American Association of Critical Care Nurses (AACN) did not prove as instructive as anticipated, the acquired data will serve as a foundation for subsequent investigations.