

Non-Psychiatric Nurse Self-Efficacy with Suicidality after an Educational Intervention

by

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Abstract

Lack of acute-care hospital non-psychiatric nurses' confidence and competence with suicidality has been reported in the literature. Evidence supports multi-modal education to increase recall and improve outcomes. The theory of self-efficacy included concepts of confidence as well as competence and served as the project's theoretical underpinning. A descriptive design was utilized to examine the effects of an education intervention using various methodologies addressing suicide risk factors, prevention, management, and safe care on nurses' perceived level of self-efficacy. Methods included a pre-test survey, an education module intervention, and a non-matched post-test survey. The survey used consisted of 11 of the original Suicide Competency Inventory (SCI) statements arranged across three scales. Convenience sampling was used with 26 participants in the pre-survey and 40 in the post-survey groups. A shift toward positive responses was observed for nine statements (range 0.2% to 34.2%). Non-psychiatric nurse positivism concerning competency to treat/care for suicidal patients was 2.141 times more likely after completing the education module. Chi-squared testing revealed statistically significant improvements with the most significant increase in the nurses' perceived competency scale $\chi^2 = 14.513$ and $p < .0001$. Multi-modal education regarding suicidality can improve nurses' self-efficacy in caring for suicidal patients or those at risk for suicide to promote better outcomes and improved safety.

Keywords: suicide, suicidality, suicide prevention, multi-modal education, suicide prevention education, Suicide Competency Inventory, self-efficacy, confidence, competence

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Table of Contents

SECTION I: PROBLEM RECOGNITION

Problem Recognition and Identified Need.....	1
Problem Statement.....	2
Problem Literature Review.....	2
Definition of Terms.....	5

SECTION II: NEEDS ASSESSMENT

Needs Assessment.....	7
Expanded Literature Review.....	7
Synthesis of Literature.....	8
Literature Review Summary.....	17
Identify Population/Community.....	18
PICOT Statement.....	18
Identify Sponsor and Stakeholders.....	18
Organizational Assessment Including SWOT Analysis.....	18
Assess Available Resources.....	19
Determine Desired and Expected Outcomes.....	20
Team Selection.....	20
Cost/Benefit Analysis.....	20
Define Scope of Project.....	22

SECTION III: GOALS, OBJECTIVES, AND MISSION STATEMENT

Goals.....	23
Process/Outcome Objectives.....	23

Mission Statement.....	24
SECTION IV: THEORETICAL UNDERPINNINGS	
Theory of Self-Efficacy	25
Bandura’s Theory of Self-Efficacy as Project Framework.....	27
Conceptual, Theoretical, Empirical (CTE) Structure	28
SECTION V: WORK PLANNING	
Project Proposal	30
SECTION VI: EVALUATION PLANNING	
Evaluation Plan.....	31
SECTION VII: IMPLEMENTATION	
Project Description.....	33
Projection Implementation.....	33
Setting.....	34
Sample.....	34
Project Design.....	35
Protection of Human Subjects	37
Data Collection	38
Data Analysis	39
Budget.....	39
Limitations	39
Implementation Summary.....	40
SECTION VIII: INTERPRETATION OF DATA AND RESULTS	
Interpretation of Data and Results	41

Sample.....	41
Findings.....	42
Major Findings.....	48
Limitations	49
Implications.....	50
Recommendation	50
Conclusion	51
REFERENCES	52
APPENDIX.....	58

List of Figures

Figure 1. SWOT Analysis.....	19
Figure 2. Diagram of Theoretical Framework	26

List of Tables

Table 1: Pre- and Post-Survey Responses by Statement, Level of Agreement, and Shift Toward Positive Change	43
Table 2: Education-Related Positivism Probability	45
Table 3: Chi-Squared Analysis of Non-Psychiatric Nurses' Self-Efficacy with Suicidality Following an Education Module.....	47

SECTION I

Problem Recognition

Problem Recognition and Identified Need

Suicide is a substantial public health concern in the United States of America (Center for Disease Control and Prevention [CDC], 2017). Inadequate training of nurses in suicide assessment and prevention is a serious safety concern in all healthcare settings (American Psychiatric Nurses Association, 2015; The Joint Commission, 2016). Though inpatient suicide is considered infrequent, it is estimated that the rate of suicides among previously hospitalized patients is three times greater than that of the general population (Dhosseche & Ulusarac, 2001).

World-wide, 800,000 people die of suicide a year; that is roughly one suicide every 40 seconds (World Health Organization [WHO], 2018). In the United States, suicide represents the tenth leading cause of death claiming 44,193 lives in 2015 (Center for Disease Control and Prevention [CDC], 2017; The Joint Commission, 2013, 2017). While suicide has been acknowledged as a serious global public health emergency, the need for action is not only present in distant countries. The United States of America, as well as the project region data, revealed equal urgency related to suicide pervasiveness. Nurses in inpatient settings, however, often feel ill-prepared to assess and address suicidal patients' needs with the same confidence and comfort that they display for patients presenting with any other type of illness (Bolster, Holliday, Oneal, & Shaw, 2015). "The economic cost of suicide and the emotional cost to families are severe" (Valente, 2010, p. 291).

Problem Statement

Nurses are integral to the identification and safe management of patients with suicidal ideations. Yet, acute care hospital nurses in medical-surgical settings often report and display a lack of competence and confidence in identifying and appropriately caring for patients at risk for suicide or with suicidal ideations (Neville & Roan, 2013). Suicide prevention and care for patients vulnerable to suicide must be approached from a broader system perspective and viewed as a barrier to overall health (The Joint Commission, 2016).

Problem Literature Review

Suicide kills more people across the world than war. Each day, roughly 123 Americans die by means of suicide for an annual loss of almost 45,000 American lives (American Foundation for Suicide Prevention [AFSP], n. d.). In North Carolina, suicide was the leading cause of death in 2012 and 2013, and non-fatal self-harm commonly results in hospitalizations and Emergency Department (ED) visits (North Carolina Injury & Violence Prevention Branch, 2015). The counties representing the primary service areas of the project facility showed rates of death per 100,000 residents ranging from 14.6 to 24.3 per 100,000 residents (North Carolina Injury & Violence Prevention Branch, 2015). These local rates are particularly alarming when examined in the national context, which is reported by the World Health Organization (2018) to be between 10.0 to 14.9 deaths per 100,000 population in 2016.

Suicide is a serious public health issue; yet, suicides can be prevented with timely, evidence-based, and often inexpensive interventions (WHO, 2018). Suicide continues to be among the most frequently evaluated sentinel events reviewed by The Joint

Commission and regularly shortcoming in assessment, specifically psychiatric assessment, has been identified as a contributing factor for the sentinel event prevalence (The Joint Commission, 2013). A recent publication by The Joint Commission indicates that a general acute care inpatient setting would be cited for ligature risk should the organization not be able to demonstrate that they are training and testing staff for competency including how staff would address the situation of a patient with suicidal ideation (The Joint Commission, 2017).

In 2016 and 2017 alone, 1,380 patients with suicidal ideations or suicide attempts were treated at the project medical center. It is important to note that only 6.5% of patients had a principle diagnosis of suicidal ideation or suicide attempt demonstrating the complexity of compounding diagnoses and presentation. While the vast majority of patients cared for were either in the inpatient psychiatry units (71%) and the ED (23.7%), nearly (6%) were cared for in the critical care areas (2.5%) and in general medical, surgical, oncology and obstetrics units (2%). Of the 1,380 patients, 20 (1.5%) presented with suicide attempts. Internal risk management data revealed an eight-fold increase in reported incidents of suicide attempts during care delivery encounters at the facility between 2015 and 2017. This increase from one reported suicide attempt in 2015 to 13 in 2017 transpired either in the Emergency Department or the Psychiatric Inpatient units and 62% (8) of incidents involved strangulations and hanging, 23% (3) of cases were overdoses using the patients' home medications and self-inflicted laceration of the wrists accounted for 15 % (2) of reported incidents.

In addition to the demonstrated cost of lives lost in the United States of America (USA) and globally, suicide also had a considerable economic impact on societies. Per

the American Foundation for Suicide Prevention (n. d.), suicide costs the USA \$69 billion annually in medical and work loss cost.

Valente (2010) surveyed 1,200 clinical oncology nurses, and based on the 454 responses found, oncology nurses are likely to interact with patients at risk for suicide and would benefit from suicide prevention education programs to improve nurses' knowledge and competence and hence improve patient safety. Nurses and other healthcare providers often miss signs of potential suicidal ideations and fail to explore suicide risk whilst stoutly focusing on physical symptoms (Valente, 2010). Competence in the assessment of suicidality is an essential clinical skill that has consistently been overlooked (Schmitz et al., 2012). Evaluating and comparing the competence of 230 healthcare professionals in Italy in assessing and managing suicidal patients, Palmieri et al. (2008) found that exposure to patients at risk for suicide was wide-spread, training was scarce and insufficient, and that future training should include an explicit focus on interview skills. In this study, 87% of all participants and 97% of nurses reported the need to improve their competence in managing suicidal patients (Palmieri et al., 2008).

During the monthly medical center Suicide Prevention Team meeting, consisting of stakeholders from the emergency department, psychiatry, critical care, intermediate care, and representatives from the performance improvement department and environmental care, the group was queried about their perception of nurses' 'readiness' to assess and manage patients at risk for suicide. Agreement existed that nurses lack preparedness with respect to assessing and managing suicidal patients throughout the organization. Clinical nurse leaders as well as nurse educators expressed observed

deficits in nurses' confidence and competence in assessing and managing suicidal risk in the various patient populations cared for at the medical center.

Definition of Terms

Definition and exploratory information for key terms and concepts used on this project are the following:

- *Suicide*: death from injury, poisoning, or suffocation where there is evidence that a self-inflicted act led to the person's death (The Joint Commission, 2013),
- *Suicidal behavior*: a spectrum of activities related to thoughts and behaviors that include suicidal thinking, suicide attempts, and completed suicide (The Joint Commission, 2013),
- *Suicidal ideation*: self-reported thoughts of engaging in suicide-related behavior (The Joint Commission, 2013),
- *Suicidality*: a term that encompasses suicidal thoughts, ideation, plans, suicide attempts, and completed suicide (The Joint Commission, 2013),
- *Non-psychiatric nurses*: registered nurses not working in designated psychiatric/mental health units, examples include nurses in general medical-surgical units,
- *Competence*: commonly describes the ability to do something successfully or efficiently,
- *Confidence*: feeling of self-assurance in one's abilities. In the context of this project, confidence is considered an element of self-efficacy,

- *Self-efficacy*: commonly referred to as confidence, is the optimistic self-belief in our competence or chance of successfully accomplishing a task and producing a favorable outcome (Akhtar, 2008).

SECTION II

Needs Assessment

Suicide is a significant public health issue in the United States that is considered preventable (CDC, 2017; WHO 2018). Insufficient prevention, education, and training of nurses and other health professionals in suicide assessment is a patient safety concern in all healthcare settings (American Psychiatric Nurses Association, 2015; The Joint Commission, 2013; Valente, 2010). The immense personal and financial implication of suicide could be lessened by educating nurses on evidence-based suicide risk assessment and intervention (CDC, 2017; WHO 2018).

Expanded Literature Review

Utilizing keywords and phrases from the research question, the existing literature was queried (Melnyk & Fineout-Overholt, 2015). The keywords used in various combinations were: suicide assessment, suicidality, suicide prevention, education, nursing, psychiatric nursing, medical-surgical nursing, education tools, and assessment tool. The keywords were entered into the databases of CINAHL, Cochrane, Turning Research into Practice (TRIP), ProQuest, and PubMed. Boolean operators “AND” or “OR” were used to combine keywords during the literature search. Further narrowing down the result list, the search was limited to peer-reviewed articles between 2000 and 2018 published in the English language. A total of 187 abstracts were reviewed and full text articles applicable to the project were retrieved. Additional references identified as pertinent while reviewing the articles obtained via literature search were also reviewed and retrieved.

This literature search resulted in a wealth of articles highlighting the importance of suicide risk assessment, prevention, and intervention and education on these topics for healthcare professionals. Within the search, several articles specifically related to nursing were identified. While the focus for many articles was broader in scope, a considerable number addressed nursing education needs as well as education methodologies for healthcare professionals overall. Reflective of the global nature of suicide as a public health concern, it is noteworthy that the existing literature originated from several different countries including the United States of America, Australia, United Kingdom, New Zealand, and China.

Synthesis of Literature

To promote integration of the empirical evidence and promote improved understanding of the significance and relevance of the resources, articles were organized in the following themes:

- (1) Knowledge and attitudes of nurses related to suicidality assessment, prevention, and intervention
- (2) Educational programs to enhance nurses' and healthcare professionals' confidence and competence related to suicide assessment, prevention, and intervention
- (3) Educational methodologies, anecdotal/opinion, and regulatory considerations

Theme # 1: Knowledge and attitudes of nurses related to suicidality assessment, prevention, and intervention. Valente (2010) sought to describe oncology nurses' knowledge of risk factors, assessments, and interventions for suicidal cancer patients. This exploratory and descriptive study utilized a mailed-survey methodology to

investigate the knowledge of oncology nurses in a stratified sample of 1,200 Oncology Nursing Society registered nurse members with a 37% (n 454) response rate (Valente, 2010). The author selected oncology nurses as the population for the inquiry because cancer patients have an increased rate of completed and attempted suicides which increases at times of diagnosis, exacerbation, treatment failure, and advanced or terminal stages (Valente, 2010). The survey contained clinical simulations using expert panel validated vignettes to assess nurses' ability to recognize suicide risk factors as well as a qualitative tool containing seven open-ended questions of the Suicide Attitude Questionnaire (Valente, 2010). Nurses rated their suicide knowledge as assessment skills using a four-point Likert scale. Findings indicated that nurses were able to identify some risk factors, such as widower (69.8%), wishes he/she was dead (82.8%), and giving away possessions (79.6%); however, few nurses demonstrated knowledge of correlation between suicidality and demographics such as ethnicity, age, or sex (Valente, 2010). Additionally, nurses inaccurately linked crying or worrying with an increased risk of suicide. Overall, nurses expressed having little to some knowledge and skills of suicide evaluation (Valente, 2010). Although this study was based on a convenience sample using a self-assessment, it had a rather large sample size lending itself applicable to broader generalizability. While the population was oncology nurses, the nature of many chronic conditions follows similar patterns of initial diagnosis, potential exacerbations, and progressive disease stages that would render similar patterns to suicide risk in patients and supports the need for increased medical–surgical nursing education about psychiatric issues.

In the descriptive, non-experimental study, Neville and Roan (2013) investigated non-psychiatric nurses' attitudes towards suicide in hospitalized general medical-surgical patients in the United States of America. While increased global suicide rates and a lack of suicide risk awareness are widely acknowledged, less information is available on suicide during general medical hospitalizations, although physically ill patients are at substantial risk particularly when faced with multiple illnesses (Neville & Roan, 2013). Thus, the goal of this particular study was to gain a more comprehensive understanding of nurses' attitudes toward suicide as well as factors that may influence nurses' attitudes. The authors believed understanding nurses' attitudes concerning suicide to be critical to improving safe nursing care and utilized the Attitudes Towards Attempted Suicide Questionnaire (ATAS-Q), an 80-item survey using a five-point Likert-scale format (Neville & Roan, 2013). The survey was distributed to 85 medical-surgical nurses and 45 were returned yielding a 53% response rate in this convenience sample (Neville & Roan, 2013). Findings suggested a positive correlation between age, educational level, and religion with attitude toward suicide while no difference in positive attitude based on either race or ethnicity were detected (Neville & Roan, 2013). This study supports the need for education about suicide assessment and issues a recommendation to include opportunities for nurses to explore the impact of their own attitudes on accurate suicide risk assessment is needed (Neville & Roan, 2013). Notable limitations to this study are the small sample size and use of a non-probability sample which limit generalizability (Neville & Roan, 2013).

Graham, Rudd, and Bryan (2011) examined factors that predict primary care providers' (PCP) attitudes towards assessing and treating suicidality via anonymous

online survey of 195 practicing PCPs affiliated with medical schools in the United States. A researcher constructed 30-item measure, including demographics, that was initially sent to 1,500 affiliated practitioners (physicians, physician assistants, and nurse practitioners) for whom e-mail addresses were publicly available with 195 PCPs completing the online survey (Graham et al., 2011). Some of the key findings suggested that prior training was predictive of willingness to treat suicidal patients, female gender was predictive of lower self-perceived competence while demonstrating equal willingness to assess and treat when compared to their male counterparts, willingness to assess for suicidality does not equate willingness to also treat, and that PCPs with higher self-perceived competence judged mental health consultations as less essential (Graham et al., 2011). An obvious limitation in this study was the recruitment methodology with a likely skewed sample toward PCPs with an interest in suicide (Graham et al., 2011). While knowledge gleaned from this study support education and training related to suicidality to improve patient care, an additional outcome was the development of a 14-item measure across four scales with an adequate reliability ($>.70$) that assess confidence with suicidality (Graham et al., 2011).

Lund, Schultz, Nadorff, Galbraith, and Thomas (2017) utilized a modified version of the suicide measure developed in a study published by Graham et al. (2011). Lund et al. (2017) eliminated three questions related to prior education and training that are part of the professional training scale and used this modified Suicide Competency Inventory (SCI) and the Suicide Competency Assessment form (SCAF) to investigate the knowledge, perceived comfort, and competency in suicide assessment and intervention in Vocational Rehabilitation (VR) counselors. Two thirds of the 233 VR participants from

eight states reported having received some training related to suicide and demonstrated both a good knowledge of suicide myths and facts as well as willingness to work with suicidal clients (Lund et al., 2017). However, congruent with previous literature findings, most participants did not identify themselves as being competent related to suicide assessment and intervention (Lund et al., 2017). While participation consisted of VR from eight states, it was not a national study which potentially limits the generalizability of the findings. In addition, self-perceived comfort and competence were studied rather than objective measures of competence (Lund et al., 2017). Although this study investigated the comfort and competence of VR, it is reasonable to conceive equal applicability of findings for nursing as well. In addition, this study further validated the reliability of the suicide competency measure originally developed by Graham et al. (2011) and adapted by Lund et al. (2017).

Theme # 2: Educational programs to enhance nurses' and healthcare professionals' confidence and competence related to suicide assessment, prevention, and intervention. Chan, Chien, and Tso (2009) evaluated the impact of an education program on suicide prevention for general hospital nurses utilizing a mixed method design that included a single group pretest-posttest analysis and focus group interviews. The convenience sample of 54 non-psychiatric registered nurses was recruited from the medical and surgical units of two regional hospitals in Hong Kong, China (Chan et al., 2009). The objectives of the education program were to increase nurses' knowledge on suicide prevention, to promote the adoption of a positive attitude, and to enhance nurses' competence in suicide prevention (Chan et al., 2009). The content was validated by an expert panel and consisted of suicide myths and facts, suicide risk and protective factors,

suicide risk assessment, suicide prevention in general hospitals, and support resources for patients and their families (Chan et al., 2009). Chan et al. (2009) found that the education program had a positive impact on nurse-participants' attitude, confidence, and professional skills in caring for patients with suicidal intent. The pretest-posttest comparison was statistically significant in the measures of participants' attitudes and competence levels which supported the use of an educational intervention to assist nurses in acquiring the needed knowledge, competence, and attitude needed to improve care delivery for patients vulnerable to suicidality (Chan et al., 2009). Two notable limitations of this study impeding with wide-spread generalizability were the use of convenience sampling and use of self-rated outcome measures.

The response of health professionals to suicidality is considered an important suicide prevention strategy; however, the effectiveness of this approach is unclear (Ferguson et al., 2018). The study involved a systematic review in eight academic databases of peer reviewed literature regarding the effectiveness of suicide prevention education programs for nurses (Ferguson et al., 2018). Original search criteria identified 5,456 articles of which 11 met the inclusion criteria (Ferguson et al., 2018). Most of the studies were quantitative with three randomized controlled trials, six quasi-experimental and two studies utilized a qualitative methodology (Ferguson et al., 2018). Nine of the 11 studies involved nurses in hospital settings (Ferguson et al., 2018). This systematic review revealed positive changes in nurses' competence, knowledge, and attitudes associated with training over the short term; though, long-term changes in clinical practice should be examined (Ferguson et al., 2018). While the authors noted weaknesses in the methodologies of the literature evaluated, potentially limiting the conclusion that

can be drawn, there is moderate body of knowledge that supports effectiveness of educational programs (Ferguson et al., 2018).

Patient and environmental assessments are at the core of suicide prevention. Interventions, such as education to increase the effectiveness of the nurse-patient relationship and increase the confidence in which nurses interact with patients are therefore considered interventions of prevention (Manister, Murray, Burke, Finegan, & McKiernan, 2017). Manister et al. (2017) studied the effectiveness of a one-hour staff education class to increase inpatient nurses' confidence to talk with patient about suicidal thoughts and their knowledge about the appropriate actions to take when a patient with suicidal thoughts is identified. A pretest-posttest electronic survey design of community nurses was utilized in this study. Manister et al. (2017) found that education significantly increased nurses' confidence to talk to patients about suicide and also increased their knowledge of needed safety actions when suicidality is identified. Limitations of this study included the use of a convenience sample, having been conducted at a single location, and pre-class and post-class surveys not being matched. These findings supported the value of focused in-service to increase nurses' confidence to dialogue with patients, hence positively impact nurses' self-efficacy as part of suicide prevention.

Theme # 3: Educational methodologies, anecdotal/opinion, and regulatory considerations. Various methods exist to convey knowledge, facilitate understanding, increase skills, and promote retention of educational content. Eppler (2006) compared concept mapping techniques to mind maps, conceptual diagrams, and visual metaphors. This systematic comparison of the four methods shows that a combined, sequenced use of

all four methods can provide considerable benefits that go beyond the possibilities of each method alone (Eppler, 2006).

The notion of mixed-methodologies is further supported in the recommendations made by the American Association of Suicidology Task Force report which asserts in several of the six recommendations the need for education in academia as well as continued education post-licensure (Schmitz et al., 2012). Further, the Task Force emphasizes that didactic training may not be synonymous with effective skill building related to suicidality and appropriate patient care (Schmitz et al., 2012).

Qiao et al. (2014) evaluated learning methods, attractiveness and effectiveness of curricula, progression from novice to expert, and cognitive load theory on medical students' learning. While a range of methods are used in medical education, much memorization is still required; therefore, concepts related to cognitive load need to be considered when education is developed to enhance content memorization and later retrieval using short-term, long-term, and working memory. Qiao et al. (2014) concluded that the clinical reasoning needed to progress from novice to expert is a complex process with a high intrinsic cognitive load which may be more readily attained using problem-based learning, such as practice examples or schemata. Although Qiao et al. (2014) examined the learning process in medical students, it is this author's belief that nurses experience a similar phenomenon of novice to expert that is based on the ability to translate memorized knowledge, skills, and experiences into the clinical expertise applied during patient care.

Soccio (2017) investigated the effectiveness of simulation compared to traditional clinical hours for mental health education of baccalaureate nursing students using a

mixed-methods design where 48 students were randomly assigned to experimental and control groups. Results revealed that students who received mental health simulations for 24% of their clinical hours had equivalent knowledge and self-confidence as those with traditional clinical hours only (Soccio, 2017). Qualitative data suggested that students that substituted clinical hours with simulations found the simulations helpful in learning patient behavior management (Soccio, 2017). Clinical site placement for students can be challenging, especially in the mental health sector, and learning experiences cannot be guaranteed; therefore, feasible alternatives and adjuncts to traditional clinical hours are critical for mental health nursing education (Soccio, 2017). Soccio (2017) emphasized that while simulations have increased in nursing education, mental health literature examples did not exist. Further, an emphasis on standardized realistic examples are highlighted as key to the positive learning outcome (Soccio, 2017).

According to Foronda, Hudson, and Budhathoki (2017), virtual simulation has been proposed as an effective pedagogy to teach skills in nursing, such as communication, decision-making, team work, leadership or disaster management. Foronda et al. (2017) investigated the use of in-class virtual simulation to Teach Evidence-Based practice (EBP) on nursing cognitive knowledge of EBP as well as affective knowledge of how evidence impacts clinical decision-making using a pretest post-test design with a convenience sample of 108 prelicensure master's entry level nursing students. Cognitive as well as affective knowledge related to EBP increased at statistically significant levels and 82% of students agreed that virtual simulation should be offered in the future (Foronda et al., 2017). While this study did not use any randomization and consisted of a small, single site sample only, it evaluated the use of

virtual simulation in a new area of education topic that had not been evaluated before and supports the use of this education methodology outside the more conventional education topics, such as assessment skill acquisition.

Nagle, McHale, Alexander, and French (2009) provided an overview of simulation history and methodologies as well as a review of a simulation program at a large academic medical center. Key benefits of simulation are related to the effectiveness for task or skill training while also serving as a successful education tool for high-level skills such as communication, decision-making or teamwork (Nagle et al., 2009). Simulation requires educators to adopt new teaching methods, utilize supportive tools such as mannequins, and develop realistic scenarios with key nursing stakeholders to gain organizational commitment (Nagle et al., 2009). Nagle et al. (2009) concluded that simulation is a valuable teaching method for nurses at all experience levels and allows the educator to create realistic scenarios to test and “apply theoretical knowledge in a controlled environment without risk to the patient.” (p. 24).

Literature Review Summary

The review of available literature proved advantageous to the formulation of the project, resulting in a variety of publications that offered the current state of the evidence related to importance, significance, and knowledge about suicide risk assessment and care management in non-psychiatric nurses. Furthermore, the literature review findings support the need for education not only for nurses, but for other healthcare providers in the United States and world-wide. The review also demonstrated that innovative methods using various teaching methodologies to promote long-term memorization and recall are most advantageous to teach content related to suicidality.

Identify Population/Community

The population for this project consisted of English-speaking, non-psychiatric registered nurses employed in a suburban acute care hospital setting located in western North Carolina.

PICOT Statement

Do non-psychiatric nurses in an acute care hospital setting who complete an electronic education intervention about suicide risk factors, prevention, management and safe care report an increase in perceived confidence in assessment and care of patients vulnerable to suicide after the education?

Identify Sponsor and Stakeholders

The impact of this project was wide-reaching, henceforth, a number of stakeholders are identified. The stakeholders were non-psychiatric nurses, patients, the organizations' professional development coordinators, psychiatric nurses and leadership as subject matter experts related to suicidality, nursing leadership and administration, the department for organizational learning, members of the suicide prevention team, the medical center's researcher, and the vice president for regulatory compliance at the study facility. The sponsor for the project was the administrator for inpatient and outpatient psychiatry services.

Organizational Assessment including SWOT Analysis

In addition to the presence of supportive evidence, the project required a distinct need that included a clear and honest assessment by stakeholder in the organization to ensure organizational readiness. Various meetings with the sponsor and stakeholders occurred to discuss the project problem, review current data and available literature as

well as brainstorm during informal discussions/conversations the stakeholders' perception of staff 'readiness' related to suicide risk assessment, intervention, and care management. The sponsor and identified stakeholders conveyed and expressed need and were fully supportive of the current project.

The SWOT analysis below (Figure 1) shows the internal strengths and weaknesses as well as external opportunities and threats of this project.

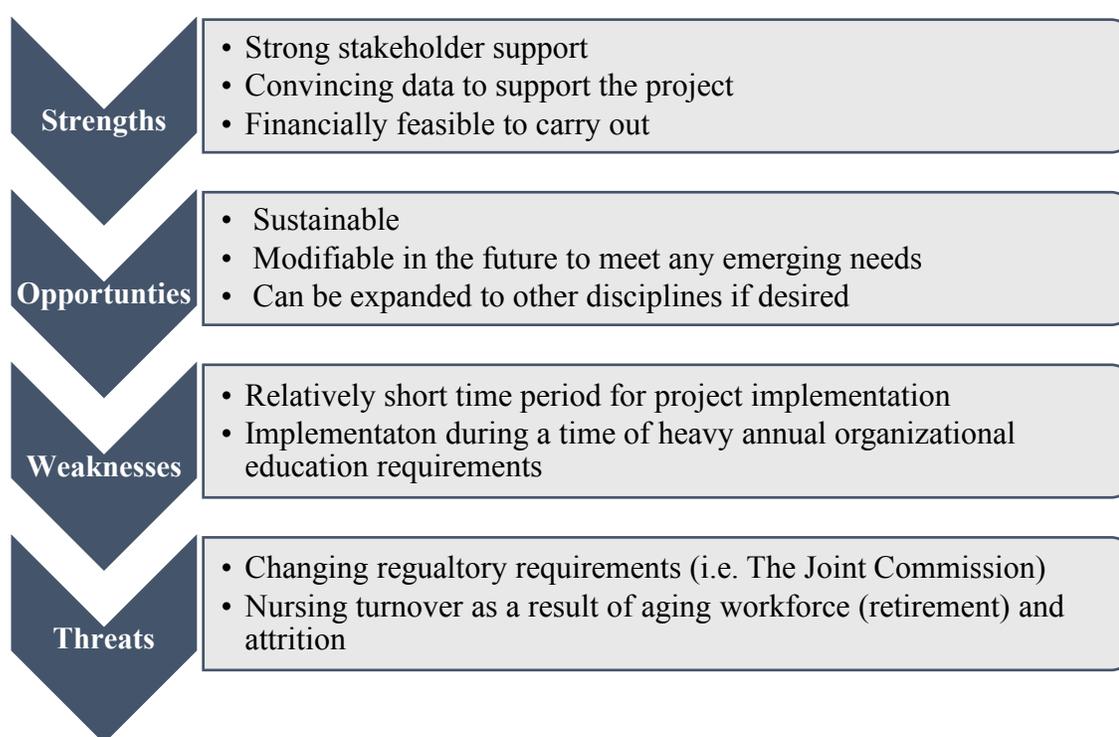


Figure 1. SWOT Analysis

Assess Available Resources

While performing the organizational assessment, it was found that there was fundamental organization support for the project. The support extended to human, fiscal,

and technology resources. These included access to clinical, educational, and subject matter experts, and access and support for use of the organization's education system to deploy the education modules to nurses.

Determine Desired and Expected Outcomes

After completion of the educational module, nurses will describe an increase in self-reported, perceived level of self-efficacy related to suicide risk factors, assessment intervention, and care management.

Team Selection

The project team consisted of three members in addition to the project leader. The project members included the university faculty project chair, a nursing leadership representative for the organization's inpatient and outpatient psychiatric services who is prepared at the Doctor of Nursing Practice-level and has greater than 15 years of mental health experience, and a Doctor of Philosophy prepared researcher with also more than 15 years of experience advancing research and evidence-based practice utilization. Each team member was frequently consulted for guidance and feedback throughout the project phases.

Cost/Benefit Analysis

Upon initial project planning, a preliminary cost projection was completed to assist with stakeholder engagement and foster support for the project. It was estimated that the education would consist of an education session lasting a total of approximately forty-five (45) minutes that would be preceded and followed by a survey assessing perceived, self-reported confidence or self-efficacy related to suicidality. The surveys were estimated to take no longer than 10 minutes each to complete for a total education

and survey completion time of 65 minutes. The population consisted of non-psychiatric nurses which is estimated to be roughly 500 nurses at the present time. The average hourly rate for nurses at the organization is estimated at \$35 which brings the overall salary investment for the completion of the educational intervention in this project to \$13,050.00 for the education module and approximately \$5,833.33 for survey completion which would be considered non-productive education hours for the direct care nursing population in the project. Additionally, there was a time commitment needed from various stakeholders throughout the project which is estimated at roughly 50 hours total for an additional \$1,600 to \$2,000 in human resource expenditure depending on the stakeholders needed. Since the software application to deploy and track education and completion already exists, there were no additional cost related to technology utilization. There was no cost for the use of the survey tool to identify the impact of the educational intervention.

When assessing the cost of the project, it is prudent to view the cost in the context of potentially avoided cost. While no suicidality cost data exists, the American Foundation for Suicide Prevention (n.d.) estimates that suicide costs the United States an astounding \$69 billion annually. It is important to note that this cost figure includes actual cost associated with care as well as additional facets such as loss of productivity or other cost to the society at large. In the absence of direct organizational return-on-investment numbers, it is in the author's eyes imperative to acknowledge the value of avoiding any lives lost that could potentially be attributed to nurses' ill-preparedness to assess and manage suicidality.

Define Scope of Project

The scope of the project included the development of an educational intervention in the shape of an education module on suicidality. The education was vetted by the organization's sponsor and project team members and includes up-to-date statistics, suicide risk factors, patient safety considerations, and nursing care management grounded in best evidence. The education utilized various methodologies for content delivery to enhance memorization and information recall and was delivered to non-psychiatric nurses at the organization. After completion of the education module, the learner was anticipated to report increased self-efficacy in assessing patients at risk for suicide, maintain patient safety, and manage patient care. Organizational project stakeholders included nurses, nursing professional development coordinators, nursing leadership, the suicide prevention team, patients, organizational learning, and the project sponsor. The project timeframe was August 2018 to April 2019. The project deliverables were the education module and pre-post data related to non-psychiatric nurse self-reported perceived level self-efficacy related to suicidality and the management thereof.

SECTION III

Goals, Objectives, and Mission Statement

Goals

The goal of this project was to improve non-psychiatric nurses' perceived self-efficacy with suicidality including understanding suicide risk factors, identifying suicidality, implementing suicide prevention precautions and appropriately managing the care of this vulnerable population through an educational module.

Process/Outcome Objectives

The purpose of this project was to measure the effect of an educational module on non-psychiatric nurses' perceived self-efficacy in assessing and identifying patients at risk for suicide as well as implementing suicide prevention and management strategies. The initial objective was to close the knowledge gap that exists in non-psychiatric nurses to improve the safety for patients at risk for suicide in non-psychiatric inpatient care settings.

The educational intervention consisted of a multi-modal learning module that uses various teaching methodologies ranging from traditional didactic teaching to visual aids, videos, virtual simulation, and 'hands-on' risk factor identification using scenarios. The content delivered in the module consisted of four main elements: (1) relevant statistics to demonstrate the significance, prevalence, and impact of suicide in the United States, regionally as well as in the local community, (2) suicide risk factors and warning signs pertinent in the risk assessment process, (3) patient safety consideration, and (4) general patient care management components.

Mission Statement

The mission of this project was to increase the perceived self-efficacy of non-psychiatric nurses expressed ability to identify and manage the care of the vulnerable population of suicidal patients or those with suicidal ideations.

SECTION IV

Theoretical Underpinnings

Theory of Self-Efficacy

To conceptually guide this project, Albert Bandura's Theory of Self-Efficacy was selected as the theoretical framework (Bandura, 1986, 1994). Self-efficacy is described as the core of the broader social cognitive theory and has been utilized in many real-world applications to increase people's confidence in mastering tasks and learning new skills in setting such as but not limited to schools, sports, mental health, business, and politics (Bandura, 1986, 1994; Braungart & Braungart, 2018; Bumann & Younkin, 2012; Kitching, Cassidy, Eachus, & Hogg, 2011). Central to Bandura's theory is the hypothesis that self-efficacy involves a complex interaction of cognitive, social, and behavioral sub-skills that must be organized into integrated courses of action that serve a variety of purposes (Bandura 1986). Bandura (2010) asserts that unless people believe they can produce a desired outcome as a result of their actions, they have little motivation to undertake an activity.

According to Bandura, four principle sources of information support the development of an individual's self-efficacy belief: (1) mastery experience or performance accomplishment meaning successfully achieving the desired outcome, (2) vicarious experience defined as observing others achieving an outcome or social modeling where the individual believes an outcome can be attained by virtue of seeing it done, (3) social persuasion, such as encouragement or reassurance, and (4) physiological response or emotional arousal, such as anxiety as a sign of vulnerability which can be

managed if the awareness exists (Bandura, 1994; Braungart & Braungart, 2018; Bumann & Younkin, 2012; Kitching et al., 2011).

Each of the four concepts exert different levels of influence on the self-efficacy perception of an individual with mastery or performance accomplishment representing the most influential source as it is based on personal experience (Bandura, 1997). Vicarious learning, although less effective than personal experience, can enhance a person's self-efficacy by seeing others perform an activity successfully. The third source of efficacy in Bandura's theory is verbal persuasion, which is considered a weaker source, but at the same time is commonly used perhaps because it is reasonably easy to perform. Lastly, emotional arousal represents the fourth source of self-efficacy and is representative of placing an individual in an emotionally simulative situation (Bandura, 1986; Kitching et al., 2011). A visual representation of the concepts in this theoretical framework are shown in Figure 2.

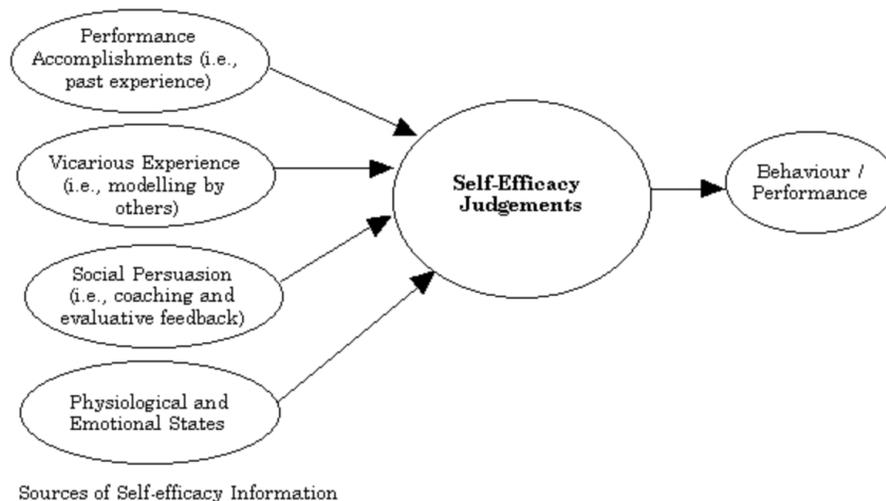


Figure 2. Diagram of Theoretical Framework (Bandura, Albert: Social learning theory and self-efficacy model, 2012)

Bandura's Theory of Self-Efficacy as Project Framework

Self-efficacy is not only about knowledge or knowing things; it is about perceiving that one has the confidence to complete the task, even if one does not have direct experience with the topic at hand (Bandura, 1986; Braungart & Braungart, 2018). People with high assurance in their abilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided; whereas, people who doubt their capabilities shy away from difficult tasks because they view them as personal threats (Bandura, 1994). Self-efficacy is well established within the education sector to positively correlate with achievement outcomes (Kitching et al., 2011).

Bandura (1997) asserts that self-efficacy is the strongest indicator of confidence and that one cannot truly be competent in a task without having a strong sense of confidence in one's ability to perform a task successfully. Consequently, for the purpose of this project, perceived self-efficacy is measured by the nurses' expressed confidence in assessing, managing and intervening with patients at risk for or expressing suicidal ideations (Bandura, 1997). Bandura's Theory of Self-Efficacy consisting of the four previously described sources was used as a tool to promote capabilities related to suicidality care and management by applying the sources of self-efficacy in the education module for this project. A combination of performance accomplishment, vicarious learning, verbal persuasion, and concern for participants' psychological and emotional responses were utilized to educate nurses about suicidality. This author developed a virtual education module including videos about suicide misconceptions, risk factors and warning signs, virtual simulation activities, self-recorded care scenario videos, outline the role of the healthcare professional, and relevant statistics. The virtual simulation

activities were designed to allow for performance accomplishment and vicarious experience while also providing feedback to reproduce verbal persuasion in a digital format.

Simulation and scenario-based simulations have demonstrated their usefulness as teaching methods not only for nursing tasks, but also high-level skills such as communication, decision-making or teamwork (Nagle et al., 2009; Kim, Hwang, & Cho, 2018). Furthermore, Foronda et al. (2017) emphasized that virtual simulation fosters immersive and problem-based learning experience to practice decision-making and posit nurse educators may benefit from exploring this novel pedagogy. The virtual simulation content used in this project included educational videos, identification of common room hazards with virtual screen capture of items that could pose ligature risks for a suicidal patient, and patient scenarios in which the participants identify the most appropriate next steps including direct feedback on their choices.

Conceptual, Theoretical, Empirical (CTE) Structure

Butts (2018) defines CTE as a system “to provide a purposeful and systematic process for practice, that is, a practice methodology” (p. 106). The CTE for this project describing the conceptual, theoretical, and empirical elements related to non-mental health nurses perceived level of self-efficacy expressed as perceived confidence with suicidality is shown in the Appendix. This project had its theoretical underpinning in Bandura’s Theory of Self-Efficacy and the associated aforementioned concepts. To evaluate the education module impact on non-mental health nurses’ perceived self-efficacy or confidence with the care and management of suicidality, the Suicide Competency Inventory (SCI), a modified version of the original suicide confidence

measure developed by Graham et al. (2011), was utilized (Lund et al., 2017). The SCI is a modified version of the original 14-item suicide assessment competency measure excluding three questions/statements assessing suicide training and experience (Lund et al, 2017). The 11 questions/statements in the SCI are rated using a 5-point Likert-type scale with the response options of strongly disagree, disagree, neutral, agree, and strongly agree (Lund et al, 2017).

The original tool conceptualized the scale to include four scales: professional training scale, not included in the modified SCI version, perceived competency to treat suicide scale, willingness to treat suicide scale, and lastly willingness to assess suicide scale (Graham et al., 2011; Lund et al., 2017). Graham et al. (2011) recorded adequate internal consistency for all scales with Cronbach's alpha scores of $\alpha = .67, .82, .88,$ and $.74$ respectively.

SECTION V

Work Planning

Project Proposal

The scope of the project included the development of an educational intervention on suicidality that includes definitions, up-to-date statistics, common misconceptions, suicide risk factors, patient safety considerations, and nursing care management grounded in best evidence. The education utilized various methodologies for content delivery, such as a YouTube video about common misconceptions, video vignettes/scenarios, and virtual identification of common hazards in patient rooms to enhance content assimilation and recall. It was expected that the learner would report an increased level of confidence and self-efficacy in assessing patients at risk for suicide, maintaining patient safety, and managing patient care after completing the education. The non-psychiatric nurse-perceived level of confidence was measured using the Suicide Confidence Inventory (SCI) developed by Graham et al. (2011). Permission to use the 14-item Likert-Scale inventory and modify it to reflect 11-items in the survey was obtained from the author and the survey was administered prior to and after completion of the education module. Since it was expected that facility nurses would report increased self-efficacy in responding and managing suicidality, a positive impact on nurses' ability to provide better-quality and holistic care was also anticipated. Improved facility nurses' awareness and confidence related to suicidality has the potential to positively impact patient care by earlier identification and improved safety and care management.

SECTION VI

Evaluation Planning

As noted by Zaccagnini and White (2017), a sound plan for evaluation promotes accountability to the stakeholders by demonstrating quality improvement and effectiveness in the particular project population. Herein forth, the identified plan to evaluate the effectiveness of the project implementation.

Evaluation Plan

A pivotal component in evaluating the effectiveness of a project is to find the ideal measurement tool that has not only shown reliability and validity to measure the project domain, but is also appropriately assessing the outcome, feasible to use, responsive in the context of measuring an outcome over time, and acceptably assessing the outcome for the project population (Zaccagnini & White, 2017). For this project, the non-psychiatric nurses' self-reported perceived level of confidence was measured using the Suicide Competency Inventory (SCI) originally developed by Graham et al. (2011). The SCI has been determined to be a suitable tool to utilize in the evaluation process based on the previously described criteria.

The 14-item measure with questions/statements across the four scales of professional training, perceived competency to treat suicide, willingness to treat suicide, and willingness to assess suicide demonstrated adequate reliability ($>.70$) to assess confidence with suicidality (Graham et al., 2011). Further, Graham et al. (2011) recorded adequate internal consistency for all sub-scales with Cronbach's alpha scores of $\alpha = .67, .82, .88,$ and $.74$ respectively. Lund et al. (2017) used a modified version of the original 14-item suicide assessment competency measure excluding three statements

assessing suicide training and experience (Lund et al., 2017). Much like the original inventory, the 11 remaining statements in the modified SCI are rated using a 5-point Likert-type scale with response options of strongly disagree, disagree, neutral, agree, and strongly agree (Lund et al., 2017). Internal consistency was found to be high for competency ($\alpha = .87$), willingness to treat ($\alpha = .96$), and willingness to assess ($\alpha = .85$) scales (Lund et al., 2017). Permission to use the SCI excluding the education scale for this project has been obtained from the original author.

To obtain SCI data from learners related to their perceived self-efficacy, the inventory statements with associated Likert-Scale response options was built in an online survey tool utilizing the SurveyMonkey® platform. The online survey was voluntarily completed before the start of the education module and after completion.

SECTION VII

Implementation

Project Description

Nurses are integral to the identification and safe management of patients with suicidal ideations. Yet, acute care hospital nurses in medical-surgical settings often report and display a lack of competence and confidence in identifying and appropriately caring for patients at risk for suicide or with suicidal ideations (Neville & Roan, 2013). Suicide prevention and care for patients vulnerable to suicide must be approached from a broader system perspective and viewed as a barrier to overall health (The Joint Commission, 2016). This scholarly project aimed to improve the safety of patients at risk for suicide in the acute care medical setting by increasing non-psychiatric nurse-perceived self-efficacy after completion of an educational intervention.

Project Implementation

The purpose of this project was to improve nurse self-efficacy with suicidality before and after an education module. The population consisted of registered nurses working primarily in non-psychiatric work areas in a community acute care hospital. The goal of this project was to improve non-psychiatric nurse-perceived self-efficacy with suicidality including understanding suicide risk factors, identifying suicidality, implementing suicide prevention precautions, and appropriately managing the care of this vulnerable population through an educational module using various teaching methodologies including traditional teaching methods, didactic learning, a suicide misconceptions YouTube video, virtual simulation of common hazards in a patient room, pictures/images, and three learning videos depicting potential care scenarios. The

mission of this project was to increase the perceived self-efficacy of non-psychiatric nurses' expressed ability to identify and manage the care of the vulnerable population of suicidal patients or those with suicidal ideations. The project utilized a modified version of the SCI developed by Graham et al. (2011) to compare pre- and post-education intervention survey results.

Setting

The project was conducted in a mid-size non-profit hospital located in western North Carolina. In 2017, the medical center had more than 11,000 hospital admissions with a little more than 52,000 inpatient days, more than 60,000 emergency department visits and over 11,000 operating room procedures. Among the total number of beds, the facility had a designated psychiatric unit that serves as a referral site for surrounding hospitals.

Sample

The population consisted of registered nurses working in non-psychiatric units at a community acute care medical center assigned the mandatory education. Based on convenience sampling, a minimum of fifty (50) participants were anticipated. Nurses working in the hospital's designated psychiatric units were excluded. Convenience sampling was used in the project. Recruitment e-mails were distributed by the facility's Department for Research & Evidence-Based Practice. E-mail content provided by the project leader included academic affiliation, concise description of the project, risk and benefits, preservation of confidentiality, voluntary participation, and a link to the electronic survey. Nurses submitting the pre-education and/or post-education electronic survey were enrolled. The pre-test survey was administered before the education was

assigned and the post-test survey after the education had been completed. Once each survey was deployed, it remained open for completion for two weeks. The mandatory education was delivered via the organization's education software.

Project Design

A descriptive design was utilized to examine nurse-perceived self-efficacy in assessing and caring for patients at risk for suicide. Methods included a pre-test survey, an education module intervention, and a post-test survey. The education module addressed suicide risk factors, misconceptions, prevention, management, and safe care served as the best-practice intervention. The newly developed education module utilized various teaching methodologies including traditional teaching methods, didactic learning, a suicide misconceptions YouTube video, virtual simulation of common hazards in a patient room, pictures/images, and three learning videos depicting potential care scenarios. Employing diverse learning strategies was anticipated to promote improved content retention and information recall in the learners. The education module was developed by the project leader in collaboration with the organization's suicide prevention team. The mandatory education was delivered via the organization's education software. The pre-test survey was administered before the education was assigned and the post-test survey after the education had been completed. The pre-test/post-test survey links were included in the recruitment e-mails that were sent by the facility's Department for Research & Evidence-Based Practice before the education was assigned and after it had been completed.

The mandatory education module, taking approximately 45 minutes to complete, was delivered via the organization's education software late September 2018 after the

project was approved by the facility's and the university's Institutional Review Boards (IRB). The due date for completion of the education was December 31st, 2018. The pre-intervention electronic survey was administered before the education was assigned and the post-intervention survey after the education had been completed. The surveys, which required an approximate 10-minute time commitment per survey, were self-administered via links to the electronic platform, SurveyMonkey®, embedded in the recruitment e-mails. The landing page of the electronic survey was the Informed Consent Form. Entry into the survey occurred only when a potential participant chose the 'I agree to participate' option. The choice of 'I decline to participate' automatically exited the individual from the survey. Furthermore, one could withdraw from the project participation at any point prior to submitting the survey by closing the survey browser.

Existing evidence suggests utilizing various teaching methods can positively impact learner's understanding, knowledge, skill acquisition, and promote retention of education content (Eppler, 2006; Schmitz et al., 2012). In addition, according to Foronda et al. (2017), virtual simulation has been proposed as an effective pedagogy to teach skills in nursing, such as communication, decision-making, team work, leadership, or disaster management. The newly developed education module utilized various teaching methodologies including traditional teaching methods, didactic learning, a suicide misconceptions YouTube video, virtual simulation of common hazards in a patient room, pictures/images, and three learning videos depicting potential care scenarios. Employing diverse learning strategies was anticipated to promote improved content retention and information recall in the learners.

Protection of Human Subjects

The project proposal was approved by the organization Institutional Review Board (IRB) and the university IRB. Non-psychiatric nursing staff that were assigned the mandatory education module received the pre- and post-recruitment e-mails which were distributed by the Department for Research & Evidence-Based Practice to avoid any inadvertent coercion. E-mail content provided by the project leader included academic affiliation, concise description of the project, risk and benefits, preservation of confidentiality, voluntary participation, and a link to the electronic survey. The landing page of the electronic survey represented the Informed Consent Form. Entry into the survey occurred only when a potential participant chose the 'I agree to participate' option. The choice of 'I decline to participate' automatically exited the individual from the survey. Furthermore, one could withdraw from participation at any point prior to submitting the survey by closing the survey browser. To ensure protection of the participants, an anonymous survey was employed. The inherent anonymity provided absolute confidentiality of one's participation in the optional survey portion of the project. Furthermore, the anonymous survey responses were retrieved from SurveyMonkey® by the Director for Research & Evidence-Based Practice and subsequently provided to the project leader.

Non-psychiatric nurse-perceived self-efficacy before and after the education was measured using the SCI developed by Graham et al. (2011). Permission to use and modify the original 14-item tool was obtained from the author. The original tool conceptualized four scales: professional training scale, not included in the modified SCI version, perceived competency to treat suicide scale, willingness to treat suicide scale,

and lastly willingness to assess suicide scale (Graham et al., 2011; Lund et al., 2017).

Graham et al. (2011) recorded adequate internal consistency for all scales with Cronbach's alpha scores of $\alpha = .67, .82, .88,$ and $.74$ respectively. The modified version of the SCI used in this project excludes three statements assessing suicide training and experience. The remaining 11 statements in the SCI are rated by the participants using a 5-point Likert-type scale option of strongly disagree, disagree, neutral, agree, and strongly agree.

Data Collection

The 11-item Likert scale SCI inventory pre-and post-intervention surveys were self-administered using SurveyMonkey® delivered via links in the pre-and post-recruitment e-mails. Participants rated their agreement with each of the statements by selecting the most applicable responses from Likert Scale options. The pre-survey was sent two weeks prior to the education module assignment and the post-education recruitment e-mail was sent early January 2019 after the education completion deadline of December 31, 2018 had passed. Data was retrieved from SurveyMonkey® by the Director for Research & Evidence-Based Practice who provided the project leader with survey response data.

Survey data collection protocols were developed and collected in a way to protect the privacy of participants. All participants were informed that confidentiality would be strictly preserved. The only individuals who had permission to view the inventory data were the primary investigator and members of the project committee. Data was recorded electronically in Microsoft Excel and stored on a secure organizational server requiring

two levels of password protection to access. Following project completion, data will be stored and later destroyed in accordance with university and facility protocols.

Data Analysis

Descriptive statistics (frequency, percentage, probability) were used to summarize response distributions as well as shifts toward positivity following completion of the education module. The shift towards more positive responses, i.e., positivity, positive change, was determined by subtracting the percentage of positive pre-education survey responses from the corresponding post-education positive response percentages for each SCI statements. Additionally, positivism probabilities were calculated for the three SCI scales. These non-matched pre-intervention and post-intervention data were evaluated for statistical significance using chi-squared analysis.

Budget

Participants did not receive any compensation for agreeing to participate in this project. The education module was deployed using the existing organizational education platform, so no new cost was associated with the electronic education module occurred. Since nurses are compensated for mandatory education, the time required to complete the education module did not constitute any new cost to the organization. It is prudent, however, to note that the time investment for the education was higher for this new education module compared to the education used by the organization in years prior.

Limitations

Some foreseeable limitations included information gathered from a single site, small sample size as a result of electronic survey distribution, and convenience sampling.

Since the project leader works at the organization, it is conceivable that nurses may have perceived participation as socially desirable, which may limit findings.

Implementation Summary

A descriptive project was designed to examine nurse-perceived self-efficacy in assessing and caring for patients at risk for suicide. Methods included a pre-test survey, an education module intervention, and a post-test survey. The evidence-based intervention implemented in the project was an education module addressing suicide risk factors, prevention, management, and safe care using various teaching methodologies to enhance learning outcomes served as the best-practice intervention. The newly developed multi-modal education module utilized traditional teaching methods, didactic learning, a suicide misconceptions YouTube video, virtual simulation of common hazards in a patient room, pictures/images, and three learning videos depicting potential care scenarios. Using diverse education strategies was expected to promote improved content retention and information recall in the learners.

SECTION VIII

Interpretation of Data and Results

The purpose of this project was to evaluate if non-psychiatric nurses' self-efficacy with preserving a safe environment and managing care of a patient at risk for suicide in the acute care medical setting increased after a multi-modal education module. This project compared nurses perceived self-reported level of comfort and confidence using a survey that was administered before and after the completion of the education module. It was anticipated that the newly developed education module using a combination of teaching methods would impart an increase in self-efficacy with suicidality. This section presents the quantitative results of the data analysis, including the survey statements frequencies, proportions, and pre-/ post-survey positive, negative, and neutral result comparisons. Positivity proportions, positive shift, positivism probability, and chi-squared testing (χ^2) was used to evaluate the pre- and post-survey response distribution and significance.

Sample

Of the 520 nurses working in non- psychiatric care area, 28 participated in the pre-test survey. However, two participants withdrew from the project by exiting the survey prior to submission. For the post-test survey, 40 nurses participated. The project population (N=66) was not comprised of equal pre- and post-samples as the anonymous nature of the survey did not allow for matched data. Also, the voluntary nature of project participation contributed to the dissimilar pre- (n=26) and post- (n=40) samples. Participants were asked to rate their agreement by selecting the most applicable response from the options of strongly disagree, disagree, neutral, agree, and strongly agree.

Statements one through six are written as positive statements, so agreement with the statement was indicated when a participant selected agree or strongly agree; whereas statements seven through 11 are written in the opposite manner where a positive agreement was present when the responded selected the choices of disagree or strongly disagree.

Findings

To assess the impact of the newly developed multi-modal education intervention, the pre-and post-survey responses were compared. The survey responses are combined to reflect positive and negative agreement and neutral stance toward the statement content. For statements one through six, 'agree' and 'strongly agree' represent positive agreement and 'disagree' and 'strongly disagree' indicate negative agreement. Due to the nature of the statement content, the order for statements seven through 11 is reversed with 'disagree' and 'strongly disagree' signifying positive agreement and 'agree' and 'strongly agree' denoting negative agreement. Table 1 displays positive, negative, and neutral responses for each statement of the modified Suicide Competency Inventory for the pre-education survey and post-education survey by frequency and percentage. In addition, the shift towards more positive responses was assessed by establishing the difference between the pre- and post-survey agreement rates to identify a 'positive shift/change' for each statement.

Table 1

Pre- and Post-Survey Responses by Statement, Level of Agreement, and Shift toward Positive Change.

n (%)	Pre-Education Survey (n = 26)			Post-Education Survey (n = 40)			Positive Change % Shift‡
	Positive†	Negative†	Neutral	Positive†	Negative†	Neutral	
Perceived competency to treat/care for suicide scale							
S1	8 (30.8%)	14 (53.8%)	4 (15.4%)	26 (65.0%)	7 (17.5%)	7 (17.5%)	34.2%
S2	6 (23.1%)	15 (57.7%)	5 (19.2%)	20 (50.0%)	13 (32.5%)	7 (17.5%)	26.9%
Willingness to treat/care for suicide scale							
S3	24 (92.3%)	1 (3.8%)	1 (3.8%)	37 (92.5%)	0 (0.0%)	3 (7.5%)	0.2%
S4	25 (96.2%)	0 (0.0%)	1 (3.8%)	38 (95.0%)	0 (0.0%)	2 (5.0%)	-1.2%
S5	20 (76.9%)	3 (11.5%)	3 (11.5%)	32 (80.0%)	2 (5.0%)	6 (15.0%)	3.1%
S6	24 (92.3%)	3 (11.5%)	2 (7.7%)	36 (90.0%)	0 (0.0%)	4 (10.0%)	-2.3%
Willingness to assess suicide scale							
S7	20 (76.9%)	2 (7.7%)	4 (15.4%)	38 (95.0%)	2 (5.0%)	0 (0.0%)	18.1%
S8	20 (76.9%)	5 (19.2%)	1 (3.8%)	36 (90.0%)	4 (10.0%)	0 (0.0%)	13.1%
S9	19 (73.1%)	7 (26.9%)	0 (0.0%)	38 (95.0%)	2 (5.0%)	0 (0.0%)	21.9%
S10	24 (92.3%)	0 (0.0%)	2 (7.7%)	39 (97.5%)	0 (0.0%)	1 (2.5%)	5.2%
S11	19 (73.1%)	3 (11.5%)	4 (15.4%)	34 (85.0%)	5 (12.5%)	1 (2.5%)	11.9%

† Positive indicative of Agree/Strongly Agree for Q1-6 and Disagree/Strongly Disagree for Q7 – 11

‡ Shift toward positive responses assessed by subtracting the positive % of the pre-survey from the post-survey responses

The survey consisted of 11 statements spanning across three scales: (1) Perceived Competency to treat/care for suicide scale, (2) Willingness to treat/care for suicide scale, and (3) Willingness to assess suicide scale. For nine out of these 11 statements, a favorable shift in positive responses was observed. A positive shift of greater than 10% occurred with six of the 11 statements.

Changes toward increased positivity were assessed at the scale level. The greatest (or largest) positive shift (range 26.9% to 34.2%) was found to be the ‘perceived competency to treat/care for suicide scale.’ The ‘willingness to assess suicide scale’ also

demonstrated a shift toward positivity in the post-education responses (range 5.2% to 21.9%). The least amount of change between pre-education and post-education responses was observed for the ‘willingness to treat/care for suicide scale.’

On an individual statement level, comfort with treating or caring for suicidal patients demonstrated the highest percentage shift, a positivity increase of 34%. Among the pre-education survey respondents, 31% (8/26) either agreed or strongly agreed with the statement related to their comfort with suicidality, while a two-fold increase (65%) in agreement was observed in the post-education sample. This result suggested the multimodal education positively impacted nurses’ level of comfort in caring for patients at risk for suicide. Likewise, 50% of post-education survey participants reported feeling competent to treat/care for a patient in acute suicidal crisis as compared to 23% (6/26) of their pre-education counterparts.

Statement number nine, ‘I worry that bringing up suicide with a patient might make the problem worse’ also observed a considerable shift to more positive self-reported responses from 73.1% in the pre-survey to 95% in the post-education survey indicating participants were less worried about the possibility that discussing suicide with patient might worsen the problem. For this statement, higher levels of disagreement and strong disagreement indicate a positive shift after completion of the education module.

There were two statement in this 11-statement survey that observed a negative shift in the post-survey compared to the pre-survey. The statement with the lowest positive shift (-2.3%) was ‘I would be willing to treat/care for a depressed patient who had made a suicide attempt in the past year’. In the pre-survey 92.3% answered this statement positively compared to 90% in the post survey. The second statement with a

negative shift (-1.2%) was ‘I would be willing to treat/care for a depressed patient who had reported a suicide attempt over five years in the past’ from 96.2% in the pre-survey compared to 95% in the post-survey.

To assess the probability of positive response or positivism occurring after the education intervention was completed, a positivism probability test was performed by calculating the fractions of times an expected event occurs in the context of the total trials (Boslaugh & Watters, 2008). The education-related positivism probability was performed at the scale level. Table 2 shows the positivism probability for pre-and post-education survey responses and a resulting education-related positivism probability.

Table 2.

Education-Related Positivism Probability.

	Perceived competency scale	Willingness to treat/care for suicide scale	Willingness to assess suicide scale
<i>Post-Edu Survey Respondent Positivism Probability</i>	0.697	0.986	0.934
<i>Pre-Edu Survey Respondent Positivism Probability</i>	0.326	0.930	0.857
<i>Education-Related Positivism Probability</i>	2.141	1.060	1.090

The highest education-related positivism probability was observed in the ‘Perceived competency to treat/care for suicide scale’. Non-psychiatric nurse positivism concerning competency to treat/care for suicidal patients was 2.141 times more likely after completing the education module. For the remaining two scales increases in

positivism was observed at lower likelihood levels. For the scales ‘Willingness to treat/care for suicide’ and ‘Willingness to assess’, non-psychiatric nurse positivism concerning their willingness to treat/care or assess were 1.060 and 1.090 times more likely after completing the education module.

Chi-squared (χ^2) Test of a Contingency Table was used to evaluate whether any observed difference between the pre- and post-education samples arose by chance (Boslaugh & Watters, 2008). The χ^2 critical value, with one degree of freedom, is 3.841 at an $\alpha = 0.05$ (Boslaugh & Watters, 2008). Any calculated χ^2 statistic exceeding the critical value indicated a difference in the pre- and post-survey data was statistically significant with 95% confidence. The test was performed at the scale levels rather than for each individual statement to comply with the Rule of Five (Boslaugh & Watters, 2008). The positive and negative scale responses for the pre- and post-education samples, with associated chi-squared statistics and p values, are shown in Table 3.

Table 3

Chi-Squared Analysis of Non-Psychiatric Nurses' Self-Efficacy with Suicidality Following an Education Module.

	Pre-Education	Post-Education	χ^2	<i>P</i>
Total participants (N)	26	40		
Competency Scale	Responses	Responses		
Positive	14	46		
Negative	29	20	14.513	<.0001
Willingness to Treat Scale	Responses	Responses		
Positive	93	143		
Negative	7	2		
Willingness to Assess Scale	Responses	Responses		
Positive	102	185		
Negative	17	13	5.170	.0230

p ≤ 0.05 considered statistically significant

* The Rule of Five prevents chi-squared analysis

Chi-square testing was performed to examine the relationship between the education module and nurses reported self-efficacy with suicidality using the survey scales. The SCI scales assessing the nurses' perceived level of confidence and willingness to assess demonstrated significance shift toward positivity when comparing pre-and post-response. Additionally, in both scales, this shift was significant. The shift toward positivity after completion of the education module on nurses' perceived competency scale was significant, $\chi^2(1, N = 66) = 14.513, p < .0001$. Nurses were more likely to agree to strongly agree with the survey statements after the education module. The relation between the education module and nurses' willingness to assess suicide scale was also significant, $\chi^2(1, N = 66) = 5.170, p = .0230$. The limited number of negative

responses in the 'willingness to treat/care for suicide' scale post-education sample prevented significance chi-squared analysis due to the Rule of Five required for analysis.

Major Findings

The multimodal education module developed, based on evidence-based principles, was implemented for the facility's non-psychiatric nurses. The impact of the education on non-psychiatric nurse-perceived self-efficacy with suicidality revealed positive shifts in nurse participant-reported competency to treat/care and willingness to assess suicidal patients. However, the education did not demonstrate this positivity in participants' willingness to treat/care for patients who had attempted suicide or with suicidal thoughts.

The two statements with the highest overall positive shift in responses were statement one and two contained within the 'Perceived competency to treat/care for suicide scale'. Statement one 'I am comfortable with the responsibility of treating or caring for suicidal patients' showed a positivity increase of 34.2%. The second largest positive shift was observed in statement two 'I feel competent to treat/care for a patient in an acute suicidal crisis' where participants' positive responses increased by 26.9%. Markedly, non-psychiatric nurse positivism concerning competency to treat/care for suicidal patients was 2.141 times more likely after completing the education module. These findings suggested the multi-modal education positively impacted nurses' level of comfort as well as competence in caring for suicidal patients or those at risk.

There were two statements in this 11- statement survey that observed a negative shift. The statement with highest negative shift (-2.3%) was 'I would be willing to treat/care for a depressed patient who had made a suicide attempt in the past year'. While

no shift towards increased positivity was observed, the pre-and post-positive responses were above 90%. Similarly, the second statement where a negative shift (-1.2%) was observed was 'I would be willing to treat/care for a depressed patient who had reported a suicide attempt over 5 years in the past' where positive responses decreased from 96.2% in the pre-survey to 95% in the post-survey. These findings suggested that hesitance to care for this vulnerable population persists, especially in the presence of a suicide attempt in the recent past. It could be hypothesized that the innate caring instinct of nurses may precipitate the shift to increased willingness to assess, but does not translate to the same willingness to treat or care for this population.

Limitations

This project was not without limitations. Small sample size, non-random sampling method and single-site conduction limit generalizability of the observations. The response rate for the pre-education module survey was 5% and for the post survey was 7.7%. Unfortunately, at the same time as this project was conducted, the setting in which the project took place had just fallen victim to a security breach resultant from a successful phishing attempt. As a result, the organization initiated an internal education campaign with an initial focus of discouraging 'clicking links' within e-mails. Since project recruitment process and access to the pre-and post-education surveys were contained within e-mails, it is anticipated that the low participation could have been precipitated by the security breach and resulting emphasis on 'not clicking links'. Additionally, the project design did not allow for pre-and post-survey response matching; results were not matched, therefore, the impact of the education module on a nurse's individual participant level was not estimated in this project. The lack of demographic

exploration, which could have added valuable information about the impact across the various dimensions of the participating nurses, was an additional limitation.

Implications

The nursing practice impact of this project was substantial. The caring relationship between a nurse and a patient may result in the nurse being the first healthcare professional to identify a patient at risk for suicide or learn of a patient's suicidal ideations. Maintaining maximum patient safety is paramount in healthcare. To increase the safety for suicidal patients or those at risk for suicide, nurses across all acute care setting specialties must become more knowledgeable about and competent and confident in their abilities to care for patients with suicide risk, understand key components to maintaining safety, and suicide prevention (American Psychiatric Nurses Association, 2015; The Joint Commission, 2016). Innovative education is a pivotal piece to improving the perceived lack of confidence and competence that non-psychiatric nurses have reported (Chan et al., 2009; Foronda et al., 2017; Neville & Roan, 2013; Soccio, 2017). As a result of the multi-modal education intervention implemented in this project, a considerable positive shift has been observed in non-psychiatric nurses' self-efficacy with suicidality.

Recommendation

The large shift in positive responses and significance of the pre-and post-survey perceived confidence and competence were impressive. To ensure sustainability, the facility planned to continue using the multi-modal electronic education implemented in this project.

The 'Willingness to treat/care for suicide scale' showed the lowest positive shift, which may warrant further evaluation of education module content or the teaching method utilized. In particular, education methods to support care decision-making and management could assist with nurse-perceived willingness to treat/care for suicidal patients. Examples could be care scenarios where the nurse has to determine the next and/or most appropriate action. Additionally, the lack of positive shift in this scale could indicate reliance on internal resources and processes managed by mental health professionals rather than the primary nurse in the non-psychiatric setting. It is therefore, that ongoing quality improvement efforts are recommended to enhance this standardized education in response to project findings along with pertinent organization data.

Conclusion

Suicide represents a substantial public health concern in the United States of America (Center for Disease Control and Prevention, 2017). Insufficient nursing education about suicide assessment and prevention is a serious safety concern in all healthcare settings (American Psychiatric Nurses Association, 2015; The Joint Commission, 2016). This project provided an innovative education intervention for non-psychiatric nurses in the acute care setting regarding suicidality which was anticipated to increase nurses' perceived self-efficacy. Findings supported the positive impact on self-efficacy with suicidality after exposure to the education. Ultimately, this project will promote improved patient safety for suicidal patients and those at risk for suicide or intentional self-harm while also benefiting the nurse and the community at large.

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Appendix

Conceptual, Theoretical, Empirical (CTE) Structure: Non-mental health nurses perceived level of self-efficacy or confidence with suicidality

