Improving the Resilience of Nurses in the Emergency Department

Matthew Quick

College of Nursing, East Carolina University

Doctor of Nursing Program

Dr. Dianne Marshburn

July 18, 2022

Abstract

Enhancing the resiliency of nurses in the emergency department (ED) will be needed to meet communities' challenging health care needs. Poor resilience can result in burnout syndrome and is linked to the development of mental health problems, such as depression and anxiety. In addition to the harm done to the nurse, burnout syndrome contributes to increased medical errors, poor quality of care, and higher turnover. A private, not-for-profit healthcare organization located in the Piedmont region of North Carolina is experiencing a problem with nurse burnout and high turnover. Nurses report feeling overwhelmed by the increased stress placed on them during the COVID-19 pandemic. During the pandemic's peak, new graduate nurse retention was lower than in previous cohorts. The aim of this quality improvement project was to improve nurse resilience using a resilience training program. A resilience training program that consisted of four online modules was designed based on cognitive-behavioral techniques and mindfulness activities. The online modules described activities to be performed over the course of an eight-week program. Resilience was measured using the 10-Item Connor-Davidson Resilience Scale pre and post program implementation. The results of the survey indicate that resilience training can improve the resilience of ED nurses, with mindfulness exercises being the most utilized resource.

Keywords: resilience, resilience training, emergency department, nurse, nurses, nursing, burnout, turnover, mindfulness, cognitive-behavioral therapy, Connor-Davidson Resilience Scale, online training

Table of Contents

Section I. Introduction

Background

Enhancing the resiliency of nurses in the emergency department (ED) is needed to meet our communities' challenging health care needs. Even before the stressors introduced by the COVID-19 pandemic, ED nurses have regularly dealt with exposure to suffering, death, and workplace violence (Wolf et al., 2020). Resilience, or the ability to bounce back from adversity and healthily adapt to stress, has been found to buffer the effects of stressful situations and prevent burnout (Sánchez-Zaballos & Mosteiro-Díaz, 2020). In addition to protecting the ED nurse's mental health, reducing burnout helps prevent costly turnover, absenteeism, and adverse patient outcomes (Brown et al., 2018).

A private, not-for-profit healthcare organization located in the Piedmont region of North Carolina is experiencing a problem with nurse burnout and high turnover in the ED. This organization serves Guilford, Forsyth, Rockingham, Alamance, and Randolph counties (███████, n.d.). The organization's community-based hospital in Greensboro is a 175-bed facility with an ED that saw 42,790 patients in the fiscal year 2020 (Cone Health, n.d.). The hospital's emergency department director has identified burnout among nurses as one of the department's leading problems, leading to decreased retention since the COVID-19 pandemic began (███████ personal communication, May 20, 2021).

The hospital's ED has experienced many negative consequences resulting from the poor retention of nurses. To meet the unit's needs, travel nurses are being hired and driving up the cost of staffing. Even with the hiring of travel nurses, sections of the ED are being closed due to short staffing, which increases the weight times and the number of patients leaving without being seen. In addition to nurses feeling overwhelmed and burnt out, the high cost of staffing the unit and fewer patients being seen is creating a financially unsustainable situation.

Organizational Needs Statement

Improving the resilience of nurses will enhance job satisfaction and ensure safe patient care, thus helping the organization fulfill its mission of caring for patients, each other, and the community (█████████, n.d.). Based on the unit director's conversations with her staff, she has found that nurses feel overwhelmed and subsequently experience burnout (███████, personal communication, May 20, 2021). The COVID-19 pandemic has accelerated this problem, with nurses retiring early and newly hired nurses leaving the unit before their one-year orientation period. The retention of new graduate nurses hired during the pandemic was the lowest the hospital has experienced, with only one out of seven new graduate nurses from the February 2020 cohort remaining after their one-year anniversary (███████, personal communication, June 16, 2021).

Improving the resilience and retention of nurses will also help the organization fulfill the Triple Aim of improving patient satisfaction, improving the health of the population they are serving, and reducing the cost of providing care (Institute for Healthcare Improvement [IHI], 2021). When a nurse leaves, the department is left insufficiently staffed, consequently increasing the workload of the remaining nurses. The increased workload of insufficient staffing leads to further nurse burnout and decreased job satisfaction for the rest of the department, which drives other nurses to leave (American Association of Colleges of Nursing [AACN], 2020). Sufficient nursing staff is imperative to patient safety, with inadequate staffing linked to higher patient mortality and infection rates (AACN, 2020). Poor nurse retention creates a vicious cycle that results in poor patient outcomes. In addition to the costs incurred from poor patient care and patients leaving without being seen, the cost of nurse turnover is estimated to be $10,000 to $88,000 per vacancy (Adams et al., 2019).

Reducing burnout and subsequent turnover will also help meet the Healthy People 2030 objective to improve access to health care (Office of Disease Prevention and Health Promotion [ODPHP], 2016). A high patient-to-nurse ratio in the ED has been found to increase the time to diagnostic evaluation, thus increasing wait time (Shindul-Rothschild et al., 2017). Healthy People 2030 notes that increased ED wait times lead to decreased patient satisfaction, increases in patients left without being seen, and delays in care (ODPHP, 2016).

Problem Statement

Nurses in the emergency department of a community-based hospital are experiencing stress that is overwhelming their coping abilities and resulting in burnout. Nurse burnout has led to increased turnover and a vicious cycle, with short staffing further aggravating burnout (█ █, personal communication, May 20, 2021).

Purpose Statement

The purpose of the project is to implement a resiliency training program to improve resilience and prevent burnout of nurses in the emergency department. This project will include interventions that focus on enhancing mindfulness, utilizing cognitive behavioral problem-solving techniques, and activities to improve work-life balance.

Section II. Evidence

Literature Review

A literature review was performed to determine the current state of knowledge and

approaches to improving resiliency in nurses. The databases of PsycINFO, Medline via PubMed,

Cumulative Index to Nursing and Allied Health Literature (CINAHL) were searched. The MeSH

terms used in searching PubMed were psychological resilience and nursing. The keywords used

in CINAHL were hardiness and nurses. Search terms for PsycINFO were nurses and resilience

training or resilience intervention or resilience program. The initial search yielded 927 results

from all three databases combined (see Appendix A). The criteria for inclusion were articles

within the last five years, English language, and full-text availability. Articles that were not

related to the project plan, editorials, and duplicate information were excluded. After applying

inclusion and exclusion criteria, forty-one articles were reviewed and twelve were selected.

Studies selected were relevant to the intervention, and studies containing solutions that were not

feasible were excluded. Articles were assigned levels of evidence using the hierarchical model

described by Melnyk & Fineout-Overholt (2018), with selected articles ranging from Level I to

Level VI (see Appendix B).

Current State of Knowledge

Resilience has been written about and studied extensively, with an increased focus on the

impact of the COVID-19 pandemic on resilience in the most recent literature. In emergency

department (ED) workers, resilience has been found to play an essential role in reducing burnout

and preventing mental illness (Sánchez-Zaballos & Mosteiro-Díaz, 2020). Due to the frequent

trauma, grieving families, and workplace violence that workers in the ED face, it is not

surprising that approximately one-third of nurses in the ED meet the criteria for being diagnosed with post-traumatic stress disorder (Allen & Palk, 2018).

Adding to the already stressful work situations ED nurses face, COVID-19 has increased their workload and regularly exposes them to a new disease that is still not fully understood. In a study of 387 nurses in Iran performed during the pandemic, resiliency was found to be lower than previous studies of nurses performed before the pandemic (Afshari et al., 2021). The authors of the study argue that the pandemic has lowered nurse resiliency. As the pandemic continues, it will be essential to monitor the resilience of our health care workers and provide support measures to enhance their resilience and prevent burnout.

To aid the development of recommendations for improving resilience in ED nurses, Allen & Palk (2018) conducted a qualitative study of 80 nurses to understand the trauma they face and their perceived need for improved resilience. The participants identified death, grieving families, and workplace violence as significant sources of trauma, and the need for debriefing, peer support, and resilience training to help improve resilience (Allen & Palk, 2018). In addition to effective debriefing and education about how to support peers, the authors suggest mandatory resilience training upon initially being hired to the ED and annual training to remain cognizant of their resilience and well-being. Suggestions from the study include education about resilience-promoting activities, such as cognitive techniques, mindfulness, and other forms of self-care, as well as ways to process the traumatic experiences ED nurses face. Written materials such as a resilience training manual and a depression self-screening tool were also proposed as resources to refer to after a traumatic experience, or as needed periodically for their own reflection (Allen & Palk, 2018).

Current Approaches to Solving Population Problem

There are several approaches to improve resilience in nurses that have been attempted with varying degrees of success. In a systematic review of resilience training interventions performed in the general population, eleven studies with a high quality of evidence were examined to assess the efficacy of different approaches to enhancing resilience (Joyce et al., 2018). The most beneficial resilience training interventions were those based on cognitive behavioral therapy, mindfulness, or a mixture of the two. Resilience training programs from this review ranged widely in their length and intensity, from two-hour single session seminars to twenty-eight hours over the course of several training sessions.

In a study performed with twenty-four mental health nurses in Australia, a resiliency training intervention took place over two full days, separated by three weeks (Foster et al., 2018). Nurses were taught cognitive behavioral therapy-based problem-solving techniques using the Promoting Adult Resilience (PAR) program. The PAR program uses PowerPoint presentations, workbooks, and group discussions to identify participants' strengths, challenge negative thoughts, and promote positive work relationships. Surveys conducted on the last day of the workshop and three months post-intervention showed improvements in participant well-being and resilience.

Mindfulness training alone has also been proposed to improve resiliency, with possible benefits due to increased body awareness, regulation of emotion, and a more positive perception of self (Kang & Myung, 2021). A study with a mixture of health care professionals was performed during the COVID-19 pandemic that measured resilience before and after completion of Mindfulness in Motion (MIM), an online mindfulness intervention, which showed improvements in post-intervention resilience scores (Klatt et al., 2020). The online mindfulness

intervention lasted eight weeks and was available at work, with weekly sessions lasting

approximately twelve minutes. The structure of each session included reflective writing, a short

video on the science of mindfulness, and yoga or meditation exercises.

In a web-based resilience training intervention that spanned twenty-four weeks,

participants showed improvements in resilience and decreased burnout after eight weeks

(Magtibay et al., 2017). The resilience training was adapted from the traditional in-person Stress

Management and Resilience Training (SMART) program. The online SMART program was

broken into twelve different modules with education on reducing stress and provided exercises to

practice throughout the duration of the program. This study differed from the approach of others

in the literature due to the online format. In the uncertainty of COVID-19 and difficulties in

gathering face-to-face, computer-based learning adds a benefit of convenience and increased

availability compared to in-person learning.

Evidence to Support the Intervention

As noted above, training has been attempted in as little time as two hours, although

interventions of this length showed mixed benefits (Joyce et al., 2018). Conversely, while more

prolonged and intense training sessions could prove beneficial, the cost and inconvenience for all

staff to participate would be prohibitive. As mentioned above, some studies demonstrate that

web-based resilience training programs are effective; however, these studies used proprietary

training programs that require a considerable time investment from staff.

For the project site, the intervention needs to be effective, considerate of participants'

time, and allow for flexibility in engaging in the resilience-enhancing activity. A program with

these characteristics was performed with forty-seven Pediatric Intensive Care Unit staff

members, utilizing an online-based "resiliency bundle" that achieved statistically significant

improvements in post-intervention resilience scores (Davis & Batcheller, 2020). The intervention

included a learning module discussing moral distress and in-depth descriptions of resilience-

enhancing resources, which included debriefings with chaplains, mindfulness apps, the employee

assistance program, social events, case discussions, and interventions specific to processes at the

site.

Using the resiliency bundle as a framework, along with the recommendations specific to

the ED from Allen and Palk (2018) as a guide, a resilience toolkit for ED nurses was designed

for the project site. Modules with education on mindfulness and cognitive-behavioral coping

strategies were created with a focus on emergency department nurses. Staff were then able to

access the training material when they found it convenient and were given in-person

reinforcement and education through monthly staff meetings and a presentation at the unit's

annual skills fair.

Evidence-Based Practice Framework

The Iowa Model provided the operational framework to guide this project. The model has

been used to improve healthcare practices since its development in 1994, incorporating evidence

from research into a problem-solving process (Titler et al., 2001). The model guides the

practitioner through a cycle that begins with identifying a problem, piloting a change, and then

evaluating the change until an acceptable improvement in practice is found.

The Iowa Model begins by identifying a trigger or the problem in practice that will drive

the change (Titler et al., 2001). The trigger needs to be a priority for the organization, with

higher-cost items or areas affecting the organization's strategic plan being the highest priority. In

the case of this project, the trigger is the lack of resilience of nursing staff, which will result in

higher turnover and increased costs. The next step in the process is forming a team, which could

be an existing committee and should include stakeholders.

After forming a team, a review of the evidence is performed to find relevant solutions to

the problem. Evidence may be in the form of higher levels, such as randomized controlled trials,

or lower levels, such as expert opinion. With sufficient research, evidence-based guidelines can

be written to guide a pilot program. The pilot program begins with identifying outcomes and

collecting baseline data. The pilot program applies the evidence-based intervention to a small

group, evaluates the intervention, then makes modifications based on the evaluation. Following

the model leads the user through feedback loops that eventually result in an evidence-based

solution that can be evaluated for widespread adoption.

Ethical Consideration & Protection of Human Subjects

Before approval of the project, modules from the Collaborative Institutional Training

Initiative (CITI) were completed. The principles outlined in the CITI modules were followed in

developing the program. The intervention was designed to be equal and equitable to everyone in

the target population. Care was taken to ensure there was no possible harm to participants and

that no vulnerable populations would be involved. The privacy of individuals was protected

throughout the process, with no identifiable information collected and all data stored in a

password-protected OneDrive account with two-factor authentication.

After completing a preliminary Quality/Research Self-Certification worksheet, the

project was deemed to be a quality improvement project with no further Institutional Review

Board (IRB) review required from the University. In order to be approved by the hospital, the

project required approval from the Nurse Research Council (NRC) and the hospital's IRB. The

project was presented to the Nurse Research Council (NRC) and was approved on November 10,

2021. The project was determined to be exempt from IRB review by the hospital on November

23, 2021 (see Appendix C).

Section III. Project Design

Project Site and Population

The project took place at a large, not-for-profit healthcare organization's community-based hospital in Greensboro, North Carolina. The hospital is a 175-bed facility with an Emergency Department (ED) that employs approximately 70 registered nurses (RNs). Facilitators for the project included existing services offered by the organization that included an Employee Assistance Counseling program, chaplains' accessibility, and availability of self-care mobile applications. Potential barriers that threatened the full implementation of the project included the ongoing COVID-19 pandemic limiting interactions with staff, the motivation of staff to participate voluntarily in the resilience training program, and the available time that staff had to complete the modules and perform the activities.

Description of the Setting

The hospital is part of a network of healthcare facilities that serve the northern piedmont area of North Carolina, with an ED that saw 42,790 patients in the fiscal year 2020 (████████, n.d.). The ED consists of 25 acute care beds, a five-bed minor care or "fast track", and five beds for boarding patients. Although patients of all ages can present with an emergent condition, the hospital specializes in adult urology, cancer, and bariatric services. The project site is also located near the organization's behavioral health hospital, which leads to many patients with psychiatric complaints being brought in by police or emergency medical services.

Description of the Population

The project's population included full and part-time registered nurses in the ED that are employed by the not-for-profit healthcare organization. Full and part-time nursing assistants that work primarily in the ED were also included. Travel nurses, physicians, advanced practice

providers, and non-clinical staff were excluded. The nurses ranged from new graduate RNs to

experienced RNs, with education ranging from two-year associate degrees to bachelor's degrees.

Project Team

The project team consisted of a project lead, a university faculty advisor, the project site

champion, and a Clinical Nurse Specialist. The project lead's role was to develop, plan, and

implement the project, as well as evaluate and disseminate the findings. The university faculty

advisor's role was to guide the project in a scholarly manner and serve as a resource for the

project lead. The project site champion was the Director of the Emergency Department, who

helped facilitate monthly meeting opportunities. The Clinical Nurse Specialist assisted in

navigating the requirements within the healthcare organization and in developing the training

modules.

Project Goals and Outcome Measures

The goal of the project was to increase the resilience of nurses in the Emergency

Department through the use of cognitive-behavioral, mindfulness, and self-care activities.

Information about coping techniques was delivered through learning modules that staff accessed

through a website, which was available at home and work. The first module introduced the

program and rationale, the second and third modules introduced mindfulness and cognitive-

behavioral techniques, and the last module included instructions on how to practice the strategies

over the course of eight weeks. In-person reinforcement and education about how to access the

modules were performed with weekly rounding, monthly Web-ex staff meetings, and a

presentation that was delivered at the unit's annual skills fair.

The goal was to improve the resiliency of nurses, as evidenced by a 4-5% increase in

post-implementation CD-RISC 10 scores. For pre- and post-survey participation, a goal was set

for at least 50% of the 32 eligible nurses. Utilization of the modules was measured using

webpage view counts collected using Google Analytics and self-reported data collected in the

final survey. A final goal was for at least 50% of participants to have used one technique from

the program over the eight-week program duration, as evidenced by final survey data.

Description of the Methods and Measurement

The project was centered around four modules (see Appendix D for an outline of

modules). The first module introduced the concept of resilience and resilience training, providing

an overview and rationale for the program. The second module introduced mindfulness

techniques to cope with stress, including diaphragmatic breathing, progressive muscle relaxation,

and mindful attention to the present moment. The third module discussed cognitive-behavioral

techniques aimed at restructuring negative thoughts, increasing gratitude, and engaging in

meaningful activities. The fourth module discussed practicing the activities at work and home

through an eight-week program. The first module was presented at the unit's staff meeting, along

with instructions for taking a short pre-implementation survey. Weekly in-person staff rounding

was performed to answer questions and demonstrate how to access the website, and a biweekly

email was sent with a recap of activities to practice from the modules. Halfway through the

project, utilization was reviewed using Google Analytics. To increase participation, shorter

"recap" modules of the mindfulness and cognitive-behavioral activities specific to the week were

posted to the website and promoted on the unit through email and in-person rounding.

To measure resilience, a pre-and post-implementation survey was administered using the

Connor-Davidson Resilience Scale 10-item (CD-RISC 10). The CD-RISC 10 is a ten-item

questionnaire with statements that describe different aspects of resilience, which participants rate

using a Likert-type scale (see Appendix E). The CD-RISC-10 and -25 item were used in five of

the studies with resilience training interventions in the literature reviewed above. The CD-RISC

10 has been shown to be a reliable scale with a Cronbach's alpha of 0.85 and has validity at

distinguishing between individuals who function well after adversity and those who do not (Klatt

et al., 2020).

Additional questions were included in the pre- and post-survey to collect demographic

data (see Appendix F & G). The post-implementation survey included the same demographic

questions as the pre-implementation survey as well as two open-ended questions to allow for

feedback and suggestions for future training (see Appendix G). Utilization of the modules was

measured in the final survey, along with tracking website data using Google Analytics.

Discussion of the Data Collection Process

The data was collected using a link to the survey using the healthcare organization's

secure email system, which requires two-factor authentication. The initial email included

information on the project and a link to a Qualtrics survey with three demographic questions and

the CD-RISC-10 questionnaire. At 12 weeks, the post-implementation survey with demographic

questions, utilization questions, and the CD-RISC-10 was sent. Only aggregate data was

reported, and no identifiable information was collected. Data analysis was performed using

Microsoft Excel, with survey data saved in a password-protected OneDrive account that required

two-factor authentication.

Implementation Plan

The implementation was guided by the Iowa Model's steps and feedback loops to ensure

the project remained evidence-based and focused on solving the organization's problem. Staff

were made aware of the resilience training program through the Emergency Department's

January staff meeting. An email was then distributed to all staff in the ED, with a link to access

the training modules and the pre-implementation survey. Staff were asked to complete the survey

before February 24th. A post-implementation survey was sent at the end of the project to measure

resilience and performance of the project.

Timeline

The project began with the publishing of the learning module and an email link to the

Qualtrics survey on January 24th, 2022. Weekly rounding was performed in person on the unit to

discuss and promote the program. Monthly staff meetings were held virtually on February 15th

and March 15th, 2022. A final email was sent on April 4th, 2022, with the post-implementation

survey (see Appendix H for a complete timeline).

Section IV. Results and Findings

Results

The goal of this project was to improve the resilience of nurses in the Emergency

Department (ED) using an 8-week resilience training program. An initial survey consisting of

demographic questions along with the Connor-Davidson Resiliency Scale 10 question (CD-RISC

10) questionnaire was sent prior to the implementation of the resilience training program. A final

survey consisting of demographic questions, utilization questions, and the same CD-RISC 10

questionnaire was sent out following the completion of the resilience training program.

Participation in the program was tracked using attendance from the initial Module 1 live

presentation on January 18, 2022, website module views during the implementation period, and

final survey responses. The first module of the program was presented at the monthly staff

meeting on January 18, 2022, which 23 out of 58 (40%) staff members attended. Using website

data obtained from Google Analytics, the website had 60 visitors between the months of

February 6, 2022 and April 4, 2022 (see Appendix I). It is important to note that these 60 users

are not necessarily unique, as the data is calculated using cookies associated with the web

browser (Google, n.d.). For example, one participant could account for three visitors by

accessing the website at work, their home computer, and their mobile device.

The initial survey met the goal of having more than 50% of eligible registered nurses

participate, with 24 out of 32 (75%) RNs responding to the survey. Descriptive analysis of

pretest data was performed using Microsoft Excel, with Qualtrics's graphs used to display

individual question responses (see Appendix J). Of the 36 RNs and clinical staff that responded

to the initial survey, roles included 24 (67%) RNs, 8 (22/%) NT/EMTs, and 4 (11%) identifying

as Other. Respondent's shift included 26 (72%) day shift, 7 (20%) night shift, and 3 (8%) mid-

shift. ED experience ranged from 6 months to 34 years, with an average of 7.24 (SD= 7.9) years, median of 4, mode of 1.

Possible scores for the CD-RISC 10 range from 0-40, with the lower quartile scoring between 0 and 29, the second quartile scoring between 30 and 32, the third quartile scoring between 33 and 36, and the top quartile scoring between 37 and 40 (Davidson, 2021). A higher CD-RISC 10 score indicates a greater ability to bounce back from adversity. The initial mean CD-RISC 10 score for the unit was 29.5 (SD= 4.9), the median score was 30, and the mode was 30.

The CD-RISC 10 scores are further separated into the five categories of flexibility/adaptability, optimism, sense of self-efficacy, ability to regulate emotions, and maintaining attention under stress. The highest-scoring category in the pre-implementation survey was for flexibility/adaptability (questions 1 and 5), with an average of 3.25 (SD= 0.71). The average across the three questions relating to self-efficacy (questions 2, 4, and 9) was 2.93 (SD= 0.82). The score for maintaining attention under stress (question 7) was 2.86 (SD= 0.72). The average across the three questions relating to optimism was 2.81 (SD= 0.91). The average score for the ability to regulate emotion was 2.9 (SD= 0.80).

The final survey had lower participation, with 14 out of the 31 (45%) RNs responding, falling below the goal of having 50% of nurses participate in the survey. The survey consisted of the same demographic questions and CD-RISC 10 questionnaire from the initial survey, along with utilization questions to evaluate participation in the program (see Appendix K). Of the 20 staff members that responded to the final survey, roles included 14 (70%) nurses, 5 (25/%) NT/EMTs, and 1 (5%) identifying as Other. Respondent's shift included 9 (45%) night shift, 8 (40%) night shift, and 3 (15%) mid-shift. ED experience in the post-implementation survey

group ranged from 6 months to 10 years, with an average of 3.59 (SD= 2.95) years, median of 3, mode of 3.

The final average CD-RISC 10 score for all participants was 30.38 (SD= 5.38). For those who indicated that they utilized the program, the average score was 31.55 (SD= 4.76), while the average CD-RISC 10 score for those who indicated they did not use the program was 27.8 (SD= 5.76). For all survey participants, the median score was 30 and the mode was 30. Compared to the pre-test CD-RISC 10 score of 29.5 for the entire unit, the average score among those who participated in the program showed a 7% improvement in the post-test CD-RISC 10, which met the initial goal of a 4-5% increase in CD-RISC 10 scores.

Like the pretest survey, the highest-scoring category for the post survey was for flexibility/adaptability (questions 1 and 5), with an average of 3.125 (SD= 0.65). The average across the three questions relating to self-efficacy (questions 2, 4, and 9) was 3.04 (SD= 0.71). The score for maintaining attention under stress (question 7) was 3.13 (SD= 0.70). The average across the three questions relating to optimism was 2.98 (SD= 0.85). The average score for the ability to regulate emotion was 2.93 (SD= 0.66).

The comparison between baseline resilience subcategory scores and final scores can be seen in Appendix L. Except for flexibility, which decreased by 4%, the subcategories showed improved scores. When the final scores were compared among participants who utilized the resources and those who did not, the final scores improved across all subcategories for participants who utilized the resources in the program. Interestingly, the average score for optimism in participants who did not utilize the program resources (3.2) was higher than those who utilized program resources (3.16).

The goal of having staff utilize one resource from the program was difficult to assess due to the lower number of responses in the final survey, however 12 out of 20 (60%) staff members indicated they tried the activities in the program, while 8 (40%) indicated they did not. Of the 12 that tried the activities, 10 (80%) reported the mindfulness activities were most helpful, one person (5%) reported the cognitive-behavioral techniques were most helpful, and one person (5%) found both activities equally helpful. One individual indicated neither resource was helpful, however they also indicated that they did not utilize resources in the program.

Discussion of Major Findings

The data from the pre-and post-implementation surveys yielded several insights. Pre-implementation survey results were similar to a study using the Connor-Davidson Resiliency Scale 25 questionnaire with nurses during the COVID 19 pandemic (Afshari et al., 2021), which found resilience among nurses as being low. Average scores across the five categories of resilience were also similar to a previous DNP project performed with nurses during the pandemic, with flexibility scoring the highest among both groups (Merrill, 2021).

The final survey was also consistent with the outcomes of resilience training programs that showed improvements in resilience training programs utilizing mindfulness and cognitive-behavioral techniques (Joyce et al., 2018). While the improvement in all survey participants' CD-RISC 10 was modest (3%), the CD-RISC 10 scores among those who utilized the program were 7% higher than the initial survey respondent average. Each subcategory of resilience showed improvement among the participants who utilized program resources, with the most significant improvement seen in the ability to maintain attention under stress, which increased by 13%.

Section V. Interpretation and Implications

Costs and Resource Management

The estimated costs of labor and resources for the organization to implement this project was calculated to be $2,677.28 (see Appendix M). Most of the cost was associated with the labor involved for research and development of the content for the learning modules, as well as the publishing and promotion of the material. At a cost of $40 per hour for an experienced RN, the total cost of labor would be $2,600 for 65 hours of work on the project. An external website was used for ease in publishing and updating content, which cost $47.28 for domain registration and hosting. However, the organization could use its existing learning module software to publish the content. The organization would also need to pay $30 to use the Connor-Davidson Resiliency Scale 10 that was utilized in this program. In light of the cost of preventing turnover of staff, which can cost between $10,000 to $88,000 per vacancy (Adams et al., 2019), the cost of the program would be justified if only one nurse was prevented from leaving the unit due to burnout. Additional savings include a reduction in costs associated with medical errors and poor quality of care associated with burnout syndrome, as described by Arrogante & Aparicio-Zaldivar (2017).

Additional resources that are not reflected in the budget include the time it took staff to complete the modules, engage in the activities they learned, and time dedicated in staff meetings and regular rounding to promote and discuss the program. The time to view all four modules combined would be approximately 30 minutes. The actual time that staff spent practicing the activities was beyond the scope of this project and not measured. However, the time to complete the activities can range from five minutes for short activities such as diaphragmatic breathing, to longer activities such as filling out cognitive behavioral worksheets that can take 15 minutes or more to work through. Approximately 10 minutes of each monthly staff meeting between

January and April were dedicated to discussing the program, along with an hour each week spent on the unit rounding with staff to discuss and reinforce the project activities.

Implications of the Findings

The implications of increased resilience in Emergency Department (ED) nurses should improve the quality of care received by patients, strengthen the nurse's ability to cope with stress, and help the organization meet the Triple Aim in healthcare. While participation was lower in the final survey, improvements in nurse resilience were seen for those who completed the program. The long-term impact of improved nurse resilience on reducing turnover was not possible to assess during the timeframe of this project and will require continued attention by the organization.

Implications for Patients

The improvement in nurse resilience will have a positive impact on patient experience. Nurses experiencing burnout are more likely to make medical errors and deliver a lower quality of care (Arrogante & Aparicio-Zaldivar, 2017). Higher resilience among nurses may also help reduce turnover in the ED and the resulting shortage in staff (Kelly et al., 2021). With more nurses available, a lower patient-to-nurse ratio will lead to decreased time before being seen and shorter wait times in the ED (Shindul-Rothschild et al., 2017).

Implications for Nursing Practice

As discussed above, increased resilience leads to less burnout among nurses, increased job satisfaction, and less stress due to understaffing as a result of high turnover. Improving the resilience of emergency nurses is also essential to strengthen their mental health, with a decreased level of resilience being associated with the development of mental disorders in workers who experience regular trauma (Joyce et al., 2018). Lastly, a project that is developed

and led by nurses will ensure that the content focuses on issues that are relevant to the nursing

profession.

Impact for Healthcare System(s)

Improving the resilience of nurses will fulfill the Triple Aim of improving patient

satisfaction, improving the health of the population they are serving, and reducing the cost of

providing care (Institute for Healthcare Improvement [IHI], 2021). Reducing burnout and

subsequent turnover will help meet the Healthy People 2030 objective to improve access to

health care (Office of Disease Prevention and Health Promotion [ODPHP], n.d.). Preventing

burnout and subsequent turnover can also save the health care organization money, with the cost

of replacing a nurse ranging from $10,000 to $88,000 per vacancy (Adams et al., 2019).

Sustainability

The resilience training material developed for this program will remain available to staff

through the website for one year, with the plan to transition content to the organization's learning

portal. The clinical nurse educator that helped facilitate this project will use the data from this

project to support and guide further development of resilience training material. The unit will

continue to promote the resilience training material through the annual blitzes that are held

during the summer.

Dissemination Plan

Results from the project were presented to the unit at the June monthly staff meeting. A

poster presentation was delivered at the university's project presentation day on July 12, 2022. A

manuscript will be submitted to the *Journal of Emergency Nursing* for consideration for

publication, along with an abstract to include in the unit's application for the Emergency Nursing

Association's Lantern Award.

Section VI. Conclusion

Limitations and Facilitators

There were several limitations throughout the implementation of this project. A substantial number of PRN staff were not present for the entire project due to their taking lucrative travel assignments. The ongoing COVID-19 pandemic led to limitations around in-person group gatherings, requiring content to be delivered online only. The surge in COVID-19 cases during winter and early spring of 2022 also limited the free time available for staff to participate in activities, due to staff picking up extra shifts to cover staffing needs.

The anonymity of the project also led to limitations in monitoring utilization and survey participation. Not everyone who took the initial survey also took the final survey, which made it impossible to know if there were actual improvements in resilience or if lower-scoring individuals did not take the final survey. This limitation was offset somewhat by comparing the utilization group to the non-utilization group, which showed improved resilience for individuals that used the program resources. As discussed above, the tracking of utilization was also difficult to accurately assess due to the inability to determine if website visits were unique.

There were several facilitators for the success of the project. Using an external website instead of the organization's learning software allowed for frequent updating of material and was accessible to staff at home through desktop or mobile browsers. The hospital's information technology team was also helpful in ensuring the material was accessible at work and not restricted by the organization's content blocker. The presentation of content by a fellow emergency department nurse was also useful in ensuring content was relevant to nursing staff and not from an outside party.

Recommendations for Others

Based on the experience from this project, there are several recommendations for those focused on increasing the resilience of emergency department nurses. Using data from the final survey responses, the mindfulness activities were the most utilized resources by the staff. These resources generally required less time and energy to perform than the cognitive-behavioral activities. For example, activities such as diaphragmatic breathing take five minutes or less and can be relaxing, while the cognitive behavioral activities involved reflection, thinking through problems, and filling out worksheets. With limited time and busy schedules, shorter and relatively enjoyable mindfulness exercises may increase the likelihood of staff participating in resilience-enhancing activities.

Another recommendation would be to increase the unit's focus on staff well-being. The resilience of the unit could be evaluated annually or periodically using a validated survey such as the CD-RISC 10, which could trigger leadership to respond when resilience is waning. Also, the only suggestions given by staff included allowing time for uninterrupted breaks or providing "mental health" days. Allowing time for self-care could lead to decreased stress and prevent burnout among staff. Prior to the staffing shortage that accelerated during the pandemic, the emergency department staffed a float nurse position that would provide relief for nurses, allowing for an uninterrupted lunch break. As staffing worsened, this position was often the first to be removed from the day's assignment sheet. Currently, the hospital is engaging in measures to increase staffing, including a "premium flex pool" to entice travel nurses to be hired by the organization, as well as hiring international nurses. As staffing improves, a recommendation would be to ensure the float nurse position is staffed to allow for an uninterrupted lunch break.

Recommendations for Further Study

Future studies could be done in several areas related to this project. Based on the final

survey results showing a significant preference for mindfulness activities, a project focused

solely on mindfulness activities could enhance adherence. Resilience training could be attempted

with other units, especially in high-stress areas such as intensive care units. Other disciplines

such as providers, social workers, or respiratory therapists may also benefit from resilience

training. As COVID-19 restrictions lessen, including in-person training could also be attempted,

while retaining the online portion would enhance the availability of the program. The effect of

nurse resilience levels, based on CD-RISC scores, on quality measures such as wait times or

patient experience scores would strengthen the case for projects aimed at improving nurse

resilience. Lastly, a project focused on enhancing the lowest scoring areas of the CD-RISC 10

found in this project, such as optimism and self-efficacy, could lead to more significant

improvements in resilience. Considering the limitations due to the anonymous design discussed

above, future project designers should consider tracking individual changes in resilience using an

anonymous identifier. Knowing the impact resilience training has on an individual over time

would allow for more robust recommendations to be made.

Final Thoughts

As seen in the initial survey of this project, resilience among emergency department

nurses is low. Increasing the resilience of emergency department staff will be essential to

protecting their mental health and preventing burnout. With limitations in the amount of time and

energy, staff may benefit from shorter, more relaxing activities that increase mindfulness.

Continuing to focus on improving resilience will help emergency nurses to overcome the

challenges of working in a high-stress environment.

References

Adams, A., Hollingsworth, A., & Osman, A. (2019). The implementation of a cultural change

toolkit to reduce nursing burnout and mitigate nurse turnover in the emergency

department. *Journal of Emergency Nursing*, *45*(4), 452–456.

https://doi.org/10.1016/j.jen.2019.03.004

Afshari, D., Nourollahi-darabad, M., & Chinisaz, N. (2021). Demographic predictors of

resilience among nurses during the COVID-19 pandemic. *Work*, *68*(2), 297–303.

https://doi.org/10.3233/wor-203376

Allen, R. C., & Palk, G. (2018). Development of recommendations and guidelines for

strengthening resilience in emergency department nurses. *Traumatology*, *24*(2), 148–156.

https://doi.org/10.1037/trm0000141

American Association of Colleges of Nursing. (2020, September). *AACN fact sheet: Nursing

shortage*. https://www.aacnnursing.org/news-information/fact-sheets/nursing-shortage

Arrogante, O., & Aparicio-Zaldivar, E. (2017). Burnout and health among critical care

professionals: The mediational role of resilience. *Intensive and Critical Care Nursing*, *42*,

110–115. https://doi.org/10.1016/j.iccn.2017.04.010

Brown, S., Whichello, R., & Price, S. (2018). The impact of resiliency on nurse burnout: An

integrative literature review. *Medsurg Nursing*, *27*(6), 349–378.

https://www.proquest.com/scholarly-journals/impact-resiliency-on-nurse-burnout-

integrative/docview/2159928351/se-2?accountid=10639

███████. (n.d.). ████████ *fact sheet*. Retrieved June 29, 2021, from

https://www.conehealth.com/news/fact-sheet/

Davidson, J. R. T. (2021). Connor-Davidson Resilience Scale (CD-RISC) Manual. Unpublished.

Davis, M., & Batcheller, J. (2020). Managing moral distress in the workplace. *Nurse Leader*,

    18(6), 604–608. https://doi.org/10.1016/j.mnl.2020.06.007

Fitzpatrick, B., Bloore, K., & Blake, N. (2019). Joy in work and reducing nurse burnout: From

    triple aim to quadruple aim. *AACN Advanced Critical Care*, *30*(2), 185–188.

    https://doi.org/10.4037/aacnacc2019833

Foster, K., Shochet, I., Wurfl, A., Roche, M., Maybery, D., Shakespeare-Finch, J., & Furness, T.

    (2018). On par: A feasibility study of the promoting adult resilience programme with

    mental health nurses. *International Journal of Mental Health Nursing*, *27*(5), 1470–1480.

    https://doi.org/10.1111/inm.12447

Google. (n.d.). *How users are identified for user metrics*. Google Analytics.

    https://support.google.com/analytics/answer/2992042?hl=en

Institute for Healthcare Improvement. (2021). *The IHI triple aim*.

    http://www.ihi.org/Engage/Initiatives/TripleAim/Pages/default.aspx

Joyce, S., Shand, F., Tighe, J., Laurent, S. J., Bryant, R. A., & Harvey, S. B. (2018). Road to

    resilience: A systematic review and meta-analysis of resilience training programmes and

    interventions. *BMJ Open*, *8*(6), e017858. https://doi.org/10.1136/bmjopen-2017-017858

Kang, M.J., & Myung, S.K. (2021). Effects of mindfulness-based interventions on mental health

    in nurses: A meta-analysis of randomized controlled trials. *Issues in Mental Health

    Nursing, 43*(1)*, 51–59. https://doi.org/10.1080/01612840.2021.1949765

Kelly, L. A., Gee, P. M., & Butler, R. J. (2021). Impact of nurse burnout on organizational and

    position turnover. *Nursing Outlook*, *69*(1), 96–102.
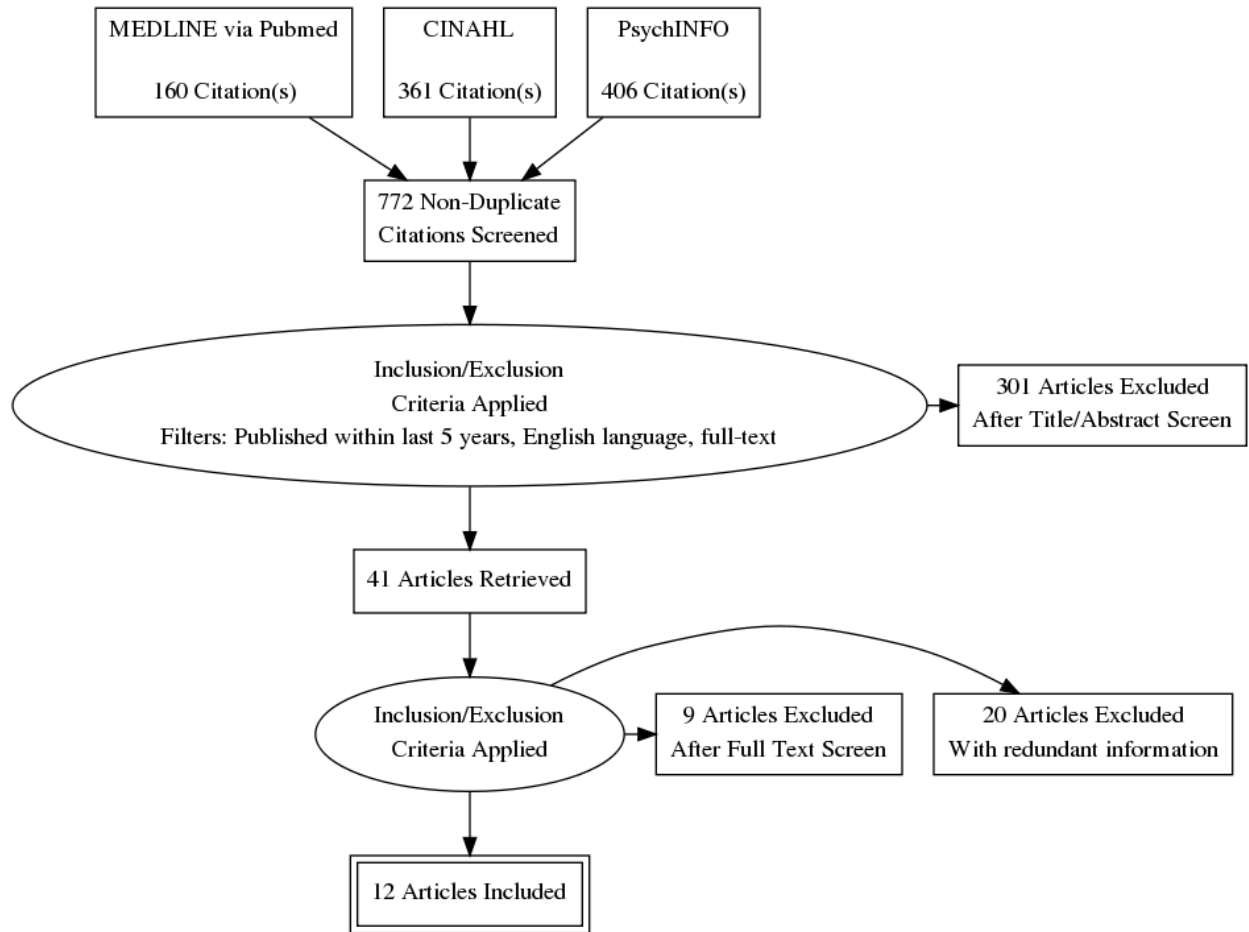
    https://doi.org/10.1016/j.outlook.2020.06.008

Klatt, M. D., Bawa, R., Gabram, O., Blake, A., Steinberg, B., Westrick, A., & Holliday, S.

(2020). Embracing change: A mindful medical center meets COVID-19. *Global

Advances in Health and Medicine*, *9*. https://doi.org/10.1177/2164956120975369

Magtibay, D. L., Chesak, S. S., Coughlin, K., & Sood, A. (2017). Decreasing stress and burnout

in nurses. *JONA: The Journal of Nursing Administration*, *47*(7/8), 391–395.

https://doi.org/10.1097/nna.0000000000000501

Melnyk, B. M., & Fineout-Overholt, E. (2018). *Evidence-based practice in nursing &

healthcare: A guide to best practice* (4ᵗʰ ed.). Wolters Kluwer Health.

Merrill, D. (2021). *Improving resiliency among inpatient nursing teams during the SARS-CoV-2

pandemic* (Doctoral Nursing Practice Project, East Carolina University). Scholarship.

http://hdl.handle.net/10342/9232

Office of Disease Prevention and Health Promotion. (2016). *Access to health services*. Healthy

People 2020. https://www.healthypeople.gov/2020/topics-objectives/topic/Access-to-

Health-Services

Sánchez-Zaballos, M., & Mosteiro-Díaz, M. (2020). Resilience among professional health

workers in emergency services. *Journal of Emergency Nursing*.

https://doi.org/10.1016/j.jen.2020.07.007

Shindul-Rothschild, J., Read, C. Y., Stamp, K. D., & Flanagan, J. (2017). Nurse staffing and

hospital characteristics predictive of time to diagnostic evaluation for patients in the

emergency department. *Journal of Emergency Nursing*, *43*(2), 138–144.

https://doi.org/10.1016/j.jen.2016.07.003

Titler, M. G., Kleiber, C., Steelman, V. J., Rakel, B. A., Budreau, G., Everett, L. Q., Buckwalter,

K. C., Tripp-Reimer, T., & Goode, C. J. (2001). The Iowa model of evidence-based

practice to promote quality care. *Critical Care Nursing Clinics of North America*, *13*(4),

497–509. https://doi.org/10.1016/S0899-5885(18)30017-0

Wolf, L., Perhats, C., Delao, A., Brim, C. B., Gentry, J., Leaver, S. L., Papa, A. R., Proud, M.,

Riwitis, C., Rogers, K., Stone, E. L., Uhlenbrock, J., Winger, J., Zaleski, M., Lee

Gillespie, G., & Kolbuk, M. (2020). Violence and its impact on the emergency nurse.

Journal of Emergency Nursing, *46*(3), 354–358. https://doi.org/10.1016/j.jen.2020.01.005

Appendix A

PRISMA Schematic

```
┌────────────────────┐   ┌────────────────────┐   ┌────────────────────┐
│ MEDLINE via Pubmed │   │      CINAHL        │   │     PsychINFO      │
│                    │   │                    │   │                    │
│  160 Citation(s)   │   │  361 Citation(s)   │   │  406 Citation(s)   │
└────────────────────┘   └────────────────────┘   └────────────────────┘
            │                      │                      │
            └──────────────────────┼──────────────────────┘
                                   ▼
                       ┌────────────────────┐
                       │ 772 Non-Duplicate  │
                       │ Citations Screened │
                       └────────────────────┘
                                   │
                                   ▼
   ╭─────────────────────────────────────────────────────────────╮       ┌────────────────────────┐
   │                   Inclusion/Exclusion                         │──────▶│ 301 Articles Excluded  │
   │                   Criteria Applied                            │       │ After Title/Abstract   │
   │ Filters: Published within last 5 years, English language,     │       │         Screen         │
   │ full-text                                                     │       └────────────────────────┘
   ╰─────────────────────────────────────────────────────────────╯
                                   │
                                   ▼
                       ┌────────────────────┐
                       │ 41 Articles        │
                       │ Retrieved          │
                       └────────────────────┘
                                   │
                                   ▼
             ╭──────────────────────╮    ┌──────────────────────┐    ┌──────────────────────┐
             │  Inclusion/Exclusion │───▶│ 9 Articles Excluded  │    │ 20 Articles Excluded │
             │  Criteria Applied    │    │ After Full Text      │    │ With redundant       │
             │                      │    │ Screen               │    │ information          │
             ╰──────────────────────╯    └──────────────────────┘    └──────────────────────┘
                                   │
                                   ▼
                       ┌────────────────────┐
                       │ 12 Articles        │
                       │ Included           │
                       └────────────────────┘
```

Appendix B

Literature Matrix

Authors	Year Pub	Article Title	Journal	Level of Evidence	Instr. Used	Sample method	Subject Charac.	Comments
Joyce et. Al.	2018	Road to resilience: a systematic review and meta-analysis of resilience training programs and interventions	*BMJ*	Level I: systematic review and meta-analysis	N/A	N/A	N/A	Limitations: Studies focused on general population, not specific to healthcare workers. Usefulness: Provides review of interventions to improve resilience. CBT and mindfulness-based interventions were found most beneficial.
Magtbay et al	2017	Decreasing Stress and Burnout in Nurses	*JONA: The Journal of Nursing Administration*	Level IV, evidence from a single cohort study	Subjective Happiness Scale, Perceived Stress Scale, Generalized Anxiety Scale, Mindful Attention Awareness Scale, Connor-Davidson Resilience Scale, and Copenhagen Burnout Inventory.	Convenience sample, measures were assessed using an online survey assessment tool	50 nurses	Limitations: No control, participants were highly motivated. Study was based on proprietary SMART intervention. Usefulness: Demonstrates effectiveness of a web-based resilience training intervention. Improvements in resilience seen at 8 weeks.
Davis & Batcheller	2020	Managing Moral Distress in the Workplace: Creating a Resiliency Bundle	*Nurse Leader*	Level IV, evidence from a single cohort study	CD-RISC 25	Convenience sample	N=47 RNs (64%), respiratory therapists (9%), unit secretaries (6%), and MD, chaplain, child life, patient care tech, and nurse practitioner (4% each)	Limitations: Small sample. No control. Usefulness: Supports using learning module to introduce resilience strengthening techniques, self-selection of self-care activities. Intervention was self-paced for participants. Statistically significant increase in post-intervention resilience
Allen & Palk	2018	Development of Recommendations and Guidelines for Strengthening Resilience in Emergency Department Nurses	*Traumatology*	Level VI, evidence from a single qualitative study	open ended survey questions	Convenience sample	80 ED nurses	Limitations: higher functioning nurses interviewed, missing nurses who already left due to burnout. Usefulness: Describes trauma experienced by ED nurses and suggestions to improve resilience.

Wei et al	2018	Nurse leaders' strategies to foster nurse resilience	*Journal of Nursing Management*	Level VI, evidence from a single qualitative study	open ended with follow up questions	purposive sampling method	20 nurse leaders	Limitations: Interviews provided subjective self-appraisals from leaders regarding resilience boosting activity Usefulness: Provides recommendations to enhance workplace through effective leadership and positive messages during huddles.
Arrogantea & Aparicio-Zaldivar	2017	Burnout and health among critical care professionals: The mediational role of resilience	*Intensive and Critical Care Nursing*	Level IV, evidence from a single cohort study	CD-RISC 10; Maslach Burnout Inventory-Human Services Survey; Short Form-12 Health Survey	convenience sample	Nurses (n = 30); nursing assistants (n = 14) and physicians (n = 8)	Limitations: small sample size, study took place outside of US (Spain) Usefulness demonstrates the buffer 36hat resilience provides against burnout and supports interventions aimed at improving resilience. Resilience mediates the relationships among three dimensions of burnout syndrome (emotional exhaustion, depersonalization and reduced personal accomplishment) and mental health.
Afshari et al	2020	Demographic predictors of resilience among nurses during the COVID-19 pandemic	*WORK: A Journal of Prevention, Assessment & Rehabilitation*	Level IV, evidence from a single cohort study	CD-RISC	self-selected sample took online questionnaire	387 nurses in an Iranian hospital	Limitations: Study took place outside of US (Iran) Usefulness: Less resilience in nurses since the pandemic. Discusses increased need for resilience training during pandemic. Work experience and level of education have positive correlation with increased resilience.
Brown et al	2020	The Impact of Resiliency on Nurse Burnout: An Integrative Literature Review	*Medsurg Nursing*	Level V, systematic review of qualitative studies	NA	NA	NA	Limitations: Not a comprehensive review. Studies varied in quality of data Usefulness: Suggests resilience training can prevent burnout, with recommendations for a variety of mindfulness based interventions.

Kelly et al	2021	Impact of nurse burnout on organizational and position turnover	*Nursing Outlook*	Level IV, evidence from a single cohort study	CD-RISC 10, Maslach Burnout Inventory	survey sent to 3 hospitals within a health system	1,688 nurses from 78 different units	Limitations: Response bias. Unclear if increased resilience was due to response to work conditions or individual characteristics. Usefulness: Describes positive relationship between burnout and organization turnover. Suggestions to include resilience training to decrease burnout and turnover. Study found increase in burnout using Maslach scale increased likelihood of a person leaving the organization (as opposed to taking another job within the organization). Most vulnerable are young, female, day shift workers
Sánchez-Zaballos & Mosteiro-Díaz	2020	Resilience among professional health workers in emergency services	*Journal of Emergency Nursing*	Level IV, evidence from a single cohort study	Wagnild & Young RS-25	sample method was not discussed	288 nurses, physicians, nursing assistants working in different units in Spain	Limitations: selection bias, resilience could be affected by characteristics of multiple professions included in study (physician, nurse, nurse assistant) in regard to salary, support, education level Usefulness: Low to moderate resilience found in emergency department staff, with night shift and increased tenure having positive association with resilience
Foster et al	2018	On PAR: A feasibility study of the promoting adult resilience program with mental health nurses.	*International Journal of Mental Health Nursing*	Level VI, evidence from a single qualitative study	Open ended questions, interviews	Purposive sample	24 mental health nurses	Limitations: proprietary resilience training program performed on a small sample. Usefulness: Improvements in resilience were seen 3 months post intervention
Klatt et al	2020	Embracing change: A mindful medical center meets COVID-19	*Global Advances in Health and Medicine*	Level IV, evidence from a single cohort study	Maslach Burnout Inventory, Perceived Stress Scale, CD-RISC, Utrecht Work Engagement Scale	Self-selected sample	465 hospital employees	Usefulness: Intervention was performed during pandemic. Online mindfulness intervention helped improve resilience

Appendix C

Hospital IRB Exempt Letter

Institutional Review Board

OFFICE OF RESEARCH COMPLIANCE AND DEVELOPMENT
INSTITUTIONAL REVIEW BOARD (IRB)
COMMITTEE FOR HUMAN RESEARCH PROTECTIONS

DATE: November 23, 2021

TO: Matthew Quick; Principal Investigator
FROM: ▇▇▇▇▇▇, Pharm. D., BCPS; Chair, ▇▇▇▇ Institutional Review
Board (FWA00004507)

PROJECT TITLE: Improving Resiliency in Emergency Department Nurses
REFERENCE #: 1826985-1

ACTION: DETERMINATION OF EXEMPT STATUS
APPROVAL DATE: November 23, 2021

REVIEW CATEGORY: Exemption category #2 *[Tests, Surveys, Interviews]*

Thank you for your submission of New Project materials for this project. The ▇▇▇▇▇▇ Health
System IRB has determined this project is **EXEMPT FROM IRB REVIEW** according to federal
regulations.

The following items are acknowledged in this submission:

- Action Plan - NRC Project Presentation (UPDATED: 10/21/2021)
- Application Form - ECU IRB application and determination (UPDATED: 10/18/2021)
- Cone Health - IRB Application - Cone Health - IRB Application (UPDATED: 11/1/2021)
- Data Collection - Research Data Security Plan Form (UPDATED: 11/1/2021)
- Letter - Course work approval email from staff education (UPDATED: 10/18/2021)
- Questionnaire/Survey - Survey questions (UPDATED: 11/1/2021)
- Questionnaire/Survey - CDRISC10 survey (UPDATED: 10/21/2021)
- Training/Certification - CITI Biomedical Training Certificate (UPDATED: 10/18/2021)

We will retain a copy of this correspondence within our records.

If you have any questions, please contact ▇▇▇▇▇▇▇▇▇▇ or
▇▇▇▇▇▇ Please include your project title and reference number in all
correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within ▇▇▇▇
Health System IRB's records.

- 1 -

Generated on IRBNet

Appendix D

Outline of Online Modules

I.   Module 1: Resilience Training Program: Introduction
     a. Resilience defined and explained
     b. Negative effects of low resilience
     c. Benefits of high resilience
     d. American Psychological Association: 10 Steps to Build Resilience
     e. Evidence for resilience training
     f. Explanation of resilience training program
II.   Module 2: Mindfulness activities
     a. Relaxation response explained
     b. Discuss mindfulness activities
         i. Diaphragmatic breathing
         ii. Progressive muscle relaxation
         iii. Staying present
III. Module 3: Cognitive-behavioral techniques
     a. CBT Background
     b. Cognitive-behavioral triangle
     c. Overview of Cognitive-behavioral techniques
         i. ACDE exercise
         ii. Gratitude journaling
         iii. Engaging in meaningful activities (identified using Values Clarification Worksheet)
IV.   Module 4: The 8-week program outline
     a. Discuss pretest
     b. Weeks 1-2: Take pretest & view modules
     c. Weeks 3-4: Practice diaphragmatic breathing & ABCD worksheet
     d. Weeks 5-6: Practice progressive muscle relaxation & Gratitude journaling
     e. Weeks 7-8: Practice staying present & Values Clarification Worksheet
     f. Discuss posttest

Appendix E

CD-RISC 10

Connor-Davidson Resilience Scale 10 (CD-RISC-10) ©

initials ☐☐☐   ID# ☐☐☐☐☐☐☐   date ☐☐/☐☐/☐☐☐☐   visit ☐☐   age ☐☐

Please indicate how much you agree with the following statements as they apply to you over the last __month__. If a particular situation has not occurred recently, answer according to how you think you would have felt.

	not true at all (0)	rarely true (1)	sometimes true (2)	often true (3)	true nearly all the time (4)
1. I am able to adapt when changes occur.	☐	☐	☐	☐	☐
2. I can deal with whatever comes my way.	☐	☐	☐	☐	☐
3. I try to see the humorous side of things when I am faced with problems.	☐	☐	☐	☐	☐
4. Having to cope with stress can make me stronger.	☐	☐	☐	☐	☐
5. I tend to bounce back after illness, injury, or other hardships.	☐	☐	☐	☐	☐
6. I believe I can achieve my goals, even if there are obstacles.	☐	☐	☐	☐	☐
7. Under pressure, I stay focused and think clearly.	☐	☐	☐	☐	☐
8. I am not easily discouraged by failure.	☐	☐	☐	☐	☐
9. I think of myself as a strong person when dealing with life's challenges and difficulties.	☐	☐	☐	☐	☐
10. I am able to handle unpleasant or painful feelings like sadness, fear, and anger.	☐	☐	☐	☐	☐

Add up your score for each column   0   + ____ + ____ + ____ + ____

Add each of the column totals to obtain CD-RISC score   = _____

Appendix F

Initial Qualtrics Survey Questions

Demographic questions:
What is your role?
   a.) RN
   b.) NT

Which shift do you primarily work?

   a.) Day
   b.) Night
   c.) Mid-shift

How many years of emergency department experience do you have? (number entry)

CD-RISC 10 questionnaire

Appendix G

Final Qualtrics Survey Questions

Demographic questions:
What is your role?
    a.) RN
    b.) NT

Which shift do you primarily work?

    a.) Day
    b.) Night
    c.) Mid-shift

How many years of emergency department experience do you have? (number entry)

Utilization questions
1. During the past two weeks, how many times have you used the activities or resources discussed in the "Building Resilience" modules?
a.) None   b.) one or twice   b.) several days   c.) every day
        d.) multiple times a day
2. Which resources or activities have you found the most helpful?
    A.) Cognitive techniques from the module
    B.) Mindfulness techniques from the module
    C.) Exercise
    D.) Time with family/friends
    E.) Other _____

3. What suggestions do you have for improving this program?

CD-RISC questionnaire

Appendix H

Project Timeline

Jan 4
- Met with site Champion to discuss timeline, resilience training module, and activities to reinforce training content introduced in module.

Jan 11
- Discussed upcoming Resilience Training project at ED Shared Governance monthly meeting.

Jan 18
- Discussed upcoming resilience training project at the ED monthly staff meeting.
- Post flyers throughout unit with information on accessing resilience training module

Jan 23
- Email sent with link to pre-implementation Qualtrics survey

Feb 7
- Email sent with link to resilience training website. Instructions given on how to watch all modules.
- Flyer posted in the locker room with QR code linking to the resilience training website and instructions on how to begin program

Feb 15
- Discussed resilience training project at monthly staff Webex meeting.

Feb 21
- Email sent with information on practicing mindfulness and cognitive behavioral techniquesL diaphragmatic breathing and worksheet on challenging unhelpful thoughts
- Flyer posted in the locker room with QR code linking to the resilience training website section discussing diaphragmatic breathing and challenging unhelpful thoughts

Mar 7
- Email sent with information on practicing mindfulness and cognitive behavioral techniques: progressive muscle relaxation and gratitiude journaling.
- Flyer posted in the locker room with QR code linking to the resilience training website section discussing progressive muscle relaxation and gratitude journaling

Mar 15
- Skills fair presentation: Gave brief example of a mindfulness exercise and CBT technique introduced in learning module. Demonstrated how to access training material.

Mar 21
- Email sent with information on practicing mindfulness and cognitive behavioral techniques: staying present and engaging in meaningful activities.
- Flyer posted in the locker room with QR code linking to the resilience training website section discussing staying present and engaging in meaningful activities

April 4
- Sent out email with link to Qualtrics post implementation survey

April 25
- Final survey closes

Appendix I

Google Analytics User Data

Appendix J

Initial Survey Results

Demographic Data

Hours worked in a typical week:

range	8-60
average	37.85
std. dev.	8.71
median	36
mode	36

Years of Emergency Department experience:

range	0-34
average	7.25
std. dev.	7.89
median	4
mode	1

CD-RISC 10 Data
1. I am able to adapt when changes occur.
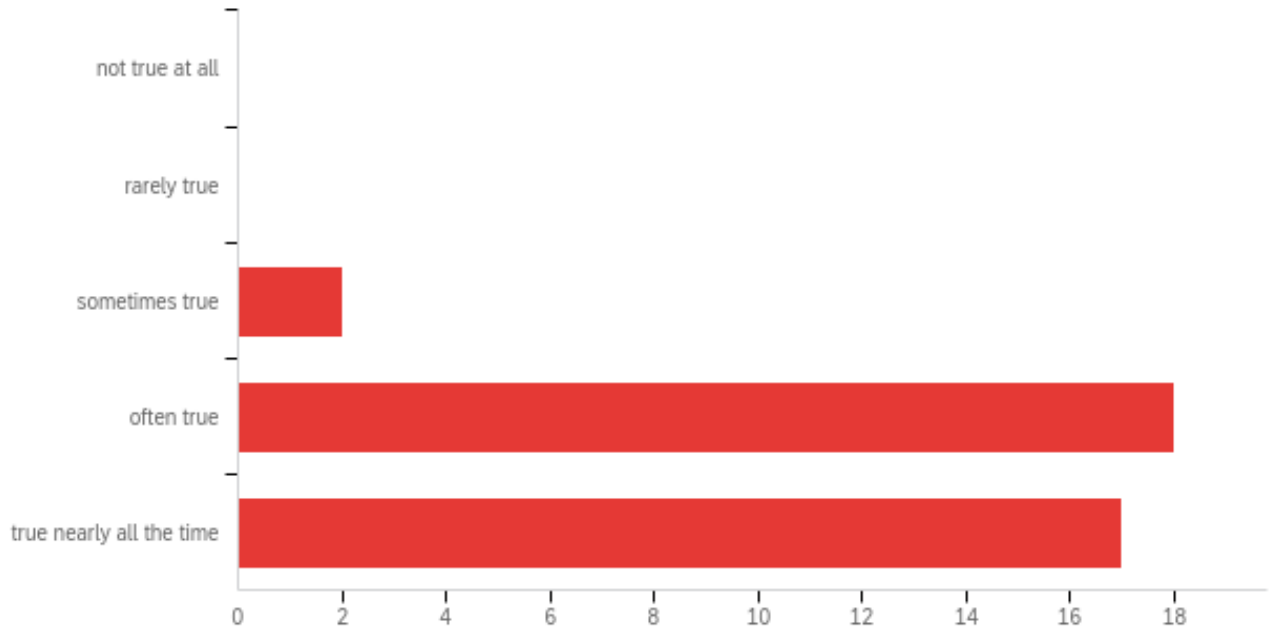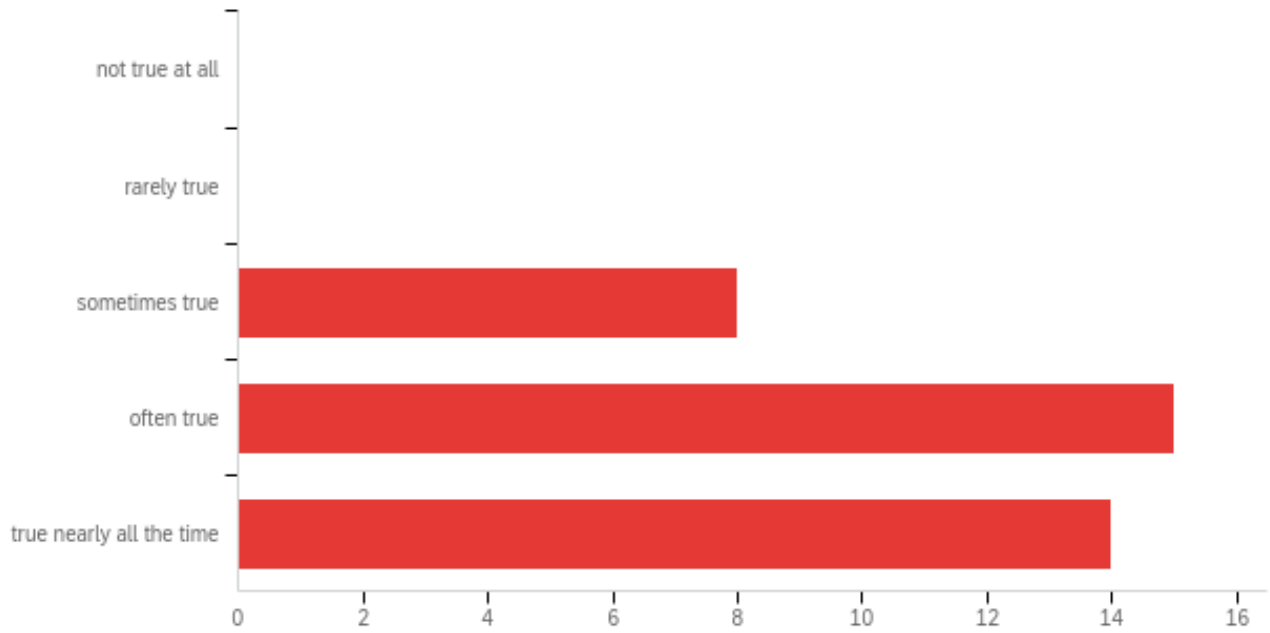
2. I can deal with whatever comes my way.

3. I try to see the humorous side of things when I am faced with problems.

4. Having to cope with stress can make me stronger.

5. I tend to bounce back after illness, injury, or other hardships.
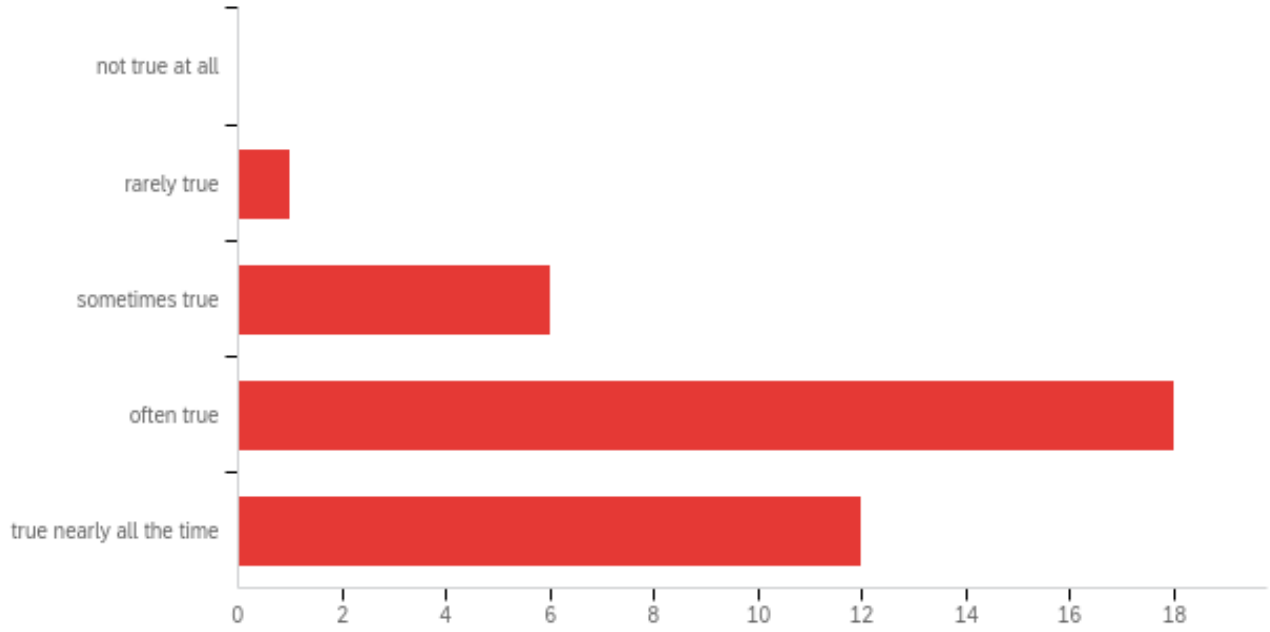
6. I believe I can achieve my goals, even if there are obstacles.
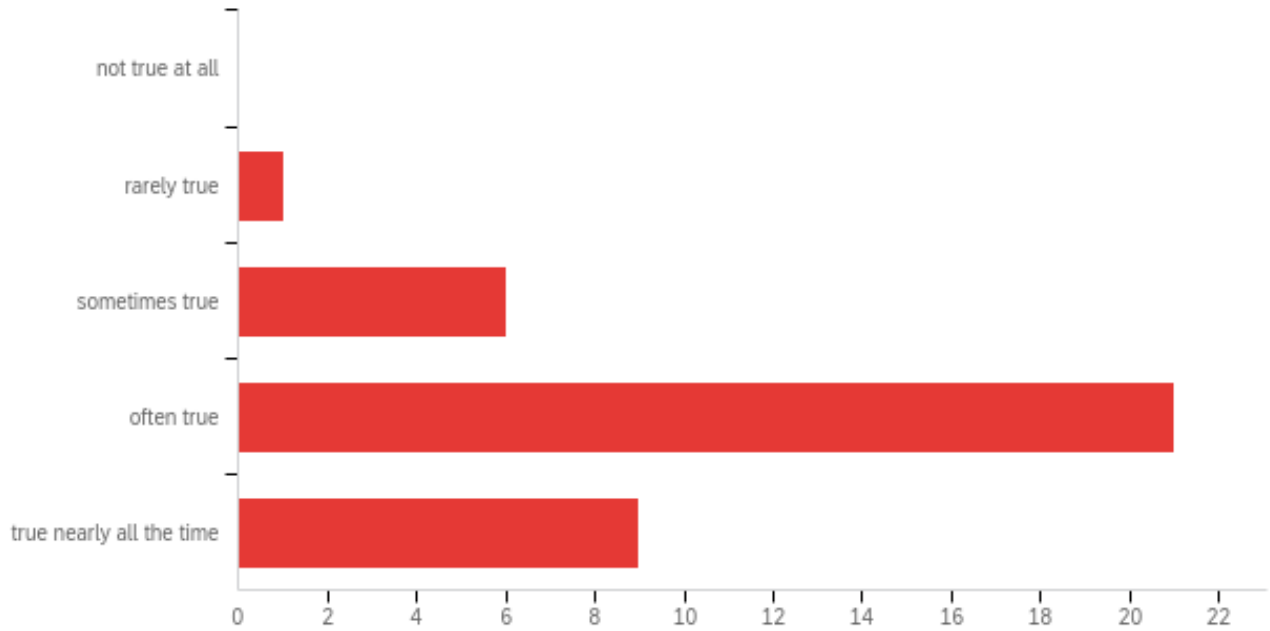
7. Under pressure, I stay focused and think clearly.
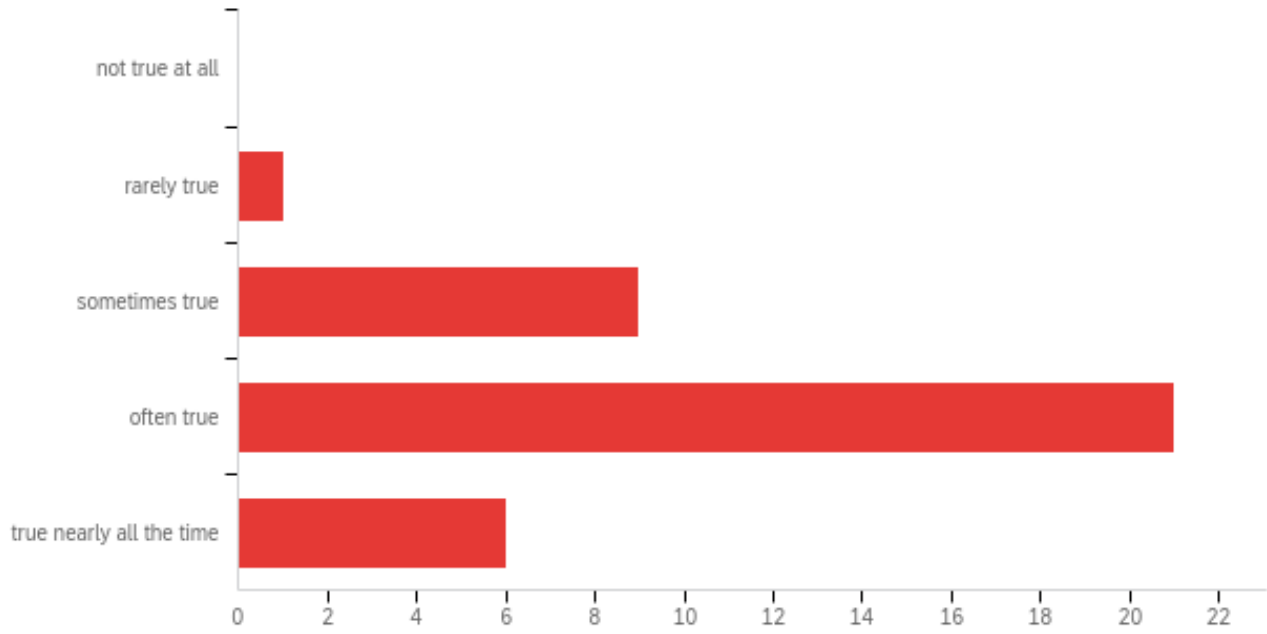
8. I am not easily discouraged by failure.

9. I think of myself as a strong person when dealing with life's challenges and difficulties.
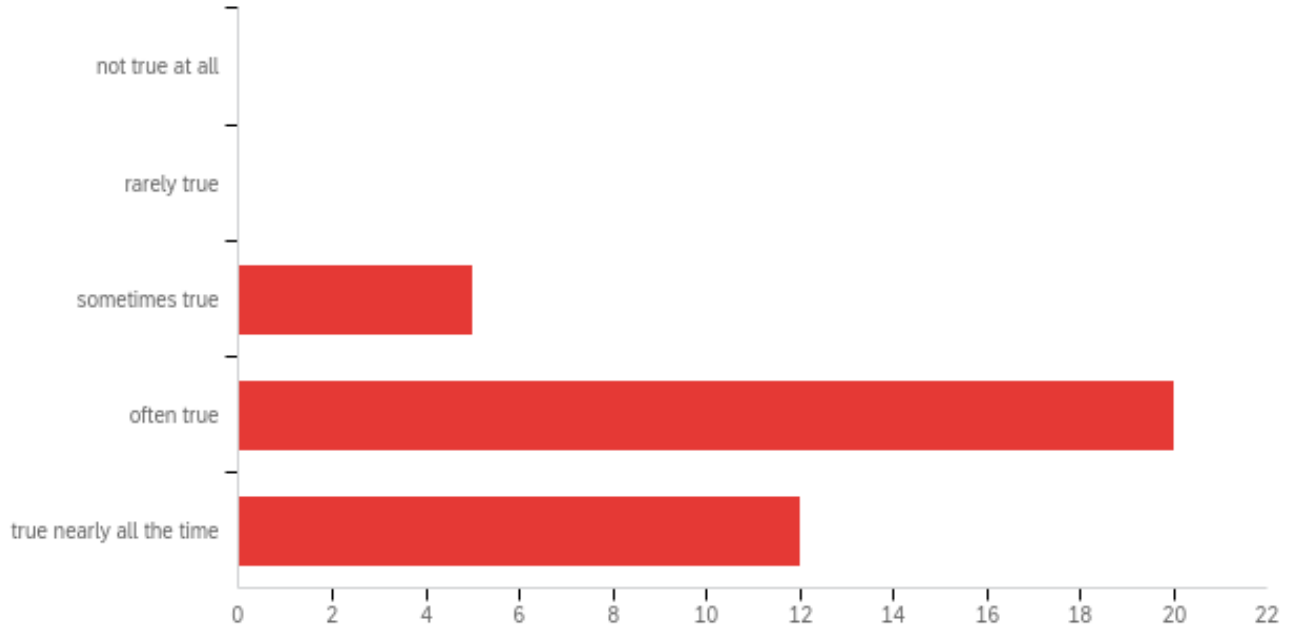
10. I am able to handle unpleasant or painful feelings like sadness, fear, and anger.

Appendix K

Final Survey Results

Demographic Data
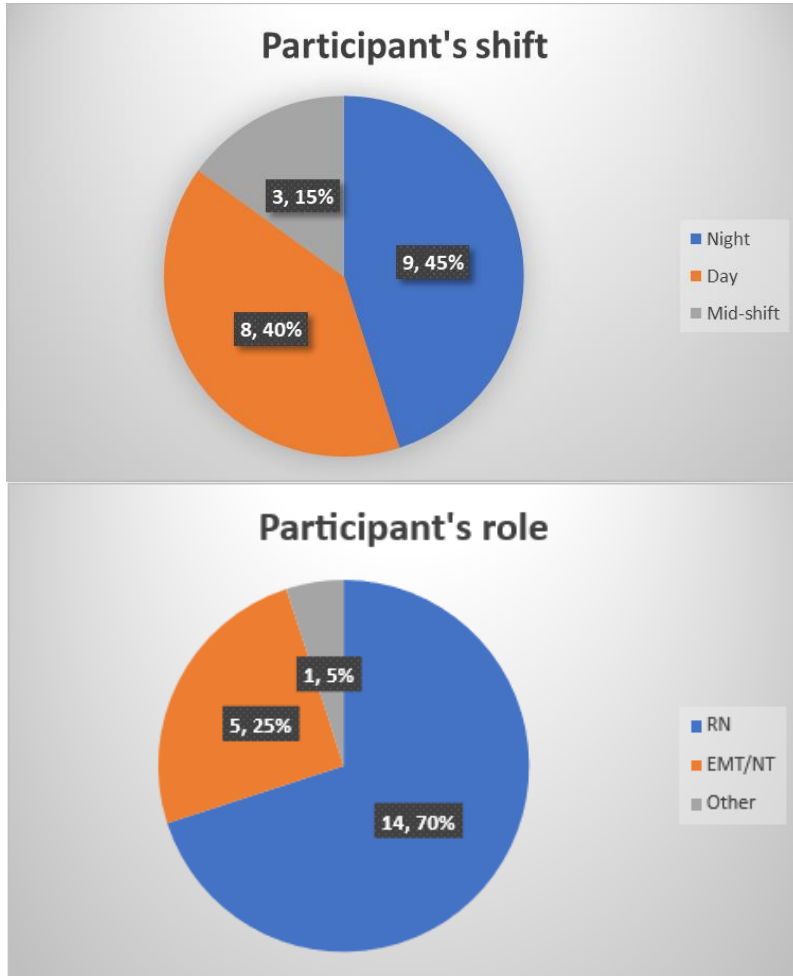
Hours worked in a typical week:

range	16-37
average	35.05
std. dev	4.387197
median	36
mode	36

Years of Emergency Department experience:

range	0-10
average	3.59
std. dev.	2.954471
median	3

mode	3

Program utilization data

Q5 – Over the past 8 weeks, did you try any of the activities or use any of the resources discussed in the resilience training modules?
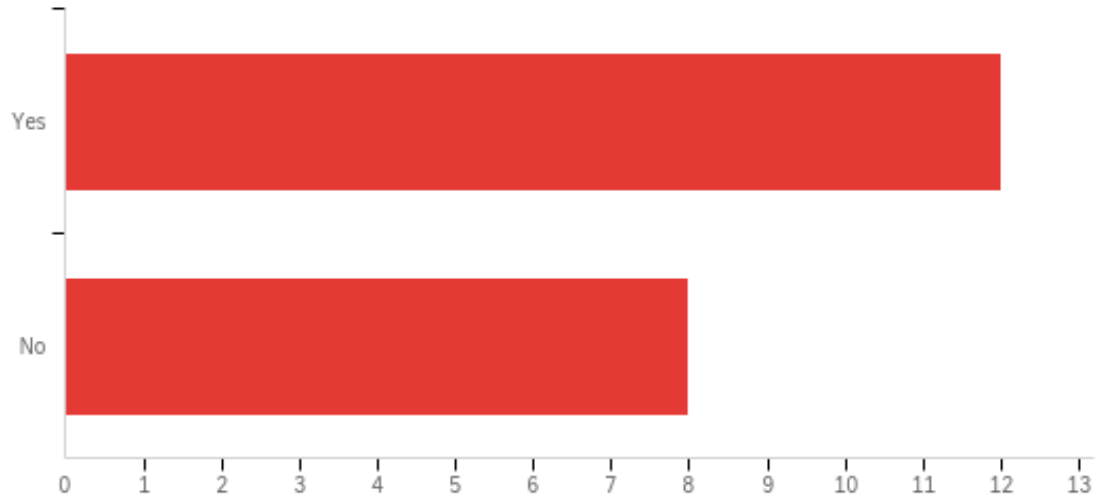
Q6 – Which techniques did find most helpful?
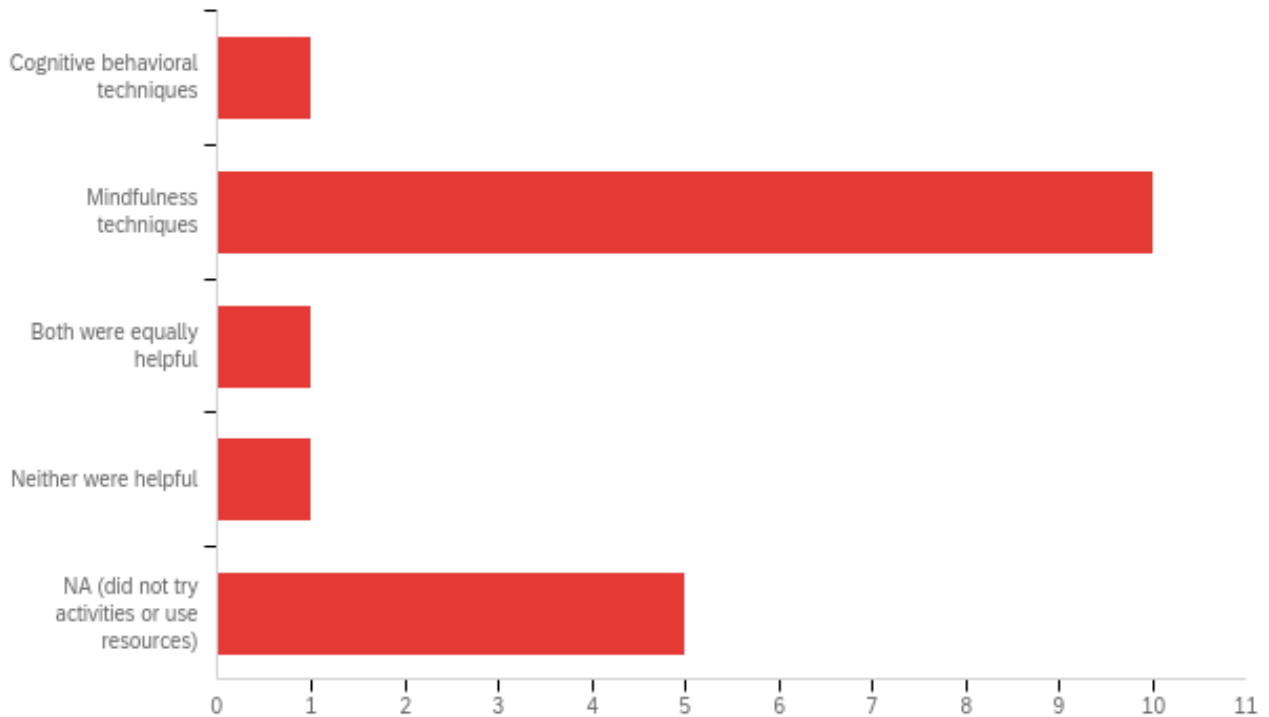
Q7 – What suggestions do you have for improving this program?

Enlist a paid mental health day for all staff
no suggestions

| Allowing staff to have a non interrupted meal break |
| None |

CD-RISC 10 Data

65. I am able to adapt when changes occur.
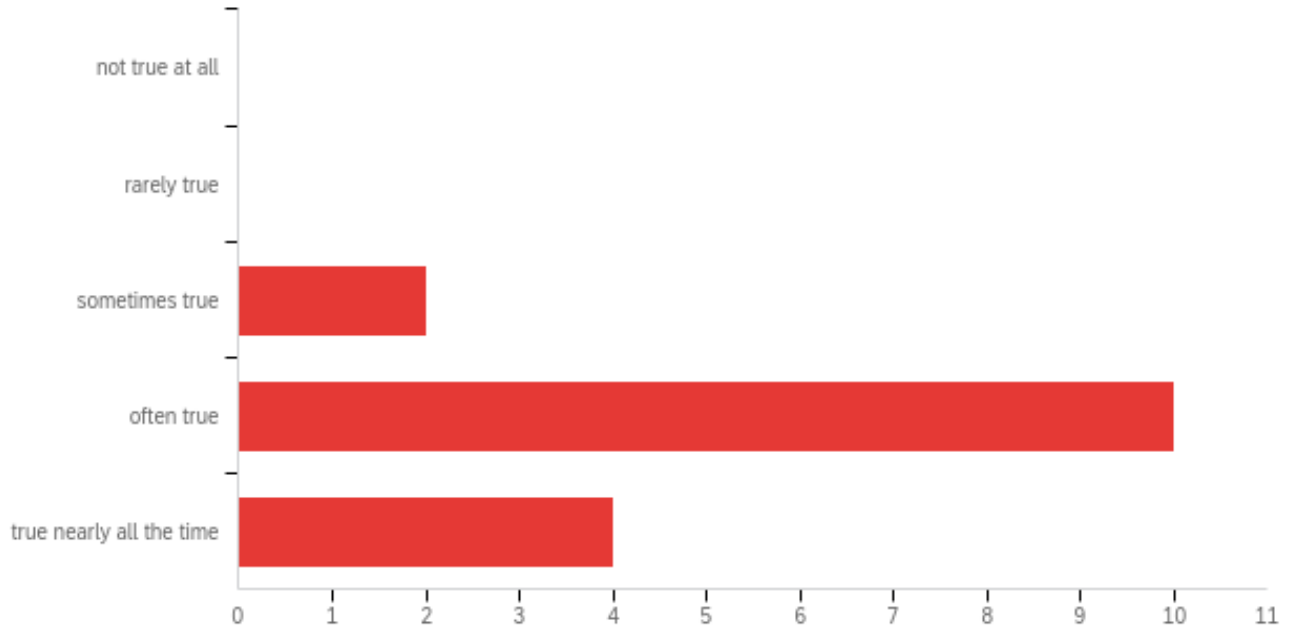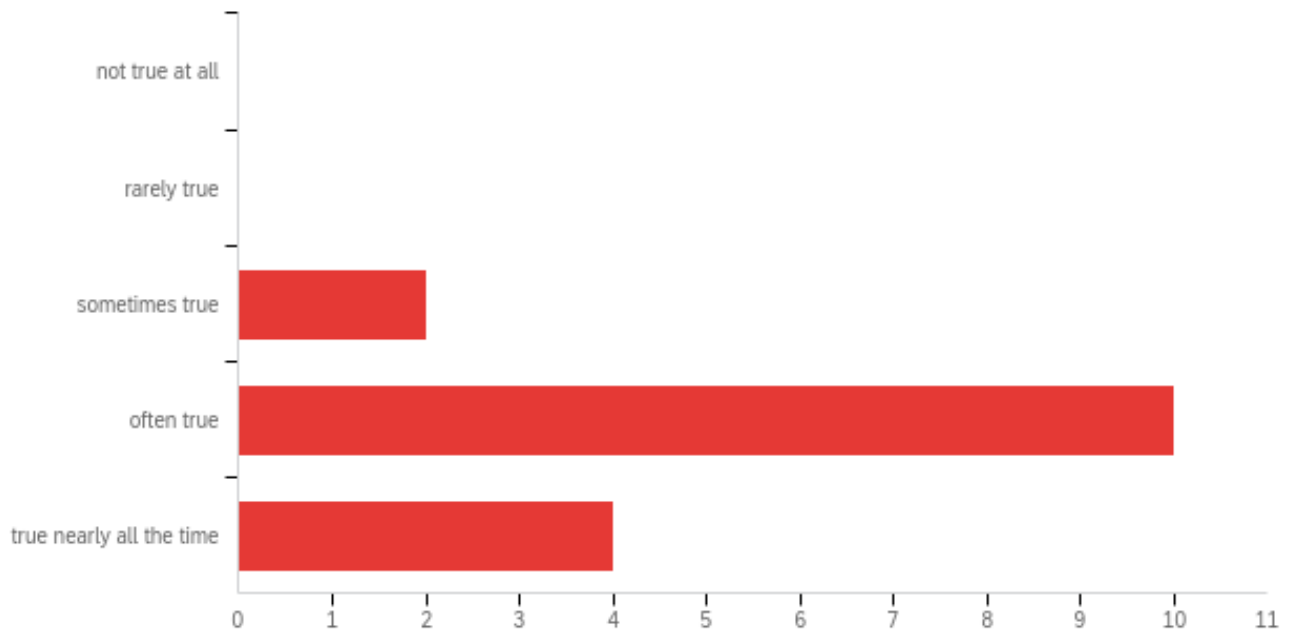
2. I can deal with whatever comes my way.

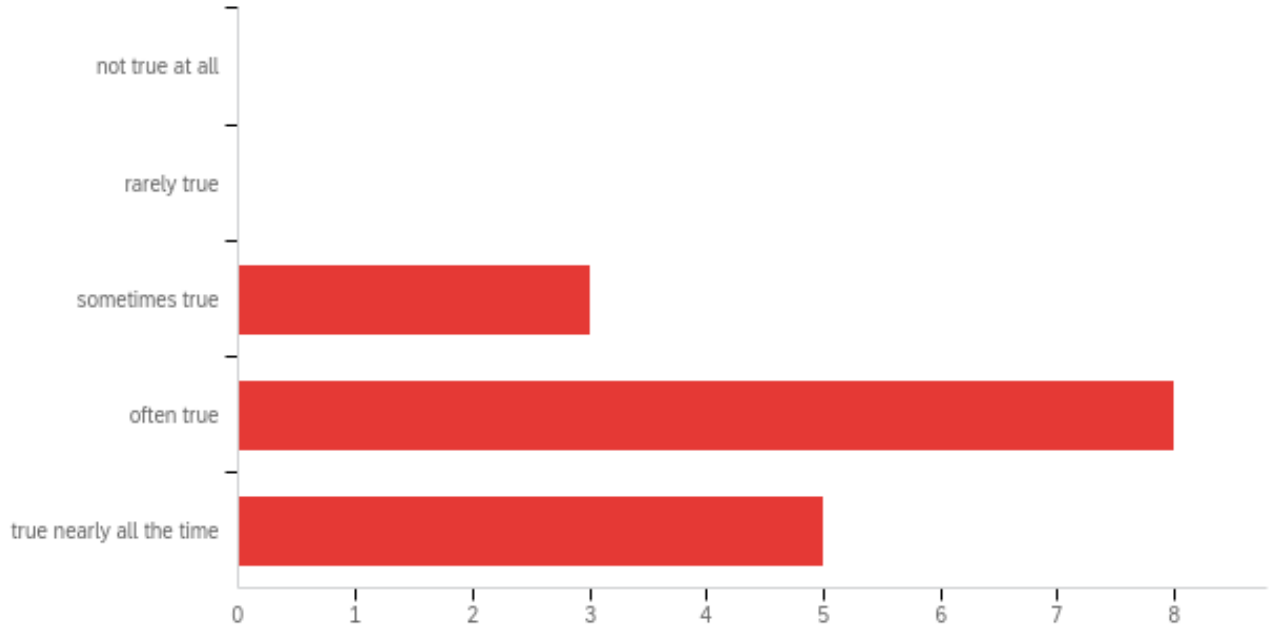**3. I try to see the humorous side of things when I am faced with problems.**
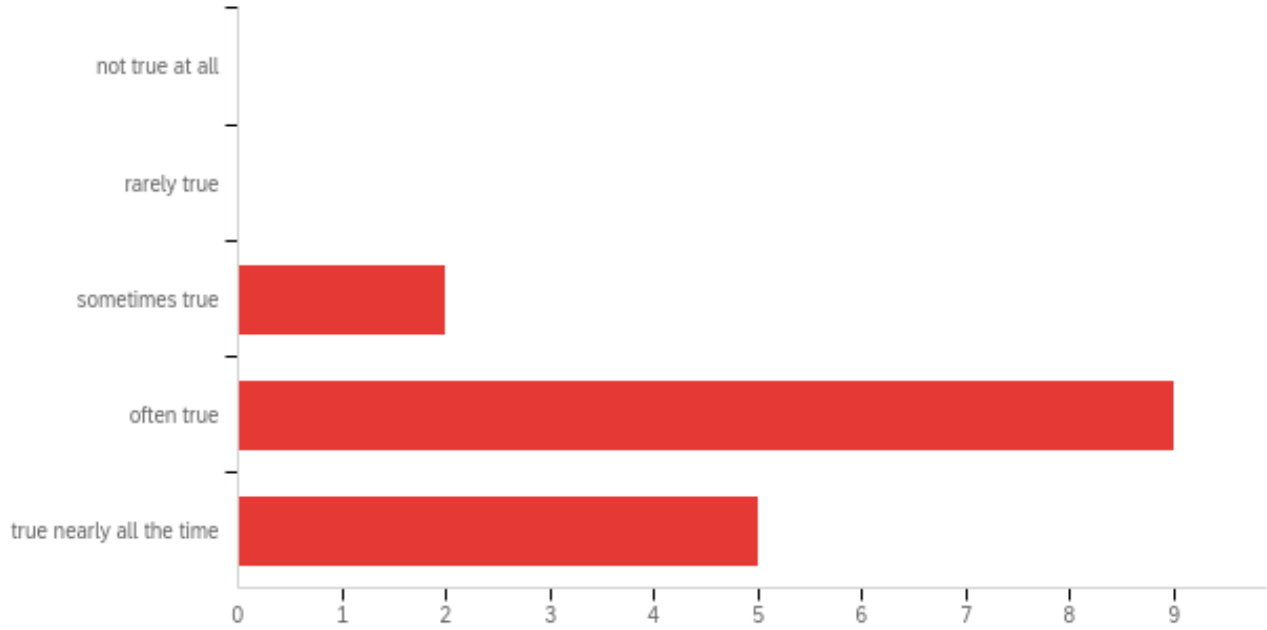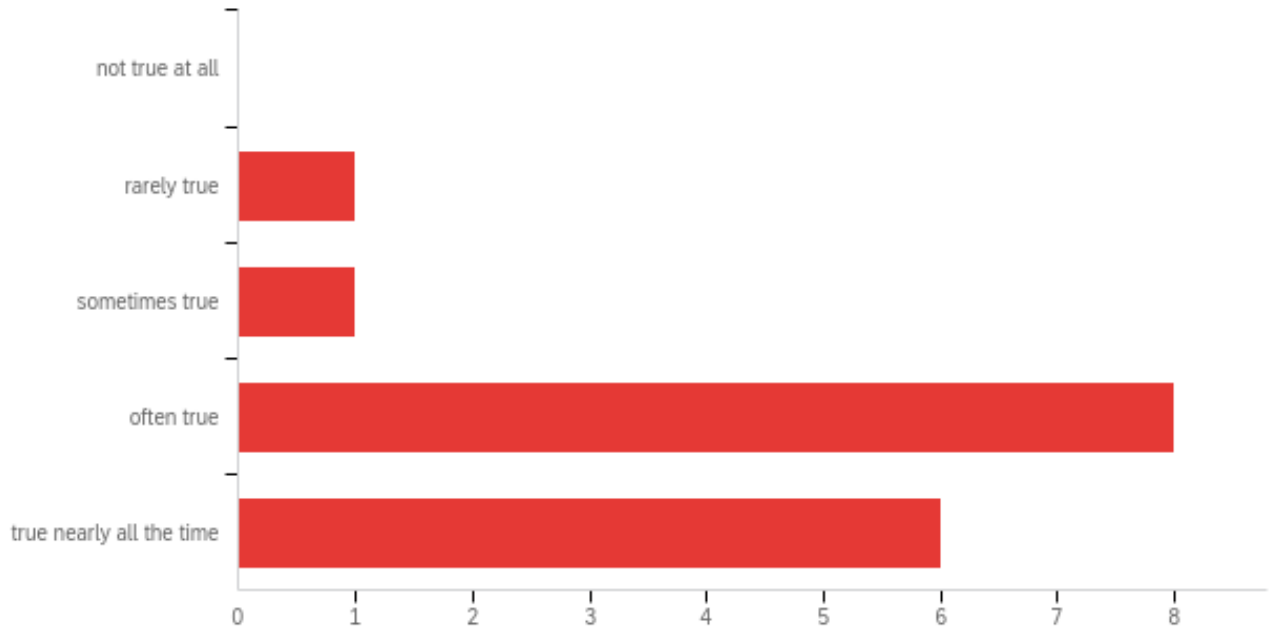
4. Having to cope with stress can make me stronger.
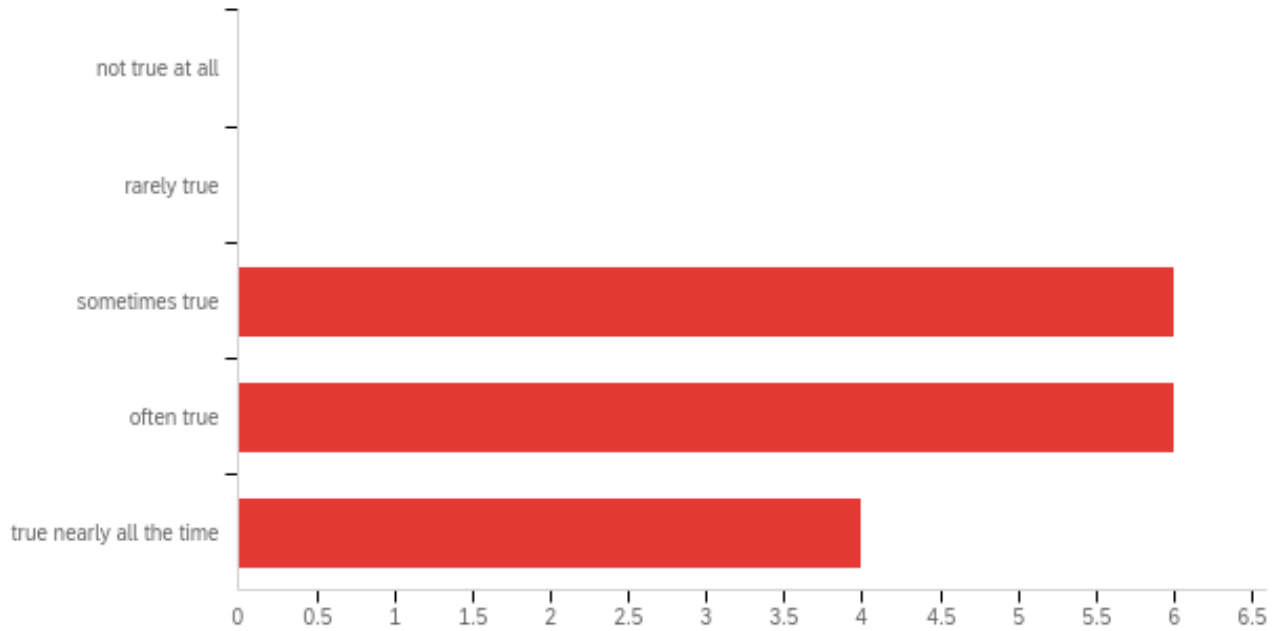
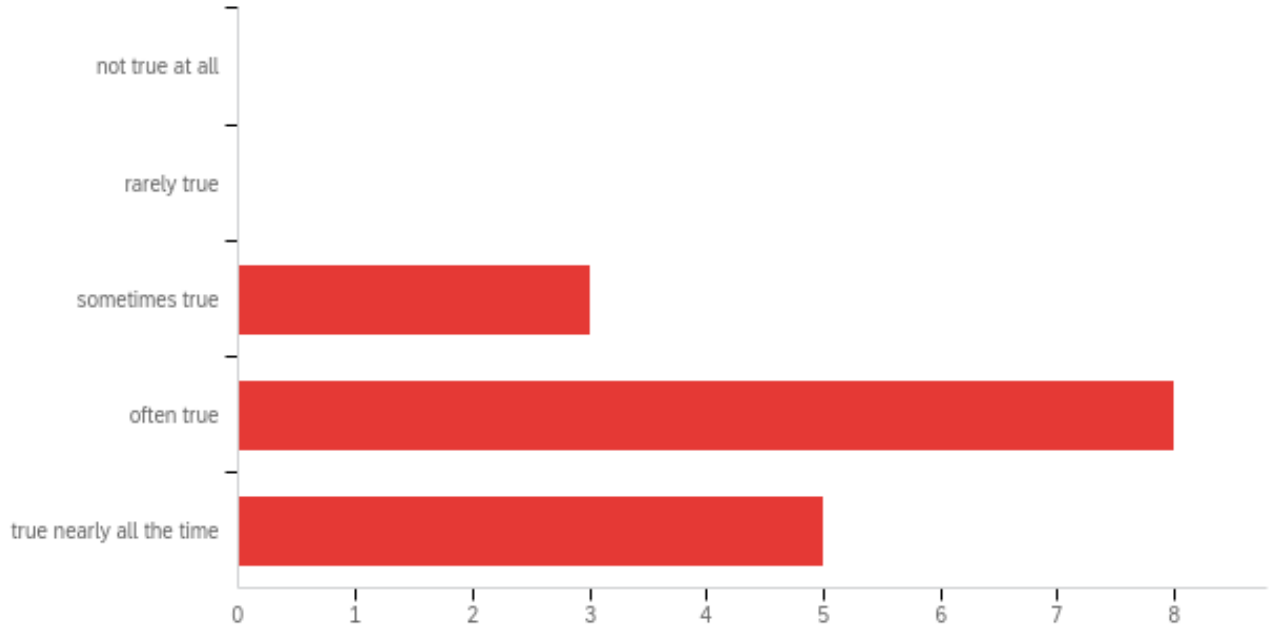| #	Field	Minimum	Maximum	Mean	SD	Variance	Count
1	4. Having to cope with stress can make me stronger.	3.00	5.00	3.88	0.78	0.61	16

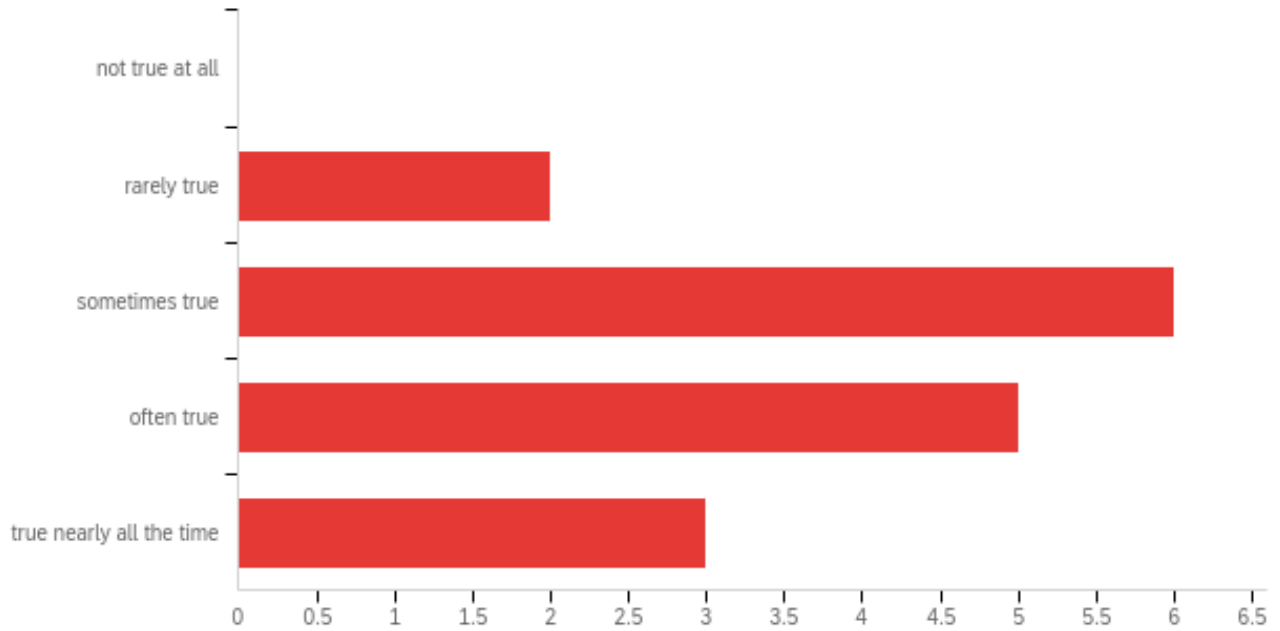**5. I tend to bounce back after illness, injury, or other hardships.**

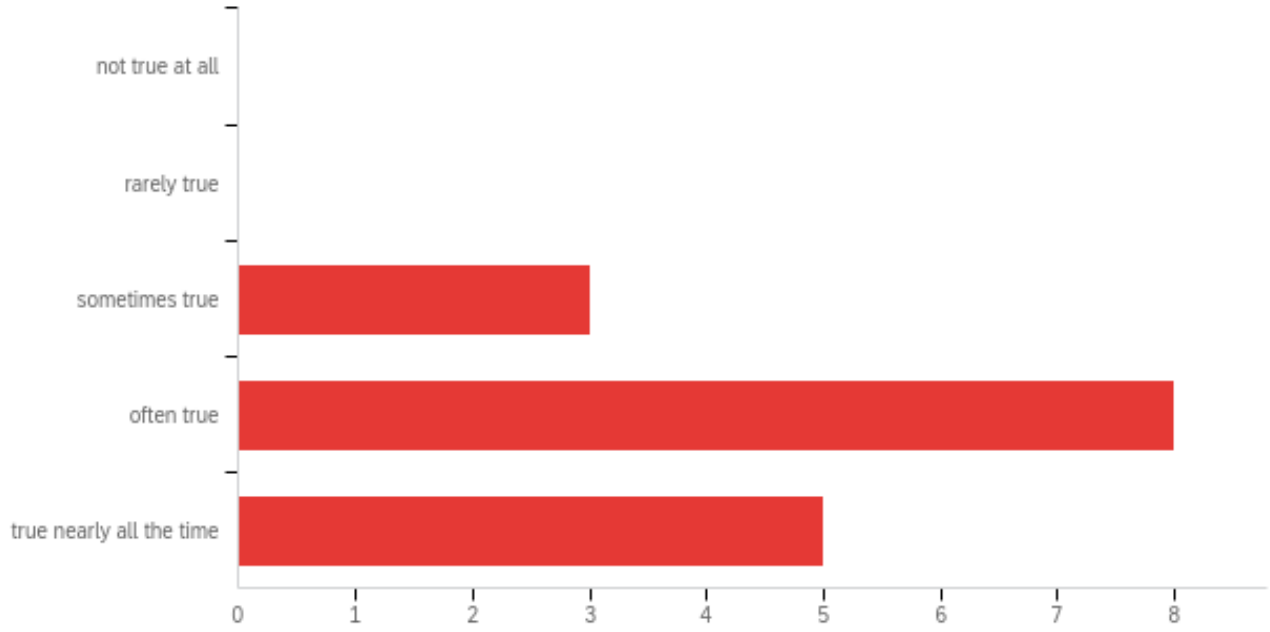**6. I believe I can achieve my goals, even if there are obstacles.**

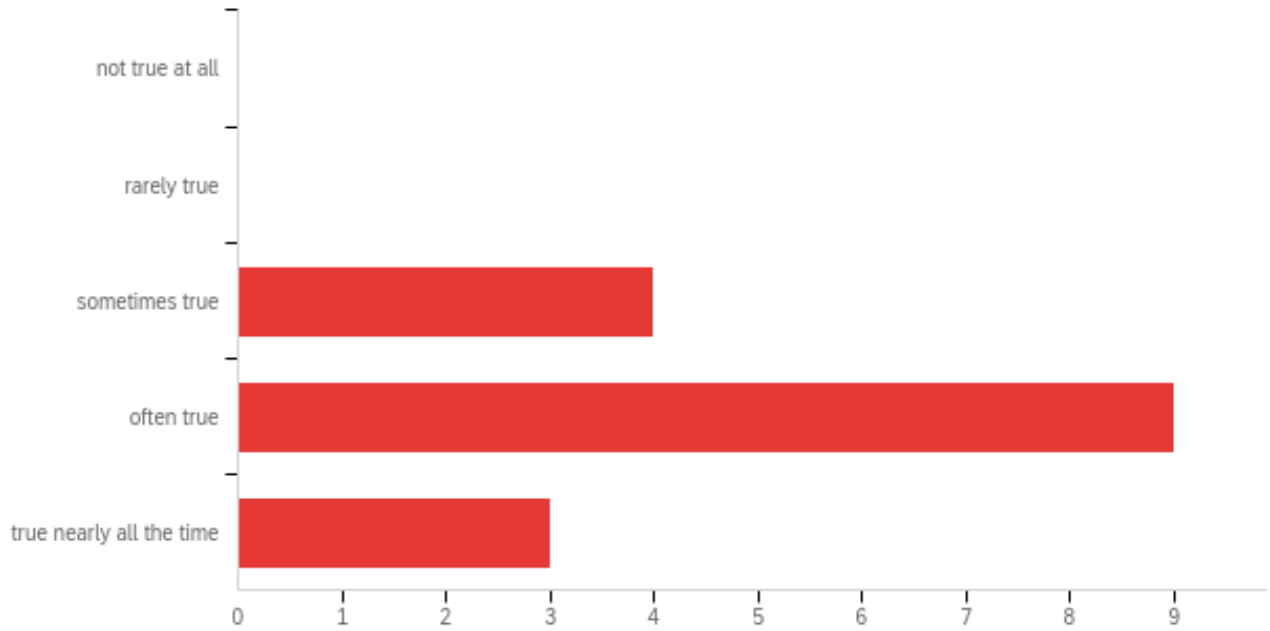**7. Under pressure, I stay focused and think clearly.**

8. I am not easily discouraged by failure.

9. I think of myself as a strong person when dealing with life's challenges and difficulties.

10. I am able to handle unpleasant or painful feelings like sadness, fear, and anger.

Appendix L

Resilience Sub-categories

Resilience Sub-category	Initial score: Total average	SD	Final score: Total average	SD	Final score: Utilized group average	SD	Final score: Non-utilization group average	SD
Flexibility	3.25	0.71	3.125	0.65	3.27	0.54	2.8	0.75
Self-efficacy	2.93	0.82	3.04	0.70	3.09	0.70	2.93	0.77
Optimism	2.86	0.72	2.97	0.85	3.16	0.77	3.2	0.4
Maintaining attention under stress	2.81	0.91	3.13	0.69	3.18	0.57	3	0.89
Ability to regulate emotions	2.9	0.81	2.93	0.66	3.09	0.67	2.6	0.49

Appendix M

Budget

Item	Cost	Quantity	Total
CD-RISC 10 survey	$30	1	$30
Website domain and hosting (1 year)	$47.28	1	$47.28
Staff: Experienced RN	$40/hour	65 hours	$2,600
Total			$2,677.28

Appendix N

Doctor of Nursing Practice Essentials

	Description	Demonstration of Knowledge
Essential I *Scientific Underpinning for Practice*	**Competency** – Analyzes and uses information to develop practice **Competency** -Integrates knowledge from humanities and science into context of nursing **Competency** -Translates research to improve practice **Competency** -Integrates research, theory, and practice to develop new approaches toward improved practice and outcomes	-Evaluated current research that was relevant to the project through literature review -Incorporated knowledge from cognitive behavior therapy into training program -Utilized IOWA model as framework to guide project
Essential II *Organizational & Systems Leadership for Quality Improvement & Systems Thinking*	**Competency** –Develops and evaluates practice based on science and integrates policy and humanities **Competency** –Assumes and ensures accountability for quality care and patient safety **Competency** -Demonstrates critical and reflective thinking **Competency** -Advocates for improved quality, access, and cost of health care; monitors costs and budgets **Competency** -Develops and implements innovations incorporating principles of change **Competency** – Effectively communicates practice knowledge in writing and orally to improve quality **Competency** – Develops and evaluates strategies to manage ethical dilemmas in patient care and within health care delivery systems	-Developed project to improve current state of nurse resilience in an organization -Reflected on outcomes of initial and final survey information in making recommendations for future practice
Essential III *Clinical Scholarship & Analytical Methods for Evidence-Based Practice*	**Competency** – Critically analyzes literature to determine best practices **Competency** – Implements evaluation processes to measure process and patient outcomes **Competency** – Designs and implements quality improvement strategies to promote safety, efficiency, and equitable quality care for patients	-Designed project based on best practices found in literature review -Collaborated with project site and university to disseminate findings at monthly staff meeting and project presentation event on campus, respectively

	Description	Demonstration of Knowledge
	Competency – Applies knowledge to develop practice guidelines **Competency** – Uses informatics to identify, analyze, and predict best practice and patient outcomes **Competency** – Collaborate in research and disseminate findings	
Essential IV *Information Systems – Technology & Patient Care Technology for the Improvement & Transformation of Health Care*	**Competency** – Design/select and utilize software to analyze practice and consumer information systems that can improve the delivery & quality of care **Competency** - Analyze and operationalize patient care technologies **Competency** – Evaluate technology regarding ethics, efficiency and accuracy **Competency** – Evaluates systems of care using health information technologies	-Created narrated module videos using PowerPoint software -Designed and published website to present modules to staff -Created Qualtrics survey to acquire demographic data and administer CD-RISC 10 to participants
	Description	**Demonstration of Knowledge**
Essential V *Health Care Policy of Advocacy in Health Care*	**Competency**- Analyzes health policy from the perspective of patients, nursing and other stakeholders **Competency** – Provides leadership in developing and implementing health policy **Competency** –Influences policymakers, formally and informally, in local and global settings **Competency** – Educates stakeholders regarding policy **Competency** – Advocates for nursing within the policy arena **Competency**- Participates in policy agendas that assist with finance, regulation and health care delivery **Competency** – Advocates for equitable and ethical health care	-Communicated with project champion, staff, and nurse educators regarding development and administration of project -Advocated for nurse's wellbeing in promoting self-care and resilience enhancing activities
Essential VI *Interprofessional Collaboration for Improving Patient & Population*	**Competency**- Uses effective collaboration and communication to develop and implement practice, policy, standards of care, and scholarship	-Collaborated with hospital executives, unit director, and nurse educators to determine the best mode of delivering educational material

Health Outcomes	**Competency** – Provide leadership to interprofessional care teams **Competency** – Consult intraprofessionally and interprofessionally to develop systems of care in complex settings	
Essential VII *Clinical Prevention & Population Health for Improving the Nation's Health*	**Competency**- Integrates epidemiology, biostatistics, and data to facilitate individual and population health care delivery **Competency** – Synthesizes information & cultural competency to develop & use health promotion/disease prevention strategies to address gaps in care **Competency** – Evaluates and implements change strategies of models of health care delivery to improve quality and address diversity	-Evaluated data from the general population as well as studies involving target population of nurses to develop educational material
Essential VIII *Advanced Nursing Practice*	**Competency**- Melds diversity & cultural sensitivity to conduct systematic assessment of health parameters in varied settings **Competency** – Design, implement & evaluate nursing interventions to promote quality **Competency** – Develop & maintain patient relationships **Competency** –Demonstrate advanced clinical judgment and systematic thoughts to improve patient outcomes **Competency** – Mentor and support fellow nurses **Competency**- Provide support for individuals and systems experiencing change and transitions **Competency** –Use systems analysis to evaluate practice efficiency, care delivery, fiscal responsibility, ethical responsibility, and quality outcomes measures	-Developed culturally competent learning material, providing range of resilience enhancing activities accessible to different cultural and professional backgrounds -Designed and implemented a nurse-driven resilience program to decrease nurse turnover.

.