THE EFFECTIVENESS OF A WEB-BASED STRESS MANAGEMENT INTERVENTION PROGRAM FOR REDUCING BURNOUT AND STRESS IN REGISTERED NURSES WORKING IN HIGH-RISK LABOR AND DELIVERY UNITS

A DISSERTATION

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN THE GRADUATE SCHOOL OF THE

TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NURSING

BY

SHELLIE NELSON, RN, M.S.

DENTON, TEXAS

DECEMBER 2023

Copyright © 2023 by Shellie Nelson

ABSTRACT

SHELLIE NELSON

THE EFFECTIVENESS OF A WEB-BASED STRESS MANAGEMENT INTERVENTION PROGRAM FOR REDUCING BURNOUT AND STRESS IN REGISTERED NURSES WORKING IN HIGH-RISK LABOR AND DELIVERY UNITS

DECEMBER 2023

According to the literature, the high level of stress experienced by nurses is one of the leading causes of burnout in the profession (Shah et al., 2021). Long-term stress could hurt hospitals by making nurses unhappy, tired, underperforming, or considering leaving. Potentially detrimental results include lengthened hospital stays, increased incidences of medical errors, diminished health outcomes, and diminished levels of patient satisfaction (Schlak et al., 2021). Though there is a lot of research related to the stress nurses feel, there is a gap in the literature about how stress management strategies affect nurses' feelings of stress and burnout. Specific plans are needed to help nurses in high-risk labor and delivery settings deal with stress and avoid burnout. This study observed how a web-based stress management program assists nurses working in high-risk labor and deliver patient care settings feel less stressed and less burned out. This randomized controlled study included three online questionnaires and participation in the web-based BREATHE: Stress Management for Nurses program. One hundred and nine nurses from Texas and California working in high-risk labor and delivery units participated in this study. The Nursing Stress Scale (NSS) measured how stressed-out nurses thought they were. In addition, nurses' levels of burnout were measured using the Maslach Burnout Inventory (MBI). The outcomes of the research showed that there is a significant positive relationship between stress management and burnout with the usage of the BREATHE program. As this study's results indicated, participants who accessed the program showed an improvement in six of the seven subscales of the NSS and two of the three subscales of the MBI.

ii

ABSTRACTii
LIST OF TABLES
LIST OF FIGURES
I. INTRODUCTION
Problem Statement
Purpose of the Study7
Research Questions
Theoretical Framework
Nature of the Study
Assumptions 12
Limitations
Definition of Terms
II. LITERATURE REVIEW
Methodology17
Literature Search
Data Analysis and Synthesis
Results
Theoretical Framework
Stress and Burnout: A Universal Perspective
Sources of Stress Experienced by Nurses
Physical Stressors
Work Relationships
Working Conditions
Nurse Well-Being Related to Stress and Burnout

Lack of Control	
Mental Effects	
Coping Strategies and Mechanisms	
Stress-Related Effects on Patient Care and Outcomes	
III. RESEARCH METHOD	
Population and Sample	56
Sample Size and Method of Determination	
Sampling Method and Data Collection	
Instrumentation	59
Intervention	60
Data Analysis	61
Ethical Consideration	61
IV. RESULTS	63
IV. RESULTS Assessment of Reliability	
IV. RESULTS	
 IV. RESULTS Assessment of Reliability Relationship Between Demographics and Stress Relationships Between the Dimensions in the Stress Variable 	
 IV. RESULTS Assessment of Reliability Relationship Between Demographics and Stress Relationships Between the Dimensions in the Stress Variable Relationships Between the Dimensions in the Burnout Variable 	
 IV. RESULTS Assessment of Reliability Relationship Between Demographics and Stress Relationships Between the Dimensions in the Stress Variable Relationships Between the Dimensions in the Burnout Variable Difference in Perceived Stress as Measured by the NSS 	
 IV. RESULTS Assessment of Reliability Relationship Between Demographics and Stress Relationships Between the Dimensions in the Stress Variable Relationships Between the Dimensions in the Burnout Variable Difference in Perceived Stress as Measured by the NSS Difference in Perceived Burnout as Measured by the MBI-HSS 	
 IV. RESULTS Assessment of Reliability Relationship Between Demographics and Stress Relationships Between the Dimensions in the Stress Variable Relationships Between the Dimensions in the Burnout Variable Difference in Perceived Stress as Measured by the NSS Difference in Perceived Burnout as Measured by the MBI-HSS Summary of Findings 	
 IV. RESULTS	
 IV. RESULTS	
 IV. RESULTS	
IV. RESULTS Assessment of Reliability Relationship Between Demographics and Stress Relationships Between the Dimensions in the Stress Variable Relationships Between the Dimensions in the Burnout Variable Difference in Perceived Stress as Measured by the NSS Difference in Perceived Burnout as Measured by the MBI-HSS Summary of Findings V. RECOMMENDATIONS AND CONCLUSIONS Discussion of the Findings Conclusions and Implications	

APPENDICES

A. TWU IRB Approval Letter	121
B. TWU Consent to Participate in Research	122
C. Demographic Questionnaire	124
D. Items and Scoring for Maslach Burnout Inventory – Human Services Survey	126
E. Items and Scoring for the Nursing Stress Scale	128
F. Participant Recruitment Email	130
G. Participant Recruitment Flyer	131

LIST OF TABLES

1. Studies Examining the Effects of Stress and Burnout
2. Study Demographics
3. Internal Consistency of the NSS Subscales
4. Internal Consistency of the MBI-HSS Subscales
5. Relationship Between Demographic Variables and Various Dimensions of Stress
6. Relationship Between Demographic Variables and Various Dimensions of Burnout 74
7. Pearson's Correlation Analysis Showing Relationship Between Dimensions in Stress
Variable
8. Pearson's Correlation Analysis Showing Relationship Between Dimensions in Burnout
Variable
9. Post Program Score Was Lower Compared to Pre-Stress Dimensions Score in the
Experimental and Control Groups
10. Repeated Measures ANOVA Conducted to Examine the Effects of the Participation in the
Program on the Stress Level in the Experimental Group
11. Repeated Measures ANOVA Conducted to Examine the Effects of the Participation in the
Program on the Stress Level in the Control Group
12. Post Program Score Was Lower Compared to Pre-Burnout Dimensions Score in the
Experimental and Control Groups
13. Repeated Measures ANOVA Conducted to Examine the Effects of the Participation in the
Program on the Burnout in the Experimental Group
14. Post Hoc Pairwise Comparisons Using a Bonferroni Correction of the Main Effects in the
Experimental Group
15. Repeated Measures ANOVA Conducted to Examine the Effects of the Participation in the
Program on the Burnout in the Control Group

LIST OF FIGURES

1. Phases of Transactional Model of Stress and Coping	. 10
2. PRISMA Diagram for Integrated Literature Search Strategy	. 19
3. Work Performance Score of Nurses Due to Stress and Burnout	. 30
4. Nurses Rating Their Level of Stress	. 32
5. Effects of Stress and Burnout on Nurses and Patients	. 35
6. How Often Do Nurses Participate in Coping and Intervention Mechanisms	. 38

CHAPTER I

INTRODUCTION

Stress at work is a global problem affecting a nurse's job, home, and social life. According to a series of yearly polls by the American Psychological Association (2017), work has been one of the top three sources of stress for American adults for over a decade. The poll found that the number of people who reported feeling at least one stress-related symptom was significantly higher than in previous years. More Americans are turning towards stress reduction techniques to deal with stress as they experience more stress symptoms (American Psychological Association, 2017). Stress has been considered an occupational hazard for nurses since the mid-1950s (Kahn et al., 1964). Research has consistently found that adverse job characteristics such as high workloads, low staffing levels, long shifts, low control, low schedule flexibility, time pressure, high job and psychological demands, low task variety, role conflict, low autonomy, negative nursephysician relationship, poor supervisor/leader support, poor leadership, negative team relationship, and job insecurity has been associated with stress and burnout in nursing (Dall'Ora et al., 2020). However, many believe that nursing provides meaningful work, career growth opportunities, diverse specialty training, high earning potential, and job stability. Because of this, nursing is one of the top five most popular jobs (Ariella, 2023).

As research has shown, one of the most stressful jobs in healthcare is being a nurse. The National Institute for Occupational Safety and Health (NIOSH) says that work-related stress is "the harmful physical and emotional responses that happen when the demands of the job don't match up with the employee's skills, resources, or needs" (Centers for Disease Control and Prevention [CDC], 2014). People see it as a high-risk, high-pressure job because it is always busy and there are always emergencies. Also, Watanabe et al. (2015) found that nurses can have psychological stress and mental health problems, which could make them

more likely to experience burnout than other healthcare workers. According to Babapour et al. (2022), job stress is an interactive situation between the job situation and the working person in that job, which leads to changes in the individual's psychological and physiological status and affects his or her normal performance. Work-related stress can damage a person's physical and mental health and ultimately have a negative effect on job productivity by increasing stress levels (Labrague et al., 2020). The COVID pandemic has added a new level of stress to nurses' lives. The increase in the demand for care, coupled with the nature of their jobs, increased their risk for experiencing higher levels of stress and burnout. Galanis et al. (2021) did a systemic review and meta-analysis to look at nurse stress and burnout and the risk factors that go along with them. They found that the main things that increased nurses' stress and burnout were working longer in quarantine areas, working in high-risk environments, working in hospitals with too few staff and resources, having more work to do, and having less specialized training. Another source of increased stress is having to manage unpredictable risk situations, while ensuring policies and protocols are being followed.

Burnout was first used to talk about a type of exhaustion seen in healthcare workers (Freudenberger, 1974). Maslach (1982) later defined the term entirely, which included the physical and mental exhaustion seen in professionals whose jobs required constant contact with other people. Maslach's (1982) study of burnout looked at how factors in the environment and the person's life affect each other. Further defined as Emotional Exhaustion being caused by feeling overworked and worn out by one's job; depersonalization as a lack of feelings toward the patient, care, treatment, or instructions; and reduced Personal Accomplishment, which is a feeling of incompetence and failure in one's work with people (Maslach & Leiter, 2016).

Burnout has been a risk in many human services jobs for a long time (Maslach & Leiter, 2016). Millions of Americans daily depend on nurses to take care of their health. For

nurses to build relationships with their patients, they need to have personal and emotional contact with them regularly. Even though these kinds of relationships can be fun and helpful, they can also be very stressful. Dall'Ora et al. (2020) said that emotional pressure, autonomy, longer and more active work hours, and possible responsibilities can lead to burnout at certain times and places in their careers. The care that labor and delivery nurses provide their patients differs from what other nurses provide. Labor and delivery nurses must learn about the physical parts of the laboring process and investigate childbirth's psychological and social aspects. Every woman's feelings and social situations are different, therefore, every care experience is different.

In high-risk areas, nurses deal with pregnancy and labor, as well as health problems like preeclampsia, gestational diabetes, premature labor, and postpartum hemorrhage. If these conditions are not treated appropriately, they could lead to further complications. In a study that used various methods, 35% of labor and delivery nurses said they felt moderate stress because of complex labor and traumatic births (Beck & Gable, 2012). Healthcare workers need help dealing with the many stressors that come with their jobs. Therefore, healthcare systems must put nurses' health first by fixing system problems, building wellness cultures, and providing evidence-based wellness support and programs. This will improve the quality of care for patients and potentially decrease medical mistakes that could have been avoided. Collectively, the goal is to provide safe and quality patient care.

Stress and burnout in nursing are caused by several factors, such as the balance between work and life, the lack of staff, the level of difficulty obtaining resources, and how well nurses interact with their peers. Nursing shortages is a key stressor and can vary in different parts of the country. Shortages can also vary depending on the nursing specialty. The time it takes to train labor and delivery nurses varies from 4 to 6 months, compared to other areas that may only take 4 to 6 weeks. Haddad et al. (2023) found shortages of critical

care nurses, specifically nurses who work in labor and delivery have increased over the past 10 years. Because of these gaps, nurses have more work than they can handle, which can lead to increased levels of stress and burnout.

The consequences of stress and burnout are significant and can affect nurse work productivity by contributing to a lack of sound decision-making, lack of concentration, performance impairment, and increased errors in patient care (Milliken et al., 2007). The experiences of stress and burnout have been the focus of extensive research during the past few decades. However, the literature on stress management courses among labor and delivery nurses working in high-risk units is limited. The treatment goal for stress and burnout is usually to enable people to return to their job and to be successful in their work. A significant contribution can be made by identifying and determining whether treatment strategies effectively reduce the stress and burnout levels experienced by these nurses.

Another vital cause of stress and burnout in nurses is high stress or emergent circumstances. The recent COVID-19 pandemic and how it was handled by the healthcare industry and authorities is a good example of a high stress occurrence. Talaee et al. (2022) stated that at the pandemic's start, the nurses were optimistic and had a positive outlook on their contribution to humanity. They were highly motivated and eager to help those infected by the COVID-19 virus. However, the COVID-19 pandemic had many accompanying effects, including increasing the risk of the mothers in the delivery units. The American College of Obstetricians and Gynecologists (ACOG) declared COVID-19 had a more detrimental effect on those who were pregnant, unvaccinated, and presented positive, increasing the likelihood of higher risks during labor and unfavorable outcomes (ACOG, 2021). These increased risks led to higher levels of stress for the nurses.

When presenting to a facility for care, pregnant women often have complaints of difficulty breathing, decreased fetal movement, chest pain, or elevated blood pressure, all of

which could result in a high-risk situation. A cross-sectional, descriptive correlational study found that witnessing a traumatic event during childbirth in the inpatient setting can have significant consequences for the labor and delivery nurse, causing increased stress levels (Nicholls et al., 2021). These high-risk scenarios are adding to the stress and burnout of labor nurses in their efforts to ensure safe and healthy outcomes.

Problem Statement

Stress can be defined as a situation wherein work-related factors interact with an employee changing their psychological and physiological condition and forcing them to deviate from normal functioning (Richardson & Rothstein, 2008). Work-related stress can damage a person's physical and mental health, while its' high levels have been known to affect staff absence and low productivity levels. According to studies on stress in nursing workplaces, there is a significant prevalence of likely occupational stress among nurses (Kuribayashii et al., 2022). Nurses often experience job stress due to excessive workloads, interpersonal difficulties, the emotional effects of care, a lack of compensation or control, and working shifts. Workplace stress dramatically contributes to mental health problems like burnout, anxiety, and depression. When nurses experience difficulties with their mental health, it can exacerbate their existing medical symptoms or disorders, disrupt their sleep, diminish their quality of life, and decrease their motivation to do their jobs (Kuribayashi et al., 2022). Negative effects on the workplace, such as increased absenteeism and resignations, are also possible, as is a negative impact on the quality-of-care nurses provide. Most professions, including nursing, lack structured employee assistance programs that teach workers how to cope with stress and boost their emotional well-being (Kuribayashi et al., 2022).

Nurses that are not equipped to handle stress may experience depression when they feel unsupported and lack adequate resources, or support from management. According to

two separate polls, between 18% and 35% of nurses in the United States are depressed, which is significantly higher than the national average (Al-Maqbali et al., 2021). This is crucial for several reasons, including the employees' well-being, the success of the business, and the quality of care provided to patients (Kuribayashi et al., 2022). Therefore, the importance of stress and burnout among nurses is vital to the profession as it has the potential of severe consequences on patient care, professionalism, nurses' care and safety, and the viability of the healthcare system.

Burnout is a major threat to the stability of the workforce on the front lines (Cabrera et al., 2020). Burnout is characterized by emotional tiredness, depersonalization, and a diminished sense of personal success, and it is common among those whose jobs require them to interact with other people (Maslach et al., 1996). Burnout not only has bad effects on the physical and mental health of staff, but it also lowers the efficiency and quality of nursing services and raises the cost of running a hospital (De Hert, 2020). Recent studies indicate that the prevalence of burnout among U.S. registered nurses ranges from 35 to 45% (Dyrbye et al., 2017; Li et al., 2018; Moss et al., 2016). Nurses' ability to provide excellent patient care is intimately related to their emotional well-being. Psychological and environmental interventions to reduce stress and burnout in the workplace have been shown to positively affect nurses' mental health and productivity (Shariatkhah et al., 2017). Therefore, programs should be made and put into place to help nurses recognize and deal with stress and burnout.

Research has been done on decreasing stress and burnout among nurses, mainly through web-based programs. However, the research is limited, and further exploration of the effectiveness of these methods on stress and burnout experienced by nurses is needed. It is vital to address this knowledge gap to discover whether a web-based stress management program can effectively decrease the stress experienced by labor and delivery nurses working in high-risk areas. Making it less likely to cause people to make bad decisions, lose their

focus, do a bad job, or make more mistakes while taking care of patients. The BREATHE: Stress Management for Nurses web-based program is one idea that was used for this study to help deal with the growing stress and burnout among nurses. This program was made to help nurses deal with the unique stresses of their jobs. It is meant to give nurses ways to deal with the stresses they may face every day. The online program comprises seven modules that nurses can utilize when it is most convenient for them. Studies of nurse-specific stress management programs show that cognitive-behavioral, physical exercise, and relaxation techniques can help nurses deal with and get rid of stress (Hersch et al., 2016; Pipe et al., 2009). However, there is a lack of information pertaining to web-based programs, even though there have been studies on stress management related to perceived stress and burnout.

Purpose of the Study

This study aimed to discover how a web-based stress management program affects labor and delivery nurses working in high-risk units. This study observed how the BREATHE: Stress Management for Nurses web-based program affects how nurses working in high-risk labor and delivery units feel about their stress and burnout. This study tried to answer the question, "Does the use of BREATHE: Stress Management for Nurses work to reduce perceived stress as measured by the Nursing Stress Scale (NSS) in high-risk labor and delivery units?" The research also aimed to answer the question, "Does the use of BREATHE: Stress Management for Nurses effective in reducing perceived burnout as measured by the Maslach Burnout Inventory-Human Services Survey (MBI-HSS in nurses working in high-risk labor and delivery units?" The participants in the experimental group had immediate access to the web-based stress management program. After they completed the program, their stress and burnout were re-examined. Additionally, the stress and burnout levels of the control group were measured before they used the program. The goal was to

determine if a web-based stress management program helped registered nurses in high-risk labor and delivery settings feel less stressed and less burned out.

The two purposes of the study mentioned above were meant to achieve a higher orderneed, which was to put practical measures in place to reduce the stress and burnout for these nurses. According to Arora et al. (2020), the labor and delivery units are high-risk areas that should be managed cautiously. In these units, even minor errors can be catastrophic and lead to the mother's death, the child's death, or both. Unfortunately for these stakeholders, nurses' burnout and high-stress levels mean they are not physically and optimally at their peak when undertaking the tasks. As a result, their concentration and motivation levels are low (Friganović et al., 2019). The outcome of this research may be beneficial to the mothers and the children in the delivery units as it will point to areas of weaknesses and gaps that can be practically and realistically plugged. This increases the health outcomes from these high-risk labor and delivery units, leading healthcare organizations to provide optimum and highquality healthcare services to mothers and newborn babies.

Research Questions

RQ1: Is there a difference in perceived stress, as measured by the Nursing Stress Scale (NSS), amongst labor and delivery nurses working in high-risk units who report the use of the BREATHE: Stress Management for Nurses program when compared to labor and delivery nurses who do not have access to the program?

RQ2: Is there a difference in perceived burnout, as measured by the Maslach Burnout Inventory-Human Services Survey (MBI-HSS), amongst labor and delivery nurses working in high-risk units who report the use of the BREATHE: Stress Management for Nurses program when compared to labor and delivery nurses who do not have access to the program?

Theoretical Framework

Stress on the mind is difficult to pin down, and numerous theories have been put forth to explain it. Based on their characterization of stress, these theories can be organized into four categories: stress as an external stimulus, stress as a response, stress as an interaction between the individual and the environment, and stress as a transaction between the individual and the environment (Biggs et al., 2017). Transactional theories of stress investigate how people make sense of their experiences and the world around them. They also consider the potentially stressful relational and dynamic aspects of the transaction. The premise of the transactional approach is that humans' interactions with their surroundings are two-way streets (Biggs et al., 2017). This suggests that stress is the result of a nuanced interaction between a person's internal experiences and external circumstances.

Research on stress and coping over the past 50 years has relied heavily on the transactional theory developed by Lazarus and Folkman (Biggs et al., 2017). The transactional model of stress and coping theory by Lazarus and Folkman from 1984 is based on the idea that stress is a two-way process. The environment creates stressors, and the person reacts to these stressors. It looks at how people react to stress and how they deal with it. It looks at the relationship between how a person feels about a threat, how they deal with it, and how their personality and environment affect their stress response. It does this in three stages: primary, secondary, and reappraisal. The primary appraisal is what a person thinks about an event or stressor. The secondary appraisal is how a person reacts to an event. Lastly, reevaluation happens when a person gets new or more information. Lazarus and Folkman's (1984) model says that stress happens when a person thinks that the demands of a situation are more significant than what they must deal with them. The model looks at the relationship between how a person feels about a threat, how their personality and environment affect their stress response. Just the relationship between how a person feels about a threat, how they deal with it, and how their personality and environment affect their stress response.

product of the interactions between environmental factors and individual perceptions and behaviors, this framework will guide this study in addressing these relationships. Observing the processes that connect the stressful situation to the three core dimensions measured by the MBI: Emotional Exhaustion, Depersonalization, and Personal Accomplishment, is essential. Figure 1 illustrates the cycle by which individuals perceive and categorize stress.

Figure 1



Phases of Transactional Model of Stress and Coping

Note. The transactional model of stress and coping explained the phases of coping as a phenomenon that involves both the environment and behavioral responses used to manage internal and external stressors perceived to exceed their personal resources. From "Illustration of the Transactional Model of Stress and Coping of Richard Lazarus," by P. Guttman, 2016 https://commons.wikimedia.org/wiki/File:Transactional_Model_of_Stress_and_Coping_-_____Richard_Lazarus.svg. CC BY-SA-4.0

Emotional Exhaustion is a way to measure how tired and emotionally drained someone feels because of their work. Depersonalization is a way to measure how cold and

uncaring you are toward the people you serve, care for, treat, or teach. Lastly, Personal Accomplishment measures how competent and successful a person feels in their work. Combining this theoretical framework with this program will give the participants more information about how they see stress and how they can deal with it.

A sense of professional achievement is another essential tool of the theoretical framework that will be important to this study. According to Chen et al. (2019), a sense of professional achievement is exhibited when professionals in their line of work feel that they have achieved the necessary goals and objectives they had previously set. These professionals could achieve or better their preset goals and objectives. In the nursing setting, a sense of professional achievement is looked at by metrics such as having feelings that one has helped humanity, achieved their personal goals, and had career progression, among others that are personalized and differ according to the profession. Sillero and Zabalegui (2018) explained that nurses' sense of professional achievement is looked at from many angles, including promotions, higher benefits, and more responsibilities. More importantly, nurses measure their sense of achievement by their ability to help their patients. If they cannot do this, it is conceivable that their stress levels may increase. Over time, they may feel burnout if they are not effectively supported. This theoretical framework should be combined with other tools, theories, and knowledge to analyze how this aspect impacts nurses' burnout and stress levels in high-risk labor and delivery units.

Depersonalization is exhibited when an individual demonstrates dissociative symptoms. According to Miguel-Puga et al. (2021), depersonalization is a common symptom of posttraumatic stress disorder (PTSD) and manifests itself when one detaches from their body or mind. In nursing, depersonalization is viewed from the context of a healthcare professional being indifferent or emotionally distant. Such an occurrence is discouraged and should not be seen in the healthcare profession because dealing with patients is highly

engaging and challenging. Colonnello et al. (2021) explained that healthcare professionals must be constantly committed. Such high levels of commitment require emotional commitment. It also involves empathy towards patients and ensuring they receive the highest possible healthcare quality. When these do not go according to plan, the healthcare practitioner is expected to immediately implement corrective measures because they should feel a sense of responsibility in their work, even beyond aspects that are not in their job description. Unfortunately, depersonalization causes these nurses to be indifferent towards their job and patients. They become emotionally distant and demotivated in their work. This tool will primarily be necessary as the inherent knowledge on depersonalization will be expended to look at any direct or indirect relationship between nurses' burnout and stress levels.

Nature of the Study

This study examined the differences in perceived stress and burnout with the webbased stress management program by registered nurses working in high-risk labor and delivery units in Texas and California. The study used descriptive statistics to describe the sample population. A descriptive, cross-sectional survey was used to obtain sociodemographic variables, including gender, education, and other categorical variables. The collection of demographic information enabled a cross-tabulation and comparison of subgroups. In addition, these variables helped to determine which factors may influence the participants' responses.

Assumptions

One of the assumptions in this study is that participants would be truthful in their responses to the questions in all questionnaires, including the NSS and the MBI-HSS. The transactional model of stress and coping evaluates the perception of the stimuli causing stress for an individual as it relates to their interpretation, their analysis of the available resources

and their coping strategies. For example, environmental stressors directly impact stress and burnout in nurses. How nurses assess a stressful situation using the tools and resources available to them, and how they manage the situation play an instrumental role in determining their level of stress or burnout. Therefore, it is assumed that programs or structured tactics designed to address stress will be effective in decreasing stress and burnout. It was assumed that nurses would complete the program, fully participating and engaging in the web-based stress management program. Similarly, it was assumed that the nurses' who completed the program prior to taking the post surveys would apply the coping strategies learned in the program to their daily activities. Finally, it was assumed that differences and correlations between variables found in this study exist despite differences in demographics such as gender or education.

Limitations

Study findings are limited to labor and delivery nurses working in high-risk areas. Therefore, the limitations of this study include other hospital healthcare populations and, subsequently, level I and level II labor and delivery units, which may experience different levels of stress. In addition, a lack of generalizability may exist. For example, although hospitals in Texas and California were selected, the results are specific to those two states and not specifically applicable to all hospitals nationwide. Another limitation was the lack of diversity in the gender demographics. The study consisted of females only, which may skew the results as different gender roles could experience stress and burnout in different ways.

Another constraint may include the limitation of the single use of the BREATHE program, as this is the only program that was evaluated in this study. Additionally, the randomization process could potentially be a limitation. The goal of a random control trial is that every participant has an equal chance of being placed into the experimental group. The

method used for this study to separate the participants into the experimental or control group did not render an equal chance.

Another major limitation of the study was that the participants, especially the experimental group, may not participate as they normally do. This is usually the risk in any research where the participants know they are being observed. Some participants may also fear that the results or outcome could be used against them, especially if they exhibit adverse outcomes such as high stress or burnout. Therefore, they may submit the wrong results and paint a more positive picture than reality. This is a limitation because there is no way of objectively determining the respondents' level of truth and honesty. Therefore, this will actualize the research phenomena of "garbage in, garbage out," whereby the outcomes' quality and relevance are only as good as the data collected.

Definition of Terms

Burnout: Burnout is a condition of Emotional Exhaustion, Depersonalization, and a reduced sense of personal accomplishment that can occur among individuals who work with people in some capacity (Maslach et al., 1996). The MBI-HSS will measure burnout to assess the levels of burnout experienced by labor and delivery nurses working in high-risk settings.

Stress: The negative response to a physical, environmental, or mental condition; it is a person's method of reacting or attempting to cope with threats, challenges, or psychological interruptions to what is deemed a deviation from the norm (Abriyani, 2012). The NSS will measure stress to assess the stress levels experienced by labor and delivery nurses working in high-risk settings.

Labor and Delivery Nurse: A registered nurse who graduated from an accredited diploma, associate, or bachelor program and completed a labor and delivery training program. A labor and delivery nurse working in a level III unit should have experience and training in obstetric nursing and neonatal nursing, as well as in caring for women with

complex maternal illnesses and obstetric complications (American Academy of Pediatrics [AAP] & ACOG, 2017). The level will be measured by self-reporting from the demographics questionnaire and cross-referenced with the list of available levels III and IV obstetric facilities.

High-Risk Unit: Demonstrates experience and capability to manage severe maternal and fetal complications comprehensively, as measured by the Maternal Levels of Care according to the ACOG. It requires an obstetrician-gynecologist always to be available onsite. Additionally, a maternal-fetal medicine subspecialist must always be available onsite, by phone, or by telemedicine. It also requires nursing leaders and adequate registered nurses who have completed orientation and demonstrated competence in the care of obstetric patients consistent with levels III or IV care criteria. These competencies include transferring high-risk women and newborns who exceed level III care criteria and special training and experience managing women with complex maternal illnesses and obstetric complications (ACOG, 2016).

Level III Obstetrics: A subspecialty care unit in which care for complex maternal medical conditions, obstetric complications, and fetal conditions are provided (ACOG, 2016). According to ACOG (2016), these conditions include but are not limited to onsite medical and surgical ICUs that accept pregnant women, the ability to accept maternal transfers, appropriate providers available onsite at all times to ventilate and monitor women, specialized obstetric ultrasound, and fetal assessment.

Web-Based Intervention: A self-guided program with the aim of improving knowledge, providing support, care, or treatment to a diverse population for any given condition. For the purposes of this study, the BREATHE: Stress Management for Nurses program was used.

Usual Daily Activities: For the purposes of this study are those activities that an individual would normally do during their free time. For example, exercising, shopping, reading, sleeping, talking with friends, traveling, etc.

CHAPTER II

LITERATURE REVIEW

The necessity of this literature review is to enlighten the readers and give them background information on how effective web-based intervention programs are in reducing burnout and stress in nurses working in high-risk labor and delivery units. The methodology provides insight into how the research study was done, including the sources and rationale for their uses. It further introduces the topic to the potential users and stakeholders as their understanding ensures they can use the lessons herein effectively. Next, the theoretical framework will discuss the universal stress and burnout concept. The sources of stress experienced by the nurses will then be addressed. After understanding these sources, it becomes necessary to delve into the nurses' coping strategies and mechanisms. Lastly, the importance of this research topic is buttressed by researching how these nurses' stress affects patient care and outcomes. The empirical approach for this part of the research uses deductive and inductive reasoning to test the hypothesis based on past research.

Methodology

The integrative review methodology described by Whittemore and Knafl (2005) was used to guide this review. The 5-stage process of Whittemore and Knafl's integrative review methodology includes (a) problem identification; (b) literature search; (c) data evaluation; (d) data analysis; and (e) presentation of results. An integrative literature review is a distinctive form of research that generates new knowledge about a topic by reviewing, critiquing, and synthesizing representative literature on a topic in an integrated way allowing for the generation of new frameworks and perspectives on the topic (Torraco, 2016). This method allows for the inclusion of diverse data sources and research methodologies to resolve discrepancies between the literature and observations about the issue. An integrative review

was conducted to comprehensively describe the relationship between stress and burnout among nurses in high-risk labor and delivery departments.

Literature Search

The study for this literature was conducted through the Texas Woman's University library home research databases: other sources for the research included EBSCOhost, CINAHL Complete with Full Text, PubMed, and Sage Journals Online Full Text. Keywords used in the search included nurse perceived stress, nurse burnout, nurse work environment, stress management programs, nurse coping strategies, and work stress. The literature research concentrated on job stressors and nurses' mechanisms for coping. The number of publications on the effects of stress and burnout on nurses initially yielded 257 articles authored by a broad base of disciplines, including nursing, medicine, and psychology. Resources were included if they represented original research, were available in full text and were written in English. In addition, resources with both quantitative and qualitative research study methods with diverse designs were considered.

The review focused on stress and burnout and included relevant and irreplaceable studies from the late 1900s and early 2000s. However, most of the studies used were from 2008 onwards, focusing on the most recent resource. The focus on the most current resources was to eliminate the chances of picking past studies that had been rendered obsolete due to new and more recent studies. These affect the research outcome's accuracy, relevance, and reliability. Additionally, resources are relevant in answering the research questions and answering several aspects of how web-based stress management effectively reduces burnout and stress for nurses. After removing all duplicates and applying the inclusion and exclusion criteria, 32 articles remained for further evaluation. Figure 2 illustrates the process of article elimination via the PRISMA flow diagram.

Figure 2



PRISMA Flow Diagram for Integrated Literature Search Strategy

This research focuses on the nurses working in high-risk labor and delivery units. However, most research may have a different focus and instead focus on other equally essential areas and workstations within healthcare institutions. Their experiences will be taken and compared and shifted depending on their relevance to the nurses working in the delivery units based on the results from the primary data collection source (the Texas Woman's University library home research databases).

Data Analysis and Synthesis

An effective integrative review provided important insight into the current state of research on a topic and recommend future research directions (Cronin & George, 2020). Critical analysis in an integrative review involves carefully examining the main ideas and arguments presented in the literature through a critical lens. Critique of the research articles was done to identify the strengths, deficiencies, omissions, inaccuracies, and other problematic aspects of the studies to identify aspects of the topic that were missing, incomplete, or poorly represented in the literature, as well as inconsistencies or contradictions among the research articles on the topic. A comprehensive literature synthesis results in new knowledge or perspective being created from a review of previous research. Considering the need to assure care based on scientific evidence, the integrative review has been identified as a unique tool in healthcare for it synthesizes investigations available on the given topic of stress and burnout and guides practice based on scientific knowledge (Cronin & George, 2020).

Results

This section answers one central question: Among nurses who suffer from burnout and stress (P), how does web intervention in stress and burnout management (I) compared to therapeutic intervention (C) affect the performance of the nurses in high-risk labor and delivery units (O)? The research included intensive readings from various online databases, journals, and questionnaires. In addition, the research involved reviewing the effects of stress and burnout on nurses' well-being related to hospital outcomes.

This section introduces the causes of stress experienced by nurses working in highrisk labor and delivery units, interventions used to reduce stress, the effects on the well-being of these nurses, and its identified effects on patient care and outcomes. These findings are mainly based on research done in the USA. The literature review continues to check more on the impact of stress and burnout on nurses in high-risk delivery units. Under this topic, other works have been used and quoted, too, making the issue not limited only to USA-based research.

Theoretical Framework

Evidence shows a considerable desire for researchers to review nurses' stress response methods. The transaction model of stress coping by Lazarus and Folkman (1984) has proven effective in understanding the relationship between workplace stressors and coping mechanisms. The model argues that stress stems from a contradiction between environmental events and the person. The study by Glanz and Schwartz (2008) revealed that nurses could draw much support from the transaction model and gain much regarding disease prevention, health education, and health promotion strategies. Understanding the theory of coping and stress is fundamental to developing approaches and practical strategies that healthcare providers and nurses can use to promote their psychological well-being.

The model developed by Lazarus and Folkman (1984) proposed a secondary assessment process that nurses can use to assess their ability to cope with and manage threats. They can then use the answers on coping mechanisms to conduct cognitive checks (Teo et al., 2013). Ebert et al. (2016), while using Lazarus' transitional model of stress, found moderate to high reductions in perceived stress post-intervention after implementing a 7-week webbased stress management program.

Stress and Burnout: A Universal Perspective

Stress in the workforce is rampant among various occupations, possibly having far more grave consequences in professions that deal with people's health (Harvey et al., 2017). Stress accruing from jobs among healthcare staff and health professionals, especially nurses, is widespread. Due to the specific nature of the nursing profession, which demands high skill, 24-hour care, a tremendous emotional burden, and team working in stressful situations, nurses are faced with various stressors (Copanitsanou et al., 2017). This stress and burnout results in care errors and, thus, may negatively impact the patients.

It is unrealistic for any employee to work round the clock. This is because the human body is naturally predisposed to become tired, hence the need to rest. According to Loh (2018), artificial intelligence (AI) machines and robotics have therefore been on the increase. They are used in many aspects and industries, including the healthcare industry. For example, there is the continued adoption of AI and robotics in electronic health records and data analysis (Mehta & Devarakonda, 2018). However, certain aspects and tasks within the healthcare sector cannot be replaced by robotics. One such role is that performed by the nurses. According to Pepito and Locsin (2018), many aspects of nursing care cannot be filled by robotics, such as empathy, emotional care, and one-on-one interactions, which enables the nurses to gain the patients' trust. The nurses must perform the 24-hour care provided within the wards, ICU units, and the labor and delivery units. This is because such roles are required to provide patient-centered care, an aspect that any form cannot deliver technology. Unfortunately, these nurses do not often receive the help and support they need, leading to burnout, stress, and many errors, as mentioned above.

According to the Professional Research Consultants Nursing Engagement Survey, 15.6% of nurses reported feelings of burnout, with 41% of unengaged nurses reporting feeling burnt out (Copinitsanou et al., 2017). Another survey in 2019 identified that nurse

exhaustion was among the healthcare system's maximum patient safety and quality concerns (Rickard et al., 2012). In addition, evidence shows that 39% of the nurses reported that their organization stood at a slightly effective mark, and the remaining 56% were unsuccessful in helping nursing staff address workplace stress (Rickard et al., 2012).

As an added stressor, Haddad et al. (2023) reported more than 275,000 additional nurses are needed from 2020 to 2030. Employment opportunities for nurses are projected to grow at a faster rate (9%) than all other occupations from 2016 through 2026 (Haddad et al., 2023). As nursing shortages continue to be on an uprise, healthcare organizations struggle to maintain an adequate workforce. The National Council for State Boards of Nursing (NCSBN) conducted a study and found that approximately 100,000 registered nurses left the workforce during the COVID-19 pandemic in the past 2 years due to stress, burnout, and retirements and another 610,388 reported an "intent to leave" the workforce by 2027 due to stress, burnout, and retirement (Smiley et al., 2023).

In this time of healthcare change, the challenge becomes providing excellent patient care amid the current realities. To achieve this, healthcare organizations must offer and support a means to reduce stress and burnout experienced by staff (Rickard et al., 2012). An initial assessment of the sources of stress is needed to determine the critical areas to target. In 2019, the Joint Commission unconfined Quick Safety, Issue 50 highlighted developing flexibility to combat nurse burnout. One means of developing resilience is to support nurses in recognizing and addressing stress.

One means of developing resilience is to support nurses in recognizing and addressing stress. The inability of nurses to address the stress and associated burnout affecting them is because they fail to recognize it. The Joint Commission (2019) explains that it has been normalized in some scenarios such that some perceive it as part of the job. The nurses themselves cannot always recognize these high-stress levels and burnout they have incurred.

The leaders and their supervisors should help them, including divulging knowledge of the ideal situation and helping the nurses compare it with the latter's current situation. Such measures, among others, help the nurses understand and recognize their high-stress levels. It becomes possible to address these high-stress levels only after this is implemented.

A practical and more achievable way to address these high-stress levels among nurses is by encouraging them to maintain a work-life balance. One of the best definitions of a work-life balance, as put forth by Holland et al. (2019), is that employees balance their time and energy between work and free time. The free time can be used to engage in stressrelieving activities, such as spending more time with family and hobbies, among other mentally fulfilling activities for an employee. Since nursing is considered a tiring and a high mentality-intensive job, they must have a work-life balance. Therefore, nurses are encouraged to disengage from their work during their free time. This helps them recharge and maintain high motivation and commitment levels. However, this stress-relieving approach is not possible with the continued problem of shortage in the number of nurses. Even though many nurses may be willing to disengage and have a work-life balance, they work for long hours and have only a few hours of rest, which is not adequate for rest (The Joint Commission, 2019). Such build-up leads to stress and burnout levels after some time. Therefore, the hospital's leadership and other relevant stakeholders should implement measures to increase the number of nurses.

Leadership strategies have also been identified as the other crucial areas to help nurses reduce their stress. Specifically, The Joint Commission (2019) explains that the leadership at healthcare institutions should engage in three approaches when dealing with the nurses: debriefing, validating, and self-reflection. With the debriefing, the leaders get the nurses to talk about the actions, treatment procedures, and other activities they experienced throughout their day. This includes the barriers and challenges they experienced. Through the

debriefing, the leaders get an insight into the minds and perceptions of the nurses in their work. Since nursing is high-stress work, the leader should validate the nurses' actions, activities, and roles. Through validation, the leader should commend the nurses for their specific tasks and achievements, despite the challenges they experienced. The nurses feel a sense of purpose through the validation process, which inspires an internal and intrinsic sense of motivation and commitment to the job. Lastly, the leadership should inspire self-reflection in the nurses. The self-reflection involves the nurses doing introspection by analyzing their work, its weaknesses, and challenges and looking into ways to get past the barriers available. Through self-reflection, the nurses put the stresses and challenges they face in their work into a better perspective and develop a better coping mechanism. The solid foundation for coping with stress is having a positive outlook and hope that it will be surmounted. The leader inspires all these.

The nursing profession is identified as a tireless job with high and unpredictable demands. These demands potentially lead to stress, which leads to the deterioration of nurses' physical and mental health status. At the same time, it negatively affects the adoption of good practices concerning nurses' caring behaviors (Reilly & Fitzpatrick, 2009). Anxiety has been associated with stress, depression, dysthymia, low self-esteem, and feelings of inadequacy. Mild psychiatric morbidity has been gradually recognized as the leading risk factor (Steinhoff, 2015). The psychological perception of stress influences the work performance and health of nurses.

Sources of Stress Experienced by Nurses

The health crisis created by the COVID-19 outbreak has led many to call it the world's most significant problem since World War II. Frontline healthcare workers are particularly at risk for contracting COVID-19 because of the nature of their profession. Critical care nurses played a crucial role during this crisis by tending to patients who were too

sick to be treated in outpatient clinics or whose conditions worsened in the hospital (Lorente et al., 2020). The CDC (2022) found women who are pregnant are more likely to get very sick and are at increased risk for complications that can affect the pregnancy and their developing babies. Nurses have had a difficult time at work during this crisis due to the risk of infection and the accompanying anxiety, fear, and other feelings that arose from witnessing the suffering and death of their patients (Lorente et al., 2020). Their lives are continuously in danger as they perform their duties while experiencing extreme mental and physical strain. Awareness of these interrelationships may help organizations devise strategies to mitigate the negative consequences of health crisis on the medical community's workforce.

Nursing can be stressful and risky as nurses face acute stressors and serious incidents. Being accountable for patient outcomes, care delivery, and the uncertainty related to the care of patients has the potential to impact the health and wellness of nurses significantly. Roberts and Grubb (2013) found that high health complaints, high turnover, and low employee morale indicate organizational stress. The Bureau of Labor Statistics predicted the need for 525,000 additional nurses in the labor force, bringing the total sum of job statistics for nurses to 1.05 million by 2022, owing to the growth in the field and the addition of nurses. The study concluded that nurses need to combine and integrate strategies to eliminate and prevent stress. Inadequate staffing increases nurses' stress levels and contributes to the turnover rate.

Turnover among nurses result in work overload and longer shifts, leading to lower nurses' job satisfaction. Increased nurse turnover rates reduce the quality of hospital services and may contribute to a negative image of nursing professionals (Burke & Greenglass, 2012). The researchers focused on work-family conflict, psychological burnout, and family-work conflict among nursing staff. They collected data from 686 hospital staff, especially women. The findings showed that nurses have higher work conflict than family-work conflict.

Research supports the correlation between stress and turnover, finding that hospitals with improved nurse staffing and work atmospheres have better nurse outcomes.

Nurse shortages are another significant impact affecting the workplace. As the generation of Baby Boomers begins to transition out of the workforce, it is projected that the U.S. will continue to see nursing shortages. From 2016 through 2026, there is an estimated projection for the need for new nurses. The opportunities present themselves at a 15% rate higher than other occupations (U.S. Bureau of Labor Statistics, 2018). Regardless of the cause, nurse burnout and stress have far-reaching consequences.

Physical Stressors

American Nurses Association (ANA) surveyed in 2011, where nurses identified chronic and acute effects as their top safety and health concern. Nurses face several possible physical stressors, including frequent bending and lifting, varying shifts, long hours, and frequently being on their feet and the move. Najimi et al. (2012) found that 30% of nurses surveyed felt that the range of roles, role duality, and the physical environment contributed to their increasing stress levels. According to the research done by Najimi et al. (2012), workrelated pressure links with long-term physical health difficulties, including muscle, migraines, hypertension, and back and joint pain.

Another often ignored physical stressor affecting the nurses occurs mainly in those working on nightshifts. The nurses coming in for their nightshifts suffer from a natural circadian rhythm. According to Yu (2018), the natural circadian rhythm refers to the daily sequence that makes up the natural cycle. Therefore, the body is predisposed to a certain sequence of the body within 24 hours, allowing it to predict and adapt to the expected environment. For nurses who interchange between day and night shifts, the body is predisposed to the dayshift by nurses, as is with other jobs, with the expectation that nighttime is when the body rests.

Consequently, these nurses' bodies adapt to this daily sequence and environment. It aligns it with hormone production, patterns in brainwave activity, and cell regeneration, among many other biological activities. Unfortunately for the nurses, being shifted to the night shift disrupts these natural circadian rhythms. Such a disruption exposes the nurses to specific physical ailments, cumulative wear and tear of body systems, and impairment of brain functions.

As mentioned, long hours are another primary source of physical stressors affecting nurses. Babapour et al. (2022) explained that one of the critical impacts of these long working hours increases in the probability and exposes nurses to injuries. In the long working hours, the nurses must be constantly alert, especially when working in high-stress and high-risk areas such as the ICU or labor and delivery units. Zimmet et al. (2019) pointed out that these long working hours also increase the nurses' metabolic syndrome, which refers to a cluster of conditions that often coincide and increase an individual's risk of type 2 diabetes, stroke, and heart disease. Due to the decreased metabolism and lack of optimization in the body due to long hours of standing, the nurses experience excess body fat, high blood pressure, abnormally high cholesterol levels, blood sugar at levels higher than the recommended, and excessively high triglyceride levels.

Work Relationships

Moustakas and Constantinidis (2010) have also emphasized that work relationships are potential stressors. The scholars identified conflicts with co-workers, and insufficient support from conflict at work has been shown to exacerbate nurses' stress and burnout levels. Nicholas et al. (2021) initiated that recurrent conflict recounts to nurse role stressors, exhaustion, and depression. Studies have similarly shown that a lack of social support has increased work stressors. Though social support has different meanings, the National Cancer Institute (2020) has defined it as; "a network of family, friends, neighbors, and community
members that is available in times of need to give psychological, physical, and financial help" (p. 1). In the further understanding of social support, more theories have comprehended social support in two dimensions: the structural dimension encompassing the size and frequency of the interactions and the second dimension of functionality.

The functionality dimension is the stage where emotions are felt, and it is very instrumental in the daily life of workers (Ozbay et al., 2008). Nurses must work extended hours without rest and in irregular shifts that are not proportionate to the workload and skills (Freshwater & Cahill, 2010). These extended hours of working and the busy schedules of the health workers have limited the opportunities for social support amongst the nurses and other members of their society. The lack of social support affects their psychological well-being because they have no one to comfort them or show love to them, which reduces the effectiveness of the nurses (Ozbay et al., 2008). Nurses tend to feel unsupported when there is no one to seek solace.

Working Conditions

Other sources of stress include scarce resources, insufficient pay, absence of control over work, extreme responsibility and limited autonomy, poor social support, job uncertainty, poor management styles, and advancement chances (Adib-Hajbaghery & Sharifi, 2017). In a qualitative study through content analysis, comprehensive interviews were conducted with nurses, and the collected data was analyzed using the Krippendorf method. The research outcome identified nurses working under pressure to produce excellent professional results. This stress has made many nurses prioritize their careers over their family life. The National Occupational Safety Association of America listed nursing as among the most stressful work in the medical profession, with 93% of nurses reporting experiencing stress to some degree (Adib-Hajbaghery & Sharifi, 2017).

The report indicated that nurses were dissatisfied with their jobs, which exhausted them. The study also found that burnout was the leading cause of absenteeism among nurses. Studies have shown that lower levels of autonomy among nurses produce negative consequences such as a higher likelihood of depression, job strain, absenteeism, and higher turnover intentions (dos Santos Alves et al., 2017). The researchers aimed to assess the connection between nursing practice, atmosphere characteristics, safety climate, and professional outcomes. Figure 3 shows the relationship between burnout and work performance. Using a cross-sectional study and an attitude questionnaire to collect data, the researchers found that nurses with good working relationships, greater autonomy, and control over the work environment had higher job satisfaction. Since stress is correlated with employees' productivity and physical and psychological well-being, programs must be developed to reduce it.

Figure 3



Work Performance Score of Nurses Due to Stress and Burnout

Note. As work performance increased, the prevalence of overall burnout, high emotional exhaustion, and high depersonalization decreased. From "Burnout Among Healthcare Professionals: A Call to Explore and Address this Underrecognized Threat to Safe, High-

Quality Care," by L. Dyrbye, T. Shanafelt, C. Sinsky, P. Cipriano, J. Bhatt, A. Ommaya,
C. West, & D. Meyers, 2017, *National Academy of Medicine Perspectives*, 7(7).
https://doi.org/10.31478/201707b. Copyright 2017 by National Academy of Medicine.

Nurse Well-Being Related to Stress and Burnout

The concept of stress is multifaceted and has numerous implications on healthcare services, and individual and administrative levels. It is evident from the literature that nursing is a demanding job. As a profession demanding high expertise, constant alertness, strong team association, and providing round-the-clock care, nursing creates great job strain on nurses. Gray-Toft and Anderson (1981) focused on detailed stressful conditions for nurses, which affect their work presentation, when they used the NSS, recognizing three causes of stress: the physical, social environment, and psychological. Many factors can lead to increased stress and burnout for nurses. A 2019 study showed that approximately half of the nurses employed in the United States have considered leaving the field due to feeling overworked, being flooded with charting, and lacking job gratification (Gray-Toft & Anderson, 1981). The researchers asked participants to rate the level of stress they experienced then and compare that with previous times. The results were as shown in Figure 4. Among the reasons identified in causing the high levels of job dissatisfaction of nurses in the high-risk units was the work's nature, due to their work requiring high efficiency.

Figure 4



Nurses Rating Their Level of Stress

Note. Figure 4 depicts the level of stress experienced now compared with before the start of the COVID-19 pandemic. From "Nursing Times Survey Reveals Negative Impact of COVID-19 Pandemic," by S. Ford, 2020, *Nursing Times*, April 2020. https://www.nursingtimes.net/news/mental-health/exclusive-survey-reveals-negative-impact-of-covid-19-on-nurse-mental-health-29-04-2020/. Copyright 2020 by Nursing Times.

Lack of Control

Stress levels rise when job requirements do not match the nurse's responsibilities, resources, demands, or capabilities. The effects of these increased levels cause concern for the growing need for nurses. Jordan et al. (2016) found that nurses' who frequently experience low levels of self-sufficiency and low control over their occupation are moved among different patient care units. Jordan et al. (2016) also supports that with the continuous application of pressures to conform, staffs exhaust energy consequential to psychological, physiological, and behavioral responses branded by Emotional Exhaustion and lack of personal achievement. A study conducted in 2012 discovered that approximately one-third

of nurses stated a dynamic exhaustion score (a calculation used to measure psychological fatigue) of 27 or more, documented by medical specialists as high weariness (Department of Professional Employees, 2013).

The low nursing levels also increase the feelings and perception of lack of control by the nurses because of the non-achievement of set goals and objectives. For example, one of the nurses' non-stated core aims is improving patient health. This may not always be the case due to factors outside their control, such as the late discovery of the ailment. However, nurses feel a high sense of fulfilment and satisfaction when they successfully treat a patient or witness noticeable positive changes in their health. With low nurse numbers, improving the health of all their patients may sometimes be outside the nurses' control since they are overwhelmed and overworked. They can only manage a certain number of patients within a certain period. Devoting too much time to one patient would mean not attending to other patients. giving attention to every patient in the unit means they may not receive sufficient levels of high-quality care (Hetzel-Riggin et al., 2020). The rush to care for as many patients as possible due to nurse shortages also increases the probability of errors. Irrespective of the outcome, all these lead to a lack of control, which increases the frustration and dissatisfaction of the nurses. Over time, it develops and piles up to become stress, and the nurses experience burnout.

Mental Effects

Labor and delivery nurses may potentially become traumatized by traumatic events. Others are also affected by hearing that traumatic events occurred to their friends or other nurses. These experiences may range from high-risk deliveries, emergent cases, and possibly deaths related to childbirth experiences. Beck and Gable (2012) conducted a mixed-methods study to determine the prevalence and brutality of stress in labor and delivery nurses in the United States. The methods involved included a qualitative approach where participants were

engaged in the Secondary Traumatic Stress Scale. The study had a total number of 464 labor and delivery participants. In the sample, 35% of the nurses reported moderate-severe secondary traumatic stress; these findings concluded by urging the nurses to find a preventive measure to possibly address the effects of the work (Beck & Gable, 2012).

In addition, by failing to meet their demands, nurses acknowledge a loss of job gratification, leading to poor health results. It has been increasingly recognized as a significant risk factor for mild psychiatric morbidity (Kinman & Jones, 2005). Lazarus and Folkman (1984) concurred that the demanding nature of the occupation exposes nurses to a higher risk of developing negative mental states such as depression, anxiety, and stress. White et al. (2019), in a study using a sample of 687 nurses to find the relationship between burnout and job dissatisfaction, found 30% of nurses having extreme burnout, 31% were unhappy with their jobs, and 72% described missing essential care tasks on their last shift due to deficiency of time. This research is relevant to this study because of its nature concerning this study. Figure 5 shows different areas that are discussed here. In this research, the National Academy of Medicine has highlighted how stress and burnout adversely affect nurses and patients (White et al., 2019).

Figure 5



Effects of Stress and Burnout on Nurses and Patients

■ All RNs (n = 687) ■ RNs Who Are Dissatisfied With Their Job (n = 212) ■ RNs With Burnout (n = 204)

Note. Figure 5 shows care activities nurses reported leaving undone, comparing the total sample of nurses to those with job dissatisfaction and those with burnout. Across all activities, nurses with burnout were most likely to leave care undone. From "Registered Nurse Burnout, Job Dissatisfaction, and Missed Care in Nursing Homes," by E. M. White, L. H. Aiken, & M. D. McHugh, 2019. *Journal of the American Geriatrics Society*, *67*(10), 2065 - 2071. (https://doi.org/10.1111/jgs.16051). Copyright 2023 by American Geriatrics Society.

Coping Strategies and Mechanisms

Although some may argue that stress is experienced in all careers, the importance of this issue turns out to be more sensitive or critical when dealing with human health. In health institutions, 60%-80% of the workload is left to the nurses (Rickard et al., 2012). The overall well-being of nurses, particularly those in high-risk units, contributes significantly to the performance of the health organization (Rickard et al., 2012). Therefore, stress reduction is necessary for the workplace. Unfortunately, studies have shown that at least 92% of nurses report some stress level (Gooch, 2018). Because of the adverse effects of job stress on nurses and the quality of care they provide, it is critical to study and identify how nurses cope with job stress to prevent unfavorable outcomes. Coping mechanisms can influence health, psychological and physical well-being, and job performance. In a conscious effort for nurses to limit or endure stress, they tend to develop coping strategies.

A stress response depends on the individual's interpretation of the stressor and ability to cope with the encounter. Nurses with higher stress coping levels are more likely to be retained, effectively provide holistic care, and exhibit motivation toward their job performance despite workplace challenges and high stress (Applebaum et al., 2010). Research recommends that the efficiency of coping approaches adopted has an interceding effect on the negative consequence of stressors on job gratification. Teo et al. (2013) found that nurses who reported adopting more effective coping strategies are more likely to report higher job satisfaction. The combined variables of cope adequacy and perceived stress inclined the nurses' health. Therefore, there should be worksite health promotion strategies to help nurses manage and reduce stress.

Akbar et al. (2017) found that the sensation of stress and coping approaches adopted by nurses are inclined by intrinsic and extrinsic mystifying factors, which play a substantial role in coping with job stress. Finding time to manage their stress using various coping strategies is exceptionally challenging. The workloads and schedules of nurses can pose problems for employing in-person or scheduled involvements. Ideally, a program allowing nurses to access and participate at their leisure could yield higher compliance rates. To

address nurses not being engaged in their leisure, a piece of recent evidence has shown that web-based programs can be operative approaches to the challenging schedules of nurses, labor force health promotion, and disease prevention (Webb et al., 2010).

There are various web-based stress management programs available in the market. One designed explicitly by nurses for nurses is the BREATHE: Stress Management for Nurses program. Hersch et al. (2016) found that nurses who acknowledged access to this program significantly enhanced perceived nursing-related stress and reduced specific areas of nursing stress. A randomized controlled trial in Virginia and New York hospitals sampled 104 nurses participating in the BREATH: Stress Management for Nurses. Various coping methods were being explored, including using a substance to lower the stress level in the nurses (Hersch et al., 2016). The research results showed that the nurses who participated in the program were more relieved than those who chose different coping mechanisms.

Wolever et al. (2012) identified online and in-person mindfulness interferences as equally effective in dropping employee stress and sleep strain. The research by Wolever et al. (2012) was more future driven as it was convenient for the nurses to have personal time for the intervention at their places of work, making it a task to promote the nurse's health and the goals of their institution. These conclusions favored web-based stress management, as Hersch et al. (2016) proposed. Eisen et al. (2008) reported an inadequate impact of computer-based or in-person relaxation and time administration program-post-interventions. Though the research was done earlier, there are questions on the effectiveness of the online-based intervention cut across then and in the future. The pandemic has accelerated the trends in today's world, witnessing many people work online, which sees a revolutionary online intervention on stress management. Hersch et al. (2016) research seems to be the future of stress intervention among nurses. However, the findings have a logical challenge described by (Eisen et al., 2008); scholars still question web-based stress intervention. However, there

has been a lack of studies on nurse burnout and its effects on their work. Eisen et al. (2008) asked participants how often they participated in stress coping and intervention mechanisms and obtained the following results.

Figure 6

How Often Do Nurses Participate in Coping and Intervention Mechanisms (Eisen et al.,

2008)



Note. Figure 6 shows coping interventions utilized by nurses and their reported levels of usage. Each activities shows how often the nurses participated in the in the activity. From "Stress management in the workplace: A comparison of a computer-based and an in-person stress-management intervention," by K. P. Eisen, G. J. Allen, M. Bollash, & L. S. Pescatello, 2008. *Computers in Human Behavior, 24*(2): 486-496.

https://doi.org/10.1016/j.chb.2007.02.003. Copyright 2008 by Computers in Human Behavior.

The web-based intervention on stress for nurses in high-risk delivery units was limited during this literature review. The first limitation of the research is that the number of published articles and journals on the topic is limited. There has been in existence other research that is close to the studies. Further research on the same online-based interventions on stress limited the sample available and time (Champion et al., 2018).

Stress-Related Effects on Patient Care and Outcomes

Nurse stress and burnout can severely impact patient satisfaction, outcomes, safety, and even mortality. A healthy work environment and healthy nurse employees contribute to a high-functioning workforce, improved employee satisfaction, decreased turnover rates, enhanced quality of patient care, and better-quality satisfaction of patients. Studies have shown that stress directly impacts nurses' health and work presentation (Champion et al., 2018). It is estimated that adverse events occur in approximately 16% of deliveries in the United States (Pettker et al., 2015). In addition, higher error rates frequently occur in demanding, fast-paced atmospheres. Research on the effects of stress and burnout is imperative now more than ever due to pressures upon healthcare service budgets, causing growing concerns around working conditions and healthcare staff's well-being.

High burnout among nurses has been linked to directly affecting the general overview of medical institutions and the worst medical experiences for patients. Nurses who fail to curb their stress tend to leave their work and roles unattended (Vahey et al., 2004). These vacant positions strain the remaining nurses, rendering patients' poor services. Other issues of nurses who work under severe burnout and stress tend to be poor memory, incomplete checkups on patients, wrong medication, and unattended personalized care are among the things that fatigued nurses are accused of (Vahey et al., 2004). Other characteristics of exhausted nurses are using harsh words to vulnerable patients who need emotional support alongside medical attention. (Vahey et al., 2004). Medical mistakes in surgery rooms include leaving operational tools like laps and unstitched wounds.

Unnecessary medical errors contribute noticeably to healthcare costs, including higher health insurance costs per person. Charges related to medical mistakes average nearly \$20 billion annually (Rodziewicz et al., 2021). Nurses among the medical staff have the most direct contact with patients and spend considerably more time with patients than any other

providers among all other medical staff. Thus, they are the primary party responsible for continuous quality improvement. Nurses must be mentally and physically stable enough to care for patients as they require safe procedures to care for patients and improve patient safety. Healthy nurses may be more well-organized in their healthcare delivery, ultimately translating into better patient outcomes.

Medical faults are a serious public health problem in the United States. Rodziewicz et al. (2021) found that advanced error rates usually occur in demanding environments. Nurse stress and burnout cost \$9 billion for hospitals annually and \$14 billion for overall healthcare. Multiple research points to overworked and stressed-out nurses. It has been proven that the work atmosphere of nurses can destructively affect their health and may increase their risk of making medical errors. However, there is a scarcity of studies investigating the connection between nurses' physical and mental health and its relation to medical errors. In a recent orderly review of 46 studies, discoveries indicated that poor well-being and restraint to high levels of burnout relate to poor patient safety outcomes, such as medical mistakes (Makary & Daniel, 2016). Hersch et al. (2016) classified the sources for medication errors into three classes: contextual, personal, and knowledge-based factors. Personal factors include stress, confusion, tiredness, inadequate attention to detail, order application errors, lack of job satisfaction, career conscience, decreased sense of commitment, and an unpleasant workplace.

Beck and Gable (2012) found that stress, exhaustion, burnout, unwarranted workload, and work atmosphere adversely affect work presentation and could contribute to medical errors. Research suggests that 3.7% of all hospital inpatient episodes in America lead to harmful adverse events (Beck & Gable, 2012). The researchers performed a systematic review where it was established that many studies found a significant correlation between patient safety and nurse burnout. Targeting nurses in high-risk areas will address an important

sector of nurses that can affect an organization's financial bottom line. Poghosyan et al. (2010) found that extreme nurse exhaustion levels were significantly linked with nurses' appraisals of the quality of care independent of nurse working conditions, physical characteristics, and other related variables.

Harvey et al. (2017) suggested that nurses' experience with stress-related issues can predict their caring behaviors application. Additionally, Akbar et al. (2017) found that increased patient errors were significantly associated with provider stress and burnout. Stress and burnout experienced by nurses can lead to unsafe procedure practices, which have legal consequences, and irreparable harm may be incurred by patients (Akbar et al., 2017). These nurses' actions could produce dire consequences for the patients and their families, increased length of stays, patient suffering, dissatisfaction with the hospitals, and sometimes even patient deaths. These could cause a tremendous economic burden on the healthcare system and the patient.

In reviewing a national nursing engagement study released in April 2019, 15.6% of nurses reported sensations of exhaustion and stress (White et al., 2019). It has been determined that stress and burnout potentially lead to decreases in job performance. These decreases result in poor patient care and, ultimately, patient dissatisfaction. Patient experience has directly impacted hospitals since the centers started value-based buying for Medicare and Medicaid services in 2013. There is a limited amount of studies attempting to relate stress and exhaustion among nurses to patient gratification, and the results of these studies are debatable. White et al. (2019) highlighted that patient fulfilment is negatively related to Emotional Exhaustion in the nursing staff they encounter.

The resolution is to create and uphold a culture that recognizes safety encounters and implements viable solutions. There is a need for further research to determine the relationship between the effectiveness of stress and burnout reduction programs in decreasing the amount

of stress reported by nurses. The available research agrees with the strenuous work of nurses and how prone they are to stress and burnout. Much of the study agrees on mindfulness intervention on burnout and stress to nurses, which cuts across to other nursing sectors, including high-risk units. The already conducted literature review in this chapter agrees that whether it is in-person or web-based mindful intervention, the results are reduced stress and burnout for respective clients. However, emphasis is placed on the need to have an in-person intervention because it will generally boost the social life of the different participants. Though this is a dynamic event for the shift to using media in our daily interactions. The excellent possibility that nurses might use their leisure time at work for these intervention exercises and still be on sight when needed should be considered in recommendations and further research.

Intervention does not require much expertise under the BREATHE technic on stress because it involves oneself in the whole process. The tools needed are breath, hand, belly, and a flat surface. There have been shreds of evidence linking even professional therapists who involve the BREATHE technic in treating psychological patients. The findings of the study by Efendy et al. in 2021 support the hypothesis that relaxation strategies like deep breathing and physical activity can alleviate some of the adverse effects of the stress response. In addition, they found substantial differences between the experimental and control groups. They discovered that stress levels decreased by 64% when breathing exercises were utilized. As a result, it is safe to say that group breathing exercises are an effective means of relieving stress (Efendy et al., 2021). Efendy et al. (2021) also proposed practicing relaxation techniques like meditation to alleviate the physical symptoms of stress as quickly as possible. According to Efendy et al. (2021), practicing progressive relaxation can help reduce blood pressure and stress hormones by teaching you to tense and release your muscles in a controlled manner. In addition, Efendy et al. (2021) found that breathing will

unblock the feedback loop between the muscles and the mind by stimulating the parasympathetic nervous system and influencing the hypothalamus to think and feel positive. The BREATHE technic is similar in such that it incorporates the practitioner's consciousness and increases their alertness as they focus on themselves and their surroundings.

Nurses today have their ways of dealing with burnout and stress. Research that used an integrative literature review from earlier years of the 1980s proposed a question on which intervention method effectively prevented burnout syndrome among nurses was being followed to understand how nurses have been coping with stress and burnout. The results yielded 553 references available across the website. The methods derived from the research include a resilience training program where nurses are trained to deal with cognitive behavior. It involves meditation, yoga, audio-recorded mental exercises, and therapeutic massage. A brief synopsis of the key articles from this review is listed in Table 1. The research concluded that these strategies are practical and suitable for regulating stress and burnout among nurses.

Table 1

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Akbar et al., 2017	19 participants	Qualitative Design Sampling method, Grounded theory	Emotional And Physical Exhaustion	Situational coping Grey outcome coping	Resilience Attitude	It showed the original and basic psychological processes that the nurses use to cope with job stresses.
Aikens et al., 2014	89 participants	Quantitative Design Perceived stress scale, Questionnaires, the Connor-Davidson Resiliency scale, Shilom Vigor scale accompanied by 6- month follow-ups	Not defined	Engaging in mindfulness intervention groups	Mindfulness, vigor, and resiliency	The online mindfulness proved to reduce employees' stress, while improving their vigor, resiliency, and general well-being.

Studies Examining the Effects of Stress and Burnout

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Aikens et al., 2017	89 participants	Quantitative Design Perceived stress scale, Questionnaires, the Connor-Davidson Resiliency scale, Shilom Vigor scale accompanied by 6- month follow-ups	Not defined	Engaging in mindfulness intervention groups	Mindfulness, vigor, and resiliency	The online mindfulness proved to reduce employees' stress, while improving their vigor, resiliency, and general well-being.
Allexander et al., 2016	169 participants	Mixed Approach design Randomization of the participants where the variables were measured at a baseline of 8 and 16 weeks and a year.	Having responsibilities that you find overwhelming and not able to manage	Lowering the online usage which showed a great reduction in perceived stress.	Emotional and psychological well- being.	The online use was low with participants opting for compact disc use and groups practice. Group support improved participation, engagement, and outcomes.

Authors(s), vear	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Ebstein, 2015	114 Participants	Multicenter descriptive design Ways of Coping Questionnaire, the Nursing Stress Scale, the Emotional Quotient Inventory in the 8 th and 12 th weeks post-employment date.	Emotional intelligence is defined as ability model or mixed model that includes the core abilities, skills, competencies, and personality traits.	Problem-focused coping which uses problem solving skills and seeking social support to reduce stress. Emotion-focused coping which seeks to reduce the negative emotions brought by perceived threat through venting, withdrawing, or avoiding much information.	Emotional intelligence	The findings showed that the newly employed nurses had an average emotional intelligence and used the problem- solving strategies to handle occupational stress. The initial stages of employed proved to be the hardest. The study also showed a great interrelation between emotional intelligence and occupational stress
Farquharson et al., 2013	100 participants	A real-time, repeated measures design	Not defined	No coping mechanisms	Psychological health Ecological momentary assessment. Energy Expenditure	The findings showed that there is a relationship between nursing tasks, psychological measures and self- reported. These results to negative work outcomes.

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Galanis et al., 2021	18935 nurses	Cochrane criteria and the preferred reporting items for systematic reviews and meta-analysis guidelines	Experiencing discrimination, hate or abuse leading low self-esteem	The nurses should work in hospitals where there are adequate equipment and high working safety.	Age, gender, and social factors	The study indicated that nurses experienced high levels of burnouts during the COVID 19 pandemic, while social, occupational, and socio-demographic factors adversely affected this burnout.
Harvey et al., 2017	1328 participants	Preferred Reporting Items for Systematic Reviews and Meta- Analyses (PRISMA)	Not defined	E-health interventions proved to decrease mental health and stress signs after intervention.	Mental health	E-health interventions proved to have an effect of reducing anxiety levels or signs.
Hersch et al., 2016	104 participants	Randomized controlled trial	Feeling empty and mentally exhausted, devoid of motivation, and beyond caring	Web-based interventions and good work schedules and workloads can help in lowering the nurses' stress.	Depression	The study showed that nurses will greater experience benefitted more than the newbies.

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Hochschild et al., 1983	No specific number of participants	Quantitative Design Randomization of the participants	Not defined	Working in healthy work- environments	Emotions Anxiety	The study indicated that it is through our feelings we are connected to those around us.
Jamal & Baba, 2000	240 participants	Descriptive design that used Questionnaires	Stress is defined as the overall burnout that results from emotional exhaustion, depersonalization, and lack of accomplishment.	Workers are encouraged to work in areas where they get job satisfaction, where they are not emotionally drained	Emotions	The findings showed that job stress is related to burnout and three dimensions i.e., lack of accomplishment, emotional exhaustion, and depersonalization
Johnson et al., 2013	254 participants	A real time study	Not defined	No coping mechanisms indicated	Control, reward, effort, and demand	The study alluded that increase in negative impact was predicted by high effort, low reward, and low control.

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Jordan et al., 2016	120 participants	Descriptive design Questionnaire, Pilot testing and survey instrument development	Defined stress as the multiple hindrances that makes it difficult for the nurses to work well in hospitals. They may include, heavy workloads, conflicts with fellow professionals, lack of resources and support.	Talking to their friends and families, Watching television, listening to music, Eating more of their favorite foods	Anxiety and depression	The study showed that most nurses were full of energy to work while the rest indicated that they lacked enough sleep on an average day. Stress has a huge impact on the production of the nurses at work as well as in personal life.
Kahn et al., 1964	No specific number of participants	Correlational research design	Stress is defined as a process which environmental forces or events known as stressors, poses a threat to a living organism.	Re-establishing control over one's life, reducing the strains that are generated from high levels of stress	Role network Mindfulness	The study showed that object conflict resulted to experienced conflict only when the role involved was powerful. Additionally, objective conflict was likely to cause subjective conflict if the role set was functionality dependent on focal.

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Laal & Aliramaie, 2010	100	Mixed Approach Design Employed Questionnaires	Stress is defined as the rate of wear and tear on the body organs and systems caused by life.	Going to the parks or nature walks to the mountains, relaxation exercises, taking bath, gardening, or painting.	Working environment	The study showed that longer working shifts and work overloads resulted to stress and other negative outcomes.
Nicholls et al., 2021	288 participants	Cross-sectional, descriptive correlational design, secondary traumatic stress scale	Not defined	No coping mechanisms provided	None	The finding indicated that nurses who witnessed traumatic child births always sort support from their family members, friends, and co- workers.
Pipe et al., 2009	Not specified	Randomization of the participants	Psychological syndrome emerging as a prolonged response to chronic interpersonal stressors	No coping mechanisms given	Mindfulness	The study showed that having higher mindfulness is related lower nursing stresses.

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Rickard et al., 2012	484 participants	Pre- and post- intervention design, triangulating data from surveys and archival information	Any type of change that causes physical, emotional, or psychological strain.	Interventions used included: roster audits, adding more nurses to cater for the shortages, developing and implementing a nursing workload tool to assess nurse workloads	Job control, job resources and system factors	The finding indicated that there was a drastic reduction in emotional exhaustion and psychological stresses and a great improvement in job satisfaction.
Roberts & Grubb, 2013	Not specified	UNAIDS Spectrum model appropriately modified based on a systematic review of available studies	Not defined	Providing better working conditions proved to have a significant effect on the production of the nurses.	None	The study indicated that integrating and combining "person-focused" strategies formulated to enhance nurses' ability to manage stress at a personal level is very important in prevention and reduction of job stresses.

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Schlak et al., 2021	Not specified	Cross sectional data	A sense of ineffectiveness and lack of accomplishment.	Improving the working conditions in the hospitals helped in lowering the nurses' burnout	Work environment	The study showed that the only solution in preventing and decreasing nurses' burnout was improving the working condition and environment for many hospitals.
Steinhoff., 2015	64 participants	Online survey, recruitment, and retention factors questionnaire	Not defined	Better retention plans for nurses and physicians will help in lowering the burnouts	Emotional Exhaustion	Good recruitment and retention policies proved to have a significant reduction of the nurses' stresses.
Teo et al., 2013	Not specified	Online survey	Not defined	The efficiency of coping strategies is significant in helping nurses to deal with the negative impacts of organizational change.	Job satisfaction	This study indicates that there is a relationship between job satisfaction, change and non- nursing stressors.

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Vahey et al., 2004	1441 participants	Cross-sectional surveys	Burnout is referred to as feelings of emotional exhaustion and lack of personal accomplishment.	Changes in the workplaces such as better working conditions i.e., hospitals would lower the nurses' burnout	Depersonalization	The study showed that there are modifiable features of hospitals that determine patients' satisfaction and nurses' burnouts. Improving working environment of nurses in hospitals reduces nurses' high levels of job burnout and the risk of turnover. It also increases patients' satisfaction with their care.
Van Straten, 2008	213 participants	Cross-sectional design Randomization, questionnaires	Not defined	No coping mechanisms given	Anxiety Emotional well-being	The study indicated that having a self-help web-based intervention is significant in decreasing anxiety, depression, and work-related burn outs.

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
Watanabe et al., 2015	120 participants	Randomized trial	Body's reaction to a challenge or demand	No coping mechanisms given	Motivations	The findings showed that a successful preventive intervention may not result to the maintenance of healthy states of nurses, but also better quality of care for the inpatients.
Webb et al., 2010	43236 participants	Computerized search of the databases	Feelings of cynicism and detachment from the job	No coping mechanisms outlined	Health risks, Increased cost, Productivity losses	Internet-based intervention were found to have a connection with nurses' burnout and their production.

Authors(s), year	Sample size	Research design	Stress & burnout defined	Coping mechanisms (Interventions)	Other variables measured	Stress & burnout intervention findings
West et al., 2014	74 participants	Randomized clinical trials	Not defined	19 biweekly facilitated physician discussion groups that constitutes mindfulness, shared experience, and reflection.	Reduced personal accomplishment	Indicated that the interventions for physicians based on a facilitated small-group curriculum improved meaning and engagement in work and decreased the depersonalization.
Wolever et al., 2012	239 participants	Randomized controlled pilot	Overwhelming exhaustion due to repeated and strenuous activity	Increasing sleep quality, eating healthy foods for the heart Mindfulness- based and therapeutic yoga programs	Life satisfaction, Personal losses, Sensation	Showed increasing the sleep quality and eating healthy foods always decreased the stresses amongst physicians Mindfulness-based and therapeutic yoga programs ensure viable and effective interventions. They target high stress levels, sleep quality, and autonomic balance in employees.

CHAPTER III

RESEARCH METHOD

The study is a randomized control trial on registered nurses practicing in a high-risk labor and delivery unit in Texas and California. According to Finkelstein et al. (2020), a randomized control trial is used in research to determine and establish a cause-effect relationship. It looks at intervention, an outcome, and the potential impact that the former has on the latter. In this research, the randomized control trial looked at the impact of the BREATHE intervention on stress and burnout levels among nurses in high-risk labor and delivery units. Participation was voluntary, and all protocols and procedures were approved by the Texas Woman's University Institutional Review Board (see Appendix A). The independent variables were the treatment group with the BREATHE: Stress Management for Nurses as a web-based program and the control group with current daily practices. The dependent variables were stress and burnout. Stress was measured using the NSS, while burnout was measured using the MBI-HSS. Those interested in participating were asked to review and complete the study consent form and return it to the researcher via email.

To effectively determine the existence of a cause-and-effect relationship, the randomized control trial had two groups of nurses: the experimental group and the control group. The experimental group measured stress and burnout levels using the BREATHE web-based program for stress management, whereas the control group was not taken through any program or intervention. This approach was necessary because it enabled easy and clear differentiation of the program's impact on the stress and burnout levels of the nurses.

Population and Sample

Eligible participants included those who work as a labor and delivery nurses in highrisk unit settings. These settings included hospitals in Texas and California that provide level III nursing care or above. Inclusion criteria: 1) registered nurses, 2) employed in a high-risk

labor and delivery patient unit, 3) have a minimum of 6 months experience in their current role, and 4) spend a minimum of 75% of their time in direct patient care.

Sample Size and Method of Determination

A review of studies designed to determine the efficacy of stress intervention programs was utilized to determine the effect size. One study concluded that to achieve moderate results, an effect size of 0.15 would be needed (West et al., 2014). This study used a power analysis to calculate the sample size. A medium effect size of (*f*) .30 was used where $\alpha = .05$ and *power* = .80 for repeated measures multivariate analysis of variance (MANOVA). It was determined that 90 participants were required to achieve adequate power. Considering an attrition rate of 10%, a total sample rate of 100 participants (50 per group) will be required for the overall trial. Participants for the pilot study were calculated based on the 10% recommendation, resulting in 10 participants.

Sampling Method and Data Collection

To obtain the participants, the following methods were used: 1) a list of registered nurses with email contact information from the Association of Women's Health, Obstetrics and Neonatal Nurses Texas and California sections were obtained, 2) invitations to participate along with the study flyer were emailed, 3) the study flyers (see Appendix G) were posted on the units that qualified as high-risk, and 4) in-person visits were conducted by the researcher or an appointed representative (see Appendix B). Participants were entered into a drawing to win registration for the next Association of Women's Health, Obstetrics, and Neonatal Nurses' State Conference or one of five \$50 Amazon gift after they completed all study sections. The drawing took place after the study concluded. All facets of the study, including the protocol, instruments, and time commitment were explained via email.

As the signed consents were returned, the participants were assigned a random number generated by a research randomizer (a free resource for researchers to generate

random number assignments). At the conclusion of the sign-up window, each randomly generated number was individually placed in a container. The researcher and an anonymous individual (not participating in the study), pulled one number at a time from the container and placed each number alternatively into two separate sections. The two sections were labeled experimental and control. Once all participants had been pulled, an electronic record was created notating the participants in each group.

Initial data was collected using the demographic questionnaire to determine descriptive statistics and eligibility. To maintain data collection and integrity, PsychData was used to administer all surveys. PsychData is a data-sharing platform enabling researchers to archive and disseminate their data within the scientific community (Dehnhard et al., 2013). The PsychData link for all surveys and questionnaires was emailed to interested participants. Once participants clicked the link, they were directed to the consent statement. Those who agreed with the consent statement clicked continue, which then took them to the demographic questionnaire.

To maintain anonymity the participants used their assigned username as their identifier for each survey, which allowed for the linking of the pre-and post-surveys. Upon completion of the demographic survey, each participant was directed to the NSS and MBI-HS surveys. After completing each survey, the participants clicked on the "Finish" button, and PsychData automatically saved all the data. Upon completion of all surveys, the experimental group was sent a link for BREATHE: Stress Management for Nurses, a web-based program. Each participant in the experimental group was given 2 weeks to complete the program. Once they completed the program, there was a 30-day waiting period before a link for the NSS and MBI-HSS surveys were sent to the experimental group for post program survey evaluation. Management of the survey completion and program activity were monitored daily by the researcher. Once the control group completed the three surveys, they had a 30-day hiatus,

during which time they were not given the program. After 30 days, they were sent the links for the NSS and MBI-HSS surveys to be completed as post-surveys. The control group was given access to the stress management program at the completion of the study.

Instrumentation

Three surveys were used for data collection: a demographic questionnaire, the NSS, and the MBI-HSS. The principal investigator created the demographic questionnaire. This questionnaire identified sex, race, marital status, age, years of experience, which shift worked, work status, education level, number of current jobs, and hospital level (see Appendix C).

The MBI-HSS, a 22-item inventory, was designed by Maslach in 1981 to measure the intensity of the triple dimensions of job burnout, including Emotional Exhaustion, Depersonalization, and reduced Personal Accomplishment. This program takes approximately 10-15 minutes to complete. Items are scaled from 0 to 6, with responses ranging from 0 = never and 6 = every day (see Appendix D). However, the range of scores differs based on the three different dimensions. The high level of Emotional Exhaustion and Depersonalization and low level of Personal Accomplishment shows a high level of job burnout. The reliability of this tool was measured using Cronbach's alpha to assess Emotional Exhaustion, Depersonalization, and Personal Accomplishment. Reliability reported $\alpha = 0.86$ -0.91 for Emotional Exhaustion, $\alpha = 0.59 - 0.75$ for Depersonalization, and $\alpha = 0.77 - 0.80$ for Personal Accomplishment (Beckstead, 2002; Chao et al., 2011; Maslach et al., 1996). The results demonstrate a need to emphasize Emotional Exhaustion and Personal Accomplishment more. To test the validity, the MBI-HSS scores were correlated with three settings; behavioral ratings, specified job characteristics expected to contribute to burnout, and hypothesized outcomes. All three sets of correlations provided substantial evidence for the validity of the MBI-HSS.

The NSS is a scale used to assess stressful situations for nurses. The NSS consists of seven sub-scales related to the following sources of stress: 1) Death and Dying; 2) Conflict with Physicians; 3) Inadequate Preparation; 4) Lack of Support; 5) Conflict with Other Nurses; 6) Workload; and 7) Uncertainty Concerning Treatment. Gray-Toft and Anderson (1981) developed this 34-item inventory, scaled from 1 to 4, where responses range from 1 = *never* and 4 = *very frequently* (see Appendix E). Higher total scores indicate more frequent exposures to occupational stress than lower scores. This tool takes approximately 10 minutes to complete. Reliability testing reported Cronbach's alpha α = 0.81- 0.90 (Akinwolere, 2016; Ebstein, 2015; Wakim, 2014). The test-retest reliability coefficients for four of the seven scales (1, 2, 5, & 7) exceeded 0.70, while the internal consistency reliability was more than 0.070 for most subscales, except two and four (Akinwolere, 2016). External validity tests for the NSS showed significant positive correlations between the NSS scores with trait anxiety, state anxiety, and nurse turnover (Akinwolere, 2016). Gray-Toft and Anderson (1981) found that validity was determined by correlating the total score from the NSS with measures of trait anxiety, job satisfaction, and nursing turnover hypothesized to be related to stress.

Intervention

BREATHE: Stress Management for Nurses, a web-based program, was designed with seven modules. However, one module is strictly geared toward nurse leaders and managers. Therefore, the participants were only asked to complete the first six modules. The modules consist of *Welcome and Introduction* (answering the questions what is stress and how does it affect you); *Assess Your Stress* (assesses personal stress and coping levels); *Identify Stressors* (teaches users how to identify stress and triggers); *Manage Stress* (provides a number of different stress management strategies and tools); *Avoid Negative Coping* (identifies negative coping strategies such as alcohol and drug use); and *Your Mental Health* (helps to identify signs of depression and anxiety with additional information for seeking

help). The program comprises exercises, worksheets, testimonials from nurses, and other interactive materials to assist the nurse in identifying and decreasing stressors.

Data Analysis

Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 25 computer program. First, reliability using Cronbach's alpha will be conducted to examine the internal consistency for each dimension in NSS and MBI-HSS tools. The total score of each subscale will need to be calculated. Next, missing data patterns and percentages will be examined. Assumption tests were also performed to ensure appropriate parametric analysis. Specifically, normality using histogram and outlier using box plot was conducted.

Moreover, the bivariate analysis examined the relationship between demographics and independent/dependent variables to determine if any demographics needed to be included as a covariate in the analysis. Also, the bivariate analysis was used to detect the relationships between the dimensions in each dependent variable. If they were at least moderately related to each other, repeated MANOVA was performed in each subscale. Otherwise, repeated measures analysis of variance (ANOVA) will be performed in each dimension. A p < 0.05 is set as significance.

Ethical Consideration

For the research, various ethical considerations were adhered to. The first ethical consideration was the privacy of the nurses who responded to the study. Therefore, any personally identifiable information was be displayed when the research results were eventually presented for analysis, interpretation, and discussion. Even the respondents' emails, which were used to obtain their consent and the answers to the research questions, were not displayed. Instead, the study results were displayed in a summary version. This intended approach for protecting their privacy was communicated to the research

respondents, hoping that it would increase their willingness to participate in the study and their honesty in answering questions.

Another ethical consideration was the voluntary participation of the respondents. None of the nurses were coerced nor forced to participate in the study. Instead, their participation was voluntary. Even after the commencement of the research, the participants had the freedom to pull out at any time, depending on their choice. Voluntary participation and exit of the respondents are in the research's best interests as it increases the study's validity and reliability. When respondents feel they are being coerced and forced to participate in research, they may not give accurate results.

The last ethical consideration for the research is protecting the respondents from harm. The researcher should protect the respondents from any harm or danger throughout the study. First, the respondents were protected from any emotional or psychological harm. This was implemented especially in framing the questions for the nurses. The researcher should exhibit emotional intelligence and cultural competence when forming, framing, and asking questions. For example, the questions were not insensitive and did not trigger resolved PTSD issues within the nurses. It is the responsibility of the researcher to protect the nurses from physical harm. Protecting the nurses from physical harm first ensures that they answer the questions during their free time rather than at work. It also protects them from being overworked while participating in the research while attending to and caring for their patients. Protecting their identity was also crucial to not expose them to unnecessary physical harm if they reveal damaging information about how their institution or colleagues contribute to their stress.

CHAPTER IV

RESULTS

The study included 109 female registered nurses with diverse backgrounds in terms of marital status, age, work status, education level, experience, maternal child health center level, work shift preferences, and race (see Table 2). Regarding age, the largest group of registered nurses fell within the 30-39 years category, comprising 39.4% of the participants. The other age groups were represented as follows: 20-29 years (17.4%), 40-49 years (26.6%), and 50-59 years (16.5%). Most of the registered nurses were employed full-time, making up 84.4% of the sample. Part-time employment was less common, with 7.3% of participants working in this capacity, and 8.3% were employed on a per diem basis. Most registered nurses held an associate degree in nursing (41.3%), followed by those with a diploma (34.9%) and a bachelor's degree in nursing (22.9%). A small proportion (0.9%) had achieved a graduate degree, specifically a master's degree. Most participants (35.8%) had more than 15 years of experience, followed by those with 6-10 years of experience (24.8%), 4-5 years (15.6%), 11-15 years (17.4%), and 1-3 years (6.4%). The participants predominantly worked in Level-3 maternal child health centers (91.7%), and smaller proportion (8.3%) worked in Level-4 centers. Most registered nurses (56.9%) worked the 7 am - 7 pm day shift, those who worked during night shift from 7 pm to 7 am constituted 41.3%, while a small percentage (1.8%) worked the 7 am - 3 pm day shift. The largest proportion of the participants were White (47.7%). Other racial groups included Black (18.3%), Hispanic (18.3%), Asian (8.3%), Pacific Islander (5.5%), and other (1.8%).

Table 2

	Demographic factors	Frequency	Percent
Race	White	52	47.7 %
	Demographic Factors	Frequency	Percent
Race	Black	20	18.3 %
	Hispanic	20	18.3 %
	Asian	9	8.3 %
	Pacific Islander	6	5.5 %
	Other	2	1.8 %
Sex	Female	109	100 %
	Male	0	0 %
Marital status	Married or domestic partnership	59	54.1 %
	Divorced	18	16.5 %
	Widowed	2	1.8 %
	Separated	28	25.7 %
	Single, never married	2	1.8 %
Age (years)	20-29	19	17.4 %
	30-39	43	39.4 %
	40-49	29	26.6 %
	50-59	18	16.5 %
Work status	Full-time	92	84.4 %
	Part –time	8	7.3 %
	Per Diem	9	8.3 %
Education level	Diploma	38	34.9 %
	Associate Degree Nursing	45	41.3 %
	Bachelor's Degree Nursing	25	22.9 %
	Graduate Degree (Master's)	1	0.9 %
Experience	1-3 years	7	6.4 %
	4-5 years	17	15.6 %
	6 – 10 years	27	24.8 %
	11 – 15 years	19	17.4 %
	Greater than 15	39	35.8 %
Level	Level 4	9	8.3 %
	Level 3	100	91.7 %
Work shift	7am – 7pm (days)	62	56.9 %
	7pm – 7am (nights)	45	41.3 %
	7am – 3pm (days)	2	1.8 %

Study Demographics (N = 109)
Initially 109 participants took part in NSS pre-test. However, following the sorting of the data, Participants 1101, 1093, 1052, 1029, and 1004 were removed from the pre-test dataset because they dropped out of the study (their post-intervention data were not recorded). Additionally, Participants 1012 and 1092 were removed from the NSS data because the participant did not provide pre-intervention data. Furthermore Participants 1033, 1047, and 1013 were removed because of incomplete data. Therefore, NSS data from 100 participants (50 control and 50 experimental) were included in the study. For MBI-HSS data, Participants 1101, 1093, 1052, 1029, 1004 were removed from the pre-test dataset because they dropped out of the study (their post intervention data were not recorded). Furthermore Participant 1013 was removed because of incomplete data. Therefore, MBI-HSS data from 103 participants (51 control and 52 experimental) were included in the study.

Assessment of Reliability

The reliability of the subscales in the NSS was assessed using Cronbach's alpha notated in Table 3. The Death and Dying subscale, consisting of items related to Death and Dying, demonstrated good internal consistency. The Cronbach's alpha coefficients for each item, if deleted, were as follows: performing procedures that patients experience as painful (α = 0.876), feeling helpless in the case of a patient who fails to improve (α = 0.817), listening or talking to a patient about his or her approaching death (α = 0.815), the death of a patient (α = 0.779), the death of a patient with whom you developed a close relationship (α = 0.771), physician not being present when a patient dies (α = 0.787), and watching a patient suffer (α = 0.802). The overall Cronbach's alpha for the Death and Dying scale was calculated as 0.832, indicating good internal consistency reliability. Similarly, the overall Cronbach's alpha for the Conflict with Physicians subscale was calculated as 0.85, indicating strong internal consistency reliability. As shown in Table 3, there was no notable change in the Cronbach's alpha coefficients if any of the five items making up the Conflict with Physicians subscale was deleted.

Table 3 indicates that the overall Cronbach's alpha for the Inadequate Preparation subscale was calculated as 0.813, indicating strong internal consistency reliability. No notable change in the Cronbach's alpha coefficients was reported if any of the three items making up the subscale was deleted. The overall Cronbach's alpha for the Lack of Support subscale was calculated as 0.951, indicating strong internal consistency reliability. No notable change in the Cronbach's alpha coefficients was reported if any of the three items making up the subscale was deleted. Table 3 also indicates strong internal consistency reliability for Workload subscale ($\alpha = 0.855$), and acceptable internal consistency for Uncertainty Concerning Treatment subscale ($\alpha = 0.731$). No notable change in the Cronbach's alpha coefficients of each of the two subscales was reported if any of the items making up the subscales was deleted. There was questionable internal consistency for Conflict with Other Nurses subscale ($\alpha = 0.626$) and the deletion to two items (Conflict with a supervisor, Criticism by a supervisor and Difficulty in working with a particular nurse [or nurses] outside the unit) resulted in Cronbach's alpha of less than 0.6 indicating poor internal consistency.

Subscale	Items	Scale	Scale	Corrected	Squared	Cronbach's	Overall
		Mean	Variance	Item-Total	Multiple	Alpha if Item	Cronbach's
		if Item	if Item	Correlation	Correlation	Deleted	Alpha
		Deleted	Deleted				
Death and Dying scale	Performing procedures that patients experience as painful	12.07	7.48	0.183	0.729	0.876	0.832
	Feeling helpless in the case of a patient who fails to improve	12.29	6.996	0.544	0.416	0.817	
	Listening or talking to a patient about his/her approaching death	12.51	6.939	0.55	0.737	0.815	
	The death of a patient	12.37	6.235	0.795	0.77	0.779	
	The death of a patient with whom you developed a close relationship	12.41	5.557	0.786	0.873	0.771	
	Physician not being present when a patient dies	12.48	5.767	0.707	0.638	0.787	
	Watching a patient suffer	12.15	6.391	0.627	0.835	0.802	
Conflict with	Criticism by a physician	8.88	5.379	0.763	0.639	0.789	0.85
Physicians	Conflict with a physician	8.85	4.674	0.774	0.719	0.796	
	Fear of making a mistake in treating a patient	8.63	6.397	0.688	0.488	0.815	
	Disagreement concerning the treatment of a patient	8.64	6.394	0.717	0.583	0.81	
	Making a decision concerning a patient when the physician is unavailable	8.64	7.344	0.445	0.27	0.867	
Inadequate Preparation	Feeling inadequately prepared to help with the emotional needs of a patient's family	4.18	0.897	0.785	0.625	0.685	0.813
-	Being asked a question by a patient for which I do not have a satisfactory answer	4.1	0.798	0.657	0.516	0.751	
	Feeling inadequately prepared to help with the emotional needs of a patient	4.12	0.632	0.639	0.453	0.818	

Internal Consistency of the NSS Subscales

Subscale	Items	Scale	Scale	Corrected	Squared	Cronbach's	Overall
		Mean	Variance	Item-Total	Multiple	Alpha if Item	Cronbach's
		if Item	if Item	Correlation	Correlation	Deleted	Alpha
		Deleted	Deleted				
Lack of	Lack of an opportunity to talk openly with other	3.96	1.211	0.891	0.808	0.933	0.951
Support	unit personnel about problems on the unit						
	Lack of an opportunity to share experiences and	4.04	1.332	0.924	0.853	0.914	
	feelings with other personnel on the unit						
	Lack of an opportunity to express to other	4.04	1.211	0.885	0.793	0.939	
	toward patients						
Conflict with	Conflict with a supervisor	7.49	3.848	0.532	0.464	0.496	0.626
Other Nurses	Floating to other units that are short-staffed	6.64	4.354	0.177	0.114	0.696	
	Difficulty in working with a particular nurse (or	7.47	4.332	0.456	0.288	0.546	
	nurses) outside the unit						
	Criticism by a supervisor	7.2	3.737	0.535	0.46	0.491	
	Difficulty in working with a particular nurse (or	7.32	4.402	0.295	0.278	0.613	
	nurses) on the unit						
Workload	Breakdown of computer	14.96	9.291	0.346	0.187	0.874	0.855
	Unpredictable staffing and scheduling	14.16	6.782	0.672	0.504	0.829	
	Too many non-nursing tasks required, such as	14.21	7.44	0.686	0.537	0.823	
	Clerical Work	14 27	7 246	0 654	0.520	0.820	
	to a patient	14.37	/.240	0.634	0.329	0.829	
	Not enough time to complete all of my nursing	14.29	6.632	0.815	0.73	0.795	
	tasks						
	Not enough staff to adequately cover the unit	13.86	7.738	0.705	0.579	0.823	
Uncertainty	Inadequate information from a physician	8.05	2.068	0.488	0.439	0.687	0.731
Concerning	regarding the medical condition of a patient						
Treatment	A physician ordering what appears to be	8.1	1.99	0.492	0.698	0.685	
	inappropriate treatment for a patient						

Subscale	Items	Scale	Scale	Corrected	Squared	Cronbach's	Overall
		Mean	Variance	Item-Total	Multiple	Alpha if Item	Cronbach's
		if Item	if Item	Correlation	Correlation	Deleted	Alpha
		Deleted	Deleted				
	A physician not being present in a medical emergency	8.02	1.636	0.608	0.729	0.635	
	Not knowing what a patient or a patient's family ought to be told about the patient's condition and its treatment	8.11	2.099	0.387	0.465	0.725	
	Uncertainty regarding the operation and functioning of specialized equipment	8.2	2.162	0.516	0.593	0.682	

Internal Consistency of the MBI-HSS Subscales

Subscale	Item	Scale Mean if Item	Scale Variance if Item	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted	Overall Cronbach' s Alpha
		Deleted	Deleted				
Emotional Exhaustion	I feel emotionally drained from my work (Q1)	30.82	41.897	0.759	0.806	0.861	0.884
	I feel used up at the end of the workday (Q2)	30.78	42.607	0.783	0.816	0.861	
	I feel fatigued when I get up in the morning and have to face another day at work (Q3)	31.26	42.98	0.585	0.488	0.875	
	Working with people all day is really a strain for me (Q6)	32.7	42.879	0.736	0.652	0.864	
	I feel burned out from my work (Q8)	30.56	42.405	0.552	0.389	0.88	
	I feel frustrated by my job (Q13)	30.88	41.084	0.713	0.66	0.864	
	I feel I'm working too hard on my job (Q14)	30.53	41.604	0.625	0.567	0.872	
	Working with people directly puts too much stress on me (Q16)	33.07	49.456	0.261	0.142	0.896	
	Q20 (I feel like I'm at the end of my rope)	32.82	40.505	0.722	0.692	0.863	

Subscale	Item	Scale	Scale	Corrected	Squared	Cronbach's	Overall
		Mean if	Variance if	Item-Total	Multiple	Alpha if Item	Cronbach'
		Item	Item	Correlation	Correlation	Deleted	s Alpha
		Deleted	Deleted				1
Depersonalizat	I can easily understand how my	33.93	29.103	0.538	0.362	0.851	0.86
ion	recipients feel about things (Q4)						
	I deal very effectively with the	33.77	29.965	0.47	0.36	0.857	
	problems of my recipients (Q7)						
	I feel I'm positively influencing	34.38	26.61	0.65	0.565	0.838	
	other people's lives through my work (Q9)						
	I feel very energetic (Q12)	35.13	27.504	0.569	0.405	0.848	
	I can easily create a relaxed	34.21	28.17	0.534	0.468	0.852	
	atmosphere with my recipients (Q17)						
	I feel exhilarated after working	35.1	26.834	0.658	0.575	0.837	
	closely with my recipients (Q18)						
	I have accomplished many	34.75	25.72	0.75	0.652	0.826	
	worthwhile things in this job (Q19)						
	In my work, I deal with emotional problems very calmly (Q21)	34.32	26.828	0.679	0.623	0.835	
Reduced	I feel I treat some recipients as if	10.51	14.311	0.418	0.301	0.805	0.799
Personal	they were impersonal objects (Q5)						
Accomplishm	I've become more callous toward	9.54	11.133	0.556	0.659	0.773	
ent	people since I took this job (Q10)						
	I worry that this job is hardening me emotionally (O11)	9.21	9.326	0.75	0.735	0.7	
	I don't really care what happens to	11.26	13.293	0.589	0.525	0.766	
	some recipients (Q15)						
	I feel recipients blame me for some of their problems (O22)	9.95	11.321	0.657	0.548	0.735	

The reliability of the subscales in the MBI-HSS was assessed using Cronbach's alpha, which is depicted in Table 4 above. The overall Cronbach's alpha for the Emotional Exhaustion subscale was calculated as 0.88, indicating strong internal consistency reliability. Table 4 also indicates strong internal consistency reliability for the Depersonalization subscale ($\alpha = 0.86$) and the Reduced Personal Accomplishment subscale ($\alpha = 0.80$). No notable change in the Cronbach's alpha coefficients of each of the two subscales was reported if any of the items making up the subscales was deleted.

Relationship Between Demographics and Stress

A one-way ANOVA was conducted to examine the relationship between the various demographic variables and the dependent variable stress across several dimensions: pre-Death and Dying (SS1), pre-Conflict with Physicians (SS2), pre-Inadequate Preparation (SS3), pre-Lack of Support (SS4), pre-Conflict with Other Nurses (SS5), pre-Workload (SS6), and pre-Uncertainty Concerning Treatment (SS7; see Table 5). Based on the obtained significance value of more than 0.05, the results of the ANOVA revealed non-significant findings for all dimensions. These results suggest that there is no significant relationship between the demographic variables (race, marital status, age, work status, education level, years of experience, level of maternal child health center, work shift, and number of jobs) and the dependent variable stress across any of the dimensions examined. Therefore, none of demographic variables were considered a covariable in the subsequent analysis.

Table 5

Relationship Between Demographic Variables and Various Dimensions of Stress

		SS1	SS2	SS3	SS4	SS5	SS6	SS7
Race	F	0.516	0.91	0.388	0.374	0.498	1.065	0.568
	Sig.	0.764	0.478	0.856	0.865	0.777	0.385	0.724
Marital status	F	0.831	2.077	1.403	0.924	1.707	0.429	1.383
	Sig.	0.509	0.09	0.239	0.453	0.155	0.787	0.246

		SS1	SS2	SS3	SS4	SS5	SS6	SS7
Age (years)	F	1.648	0.231	2.208	1.589	0.435	0.739	1.488
	Sig.	0.183	0.875	0.092	0.197	0.728	0.531	0.223
Work status	F	0.246	0.337	0.126	2.057	1.075	0.813	0.212
	Sig.	0.782	0.715	0.882	0.133	0.345	0.446	0.81
Education level	F	1.46	1.683	0.487	1.35	1.787	2.055	1.411
	Sig.	0.23	0.176	0.692	0.263	0.155	0.111	0.244
Experience	F	0.221	0.88	1.201	0.427	0.215	0.132	0.413
	Sig.	0.926	0.479	0.316	0.789	0.929	0.97	0.799
Level of center	F	0.571	0.917	4.064	0.041	2.758	0.02	0.037
	Sig.	0.452	0.341	0.05	0.84	0.1	0.887	0.848
Work shift	F	0.303	2.604	1.917	0.352	0.357	0.922	0.463
	Sig.	0.739	0.079	0.153	0.704	0.701	0.401	0.631

A one-way ANOVA was conducted to examine the relationship between the various demographic variables and the dependent variable burnout across three dimensions: Emotional Exhaustion (BSS1), Depersonalization subscale (BSS2), and Reduced Personal Accomplishment subscale (BSS3). Based on the obtained significance value of more than 0.05, the results of the ANOVA revealed non-significant findings for all dimensions except for the education level. Table 6 indicates a statistically significant relationship between education level and BSS1 (p < 0.001) and BSS3 (p < 0.001) but no significant relationship was observed with the other variables (race, marital status, age, work status, years of experience, level of maternal child health center, work shift and number of jobs). Therefore, only the demographic variable education level was considered a covariable in the subsequent analysis.

		BSS1	BSS2	BSS3
Race	F	0.286	0.415	0.236
		BSS1	BSS2	BSS3
	Sig.	0.92	0.837	0.946
Marital status	F	0.316	1.246	0.523
	Sig.	0.867	0.297	0.719
Age (years)	F	0.651	0.544	0.48
	Sig.	0.584	0.653	0.697
Work status	F	0.319	0.343	0.279
	Sig.	0.728	0.711	0.757
Education level	F	6.288	1.13	8.787
	Sig.	<.001	0.341	<.001
Experience	F	0.906	1.144	0.843
	Sig.	0.464	0.34	0.501
Level of center	F	1.671	0.135	2.252
	Sig.	0.199	0.714	0.137
Work shift	F	0.099	0.996	0.168
	Sig.	0.906	0.373	0.845
Number of jobs	F	0.712	0.065	0.226
	Sig.	0.401	0.8	0.635

Relationship Between Demographic Variables and Various Dimensions of Burnout

Relationships Between the Dimensions in the Stress Variable

The relationship between dimensions in stress variable (Death and Dying, Conflict with Physicians, Inadequate Preparation, Lack of Support, Conflict with Other Nurses, Workload, and Uncertainty Concerning Treatment) was carried out using Pearson's correlation analysis. The analysis revealed a statistically significant, but low negative correlation between pre-Inadequate Preparation and post-Lack of Support (r = -197, p = 0.05), pre-Inadequate Preparation and post-Uncertainty Concerning Treatment (r = -0.203, p = 0.043), post-Death and Dying and post-Uncertainty Concerning Treatment (r = -0.206, p = 0.043). However, Table 7 indicates a lack of statistical significance in the correlation between the other dimensions (p > 0.05). It is evident that none of the dimensions were at least

moderately related to each other. Therefore, repeated measures ANOVA was performed in each dimension and findings described later in this chapter.

Pearson's Correlation Analysis Showing the Relationship Between Dimensions in the Stress Variable

		Post-	Post-Conflict	Post-	Post-	Post-Conflict	Post-	Post-Uncertainty
		Death and	with	Inadequate	Lack of	with Other	Workload	Concerning
		Dying	Physicians	Preparation	Support	Nurses		Treatment
Pre-Death and	Pearson Correlation	-0.011	0.009	-0.036	-0.002	-0.059	-0.006	-0.022
Dying	Sig. (2-tailed)	0.917	0.933	0.72	0.983	0.562	0.955	0.829
	N	100	100	100	100	100	100	100
Pre-Conflict with	Pearson Correlation	-0.042	-0.058	-0.016	-0.082	-0.009	-0.144	-0.02
Physicians	Sig. (2-tailed)	0.679	0.568	0.871	0.42	0.929	0.154	0.84
	N	100	100	100	100	100	100	100
Pre-Inadequate	Pearson Correlation	-0.124	-0.12	-0.082	197*	-0.134	-0.112	203*
Preparation	Sig. (2-tailed)	0.22	0.234	0.417	0.05	0.182	0.266	0.043
	N	100	100	100	100	100	100	100
Pre-Lack of	Pearson Correlation	-0.014	-0.006	0.185	0.067	-0.057	-0.034	0.104
Support	Sig. (2-tailed)	0.894	0.951	0.066	0.511	0.575	0.735	0.305
	N	100	100	100	100	100	100	100
Pre-Conflict with	Pearson Correlation	-0.132	-0.042	-0.03	-0.115	-0.008	-0.039	-0.047
Other Nurses	Sig. (2-tailed)	0.191	0.676	0.767	0.253	0.936	0.697	0.639
	N	100	100	100	100	100	100	100
Pre-Workload	Pearson Correlation	-0.061	-0.078	0.048	-0.003	-0.089	-0.026	-0.008
	Sig. (2-tailed)	0.548	0.443	0.638	0.979	0.379	0.798	0.937
	N	100	100	100	100	100	100	100
Pre-Uncertainty	Pearson Correlation	206*	-0.139	-0.057	-0.103	-0.118	-0.135	-0.075
Concerning	Sig. (2-tailed)	0.04	0.169	0.573	0.307	0.244	0.179	0.458
Treatment	Ν	100	100	100	100	100	100	100

*The analysis revealed a statistically significant, but low negative correlation

Relationships Between the Dimensions in the Burnout Variable

The relationship between dimensions in the burnout variable (Emotional Exhaustion [SS1], Depersonalization [SS2], and Reduced Personal Accomplishment [SS3]) was carried out using Pearson's correlation analysis. Table 8 indicates a lack of statistical significance in the correlation between the dimensions (p > 0.05). Since none of the dimensions were at least moderately related to each other, repeated measures ANOVA was performed in each dimension and findings described later in this chapter.

Table 8

Pearson's Correlation Analysis Showing the Relationship Between Dimensions in the Burnout

Variable

		POST-SS1	POST-SS2	POST-SS3
PRE-SS1	Pearson Correlation	0.082	-0.038	0.099
	Sig. (2-tailed)	0.408	0.701	0.321
	N	103	103	103
PRE-SS2	Pearson Correlation	-0.104	0.116	-0.092
	Sig. (2-tailed)	0.298	0.243	0.354
	N	103	103	103
PRE-SS3	Pearson Correlation	0.083	-0.046	0.018
	Sig. (2-tailed)	0.405	0.642	0.855
	Ν	103	103	103

Difference in Perceived Stress as Measured by the NSS

A repeated measures ANOVA was conducted in SPSS to examine the difference between treatment effects focusing on the stress dimensions among labor and delivery nurses who used the BREATHE: Stress Management for Nurses program when compared to nurses who did not have access to the program. Table 9 shows the means (*M*) and standard deviations (*SD*) of the score before and after the program for nurses who participated in the program (experimental) and those who did not participate (control). For nurses who participated in the program, the post program score was lower compared to pre score for Death and Dying, Conflict with Physicians, Inadequate Preparation, Lack of Support, Conflict with Other Nurses, and Workload Dimensions. However, the post Uncertainty Concerning Treatment score (M = 10.04, $SD = \pm 1.603$) was higher compared to pre Uncertainty Concerning Treatment score (M = 9.98, $SD = \pm 1.900$). For the control, the post program score was lower compared to pre score for Death and Dying, Inadequate Preparation, and Uncertainty Concerning Treatment dimensions. The scores remained the same for Conflict with Physicians, and Lack of Support dimensions while there an increase post the program in the scores of the Conflict with Other Nurses and Workload dimensions (see Table 9).

Table 9

Post Program Score Was Lower Compared to the Pre-Stress Dimensions Score in the

Experimental and Control Groups

	Experi	mental $(N = 50)$	Cor	ntrol ($N = 50$)
	Mean	Std. Deviation	Mean	Std. Deviation
Pre-Death and Dying	14.0	± 2.432	14.7	± 3.344
Post-Death and Dying	13.8	± 1.899	14.4	± 2.764
Pre-Conflict with Physicians	11.1	± 3.025	10.7	± 3.024
Post-Conflict with Physicians	10.2	± 2.664	10.7	± 3.107
Pre-Inadequate Preparation	6.0	± 1.124	6.4	± 1.382
Post-Inadequate Preparation	5.9	± 0.922	6.0	± 1.245
Pre-Lack of Support	6.1	± 1.796	5.9	± 1.515
Post-Lack of Support	5.8	± 1.302	5.9	± 1.676
Pre-Conflict with Other Nurses	9.3	± 2.638	8.7	± 2.193
Post-Conflict with Other Nurses	8.6	± 2.107	9.1	± 2.538
Pre-Workload	17.6	± 3.189	16.8	± 3.284
Post-Workload	17.1	± 2.715	17.4	± 3.156
Pre-Uncertainty Concerning	10.0	± 1.900	10.3	± 1.496
Treatment				
Post-Uncertainty Concerning	10.0	± 1.603	10.0	± 1.922
Treatment				

Table 10 shows a repeated measures ANOVA conducted to examine the effects of the participation in the program on the stress level among nurses. The analysis did not reveal a significant main effect of the participation in the program on Death and Dying ($F(1, 49) = 0.202, p = 0.655, \eta^2 = 0.004$), Conflict with Physicians ($F(1, 49) = 1.7, p = 0.198, \eta^2 = 0.034$), Inadequate Preparation ($F(1, 49) = 0.277, p = 0.601, \eta^2 = 0.006$), Lack of Support ($F(1, 49) = 1.807, p = 0.185, \eta^2 = 0.036$), Conflict with Other Nurses ($F(1, 49) = 1.714, p = 0.197, \eta^2 = 0.034$), Workload ($F(1, 49) = 0.553, p = 0.461, \eta^2 = 0.011$), and Uncertainty Concerning Treatment ($F(1, 49) = 0.025, p = 0.876, \eta^2 = 0.001$). Given the lack of statistically significant outcome, the post hoc pairwise comparisons, which was carried out using Bonferroni correction is not reported.

For the control, Table 11 shows the repeated measures ANOVA of the effects of the participation in the program on the stress level among nurses also did not reveal a significant main effect of the participation in the program on Death and Dying (F(1, 49) = 0.204, p = 0.653, $\eta^2 = 0.004$), Conflict with Physicians (F(1, 49) = 0.005, p = 0.944, $\eta^2 = 0$), Inadequate Preparation (F(1, 49) = 1.873, p = 0.177, $\eta^2 = 0.037$), Lack of Support (F(1, 49) = 0.004, p = 0.951, $\eta^2 = 0$), Conflict with Other Nurses (F(1, 49) = 0.636, p = 0.429, $\eta^2 = 0.013$), Workload (F(1, 49) = 0.892, p = 0.35, $\eta^2 = 0.018$), and Uncertainty Concerning Treatment (F(1, 49) = 0.502, p = 0.482, $\eta^2 = 0.01$). Given the lack of statistically significant outcome, the post hoc pairwise comparisons, which was carried out using Bonferroni correction is not reported.

Source	Measure		Type III Sum of	df	Mean	F	Sig.	Partial Eta
			Squares		Square			Squared
Stress	SS1	Sphericity Assumed	1	1	1	0.202	0.655	0.004
		Greenhouse-Geisser	1	1	1	0.202	0.655	0.004
		Huynh-Feldt	1	1	1	0.202	0.655	0.004
		Lower-bound	1	1	1	0.202	0.655	0.004
	SS2	Sphericity Assumed	17.64	1	17.64	1.7	0.198	0.034
		Greenhouse-Geisser	17.64	1	17.64	1.7	0.198	0.034
		Huynh-Feldt	17.64	1	17.64	1.7	0.198	0.034
		Lower-bound	17.64	1	17.64	1.7	0.198	0.034
	SS3	Sphericity Assumed	0.36	1	0.36	0.277	0.601	0.006
		Greenhouse-Geisser	0.36	1	0.36	0.277	0.601	0.006
		Huynh-Feldt	0.36	1	0.36	0.277	0.601	0.006
		Lower-bound	0.36	1	0.36	0.277	0.601	0.006
	SS4	Sphericity Assumed	3.61	1	3.61	1.807	0.185	0.036
		Greenhouse-Geisser	3.61	1	3.61	1.807	0.185	0.036
		Huynh-Feldt	3.61	1	3.61	1.807	0.185	0.036
		Lower-bound	3.61	1	3.61	1.807	0.185	0.036
	SS5	Sphericity Assumed	11.56	1	11.56	1.714	0.197	0.034
		Greenhouse-Geisser	11.56	1	11.56	1.714	0.197	0.034
		Huynh-Feldt	11.56	1	11.56	1.714	0.197	0.034
		Lower-bound	11.56	1	11.56	1.714	0.197	0.034
	SS6	Sphericity Assumed	4.84	1	4.84	0.553	0.461	0.011
		Greenhouse-Geisser	4.84	1	4.84	0.553	0.461	0.011
		Huynh-Feldt	4.84	1	4.84	0.553	0.461	0.011

Repeated Measures ANOVA Conducted to Examine the Effects of the Participation in the Program on the Stress Level in the Experimental Group

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
		Lower-bound	4.84	1	4.84	0.553	0.461	0.011
	SS7	Sphericity Assumed	0.09	1	0.09	0.025	0.876	0.001
		Greenhouse-Geisser	0.09	1	0.09	0.025	0.876	0.001
		Huynh-Feldt	0.09	1	0.09	0.025	0.876	0.001
		Lower-bound	0.09	1	0.09	0.025	0.876	0.001

Repeated Measures ANOVA Conducted to Examine the Effects of the Participation in the Program on the Stress Level in the Control Group

Source	Measure		Type III	df	Mean	F	Sig.	Partial
			Sum of		Square			Eta
			Squares					Squared
Stress	SS1	Sphericity Assumed	1.96	1	1.96	0.204	0.653	0.004
		Greenhouse-Geisser	1.96	1	1.96	0.204	0.653	0.004
		Huynh-Feldt	1.96	1	1.96	0.204	0.653	0.004
		Lower-bound	1.96	1	1.96	0.204	0.653	0.004
	SS2	Sphericity Assumed	0.04	1	0.04	0.005	0.944	0
		Greenhouse-Geisser	0.04	1	0.04	0.005	0.944	0
		Huynh-Feldt	0.04	1	0.04	0.005	0.944	0
		Lower-bound	0.04	1	0.04	0.005	0.944	0
	SS3	Sphericity Assumed	3.24	1	3.24	1.873	0.177	0.037
		Greenhouse-Geisser	3.24	1	3.24	1.873	0.177	0.037
		Huynh-Feldt	3.24	1	3.24	1.873	0.177	0.037
		Lower-bound	3.24	1	3.24	1.873	0.177	0.037

Source	Measure		Type III	df	Mean	F	Sig.	Partial
			Sum of		Square			Eta
			Squares					Squared
	SS4	Sphericity Assumed	0.01	1	0.01	0.004	0.951	0
		Greenhouse-Geisser	0.01	1	0.01	0.004	0.951	0
		Huynh-Feldt	0.01	1	0.01	0.004	0.951	0
		Lower-bound	0.01	1	0.01	0.004	0.951	0
	SS5	Sphericity Assumed	2.89	1	2.89	0.636	0.429	0.013
		Greenhouse-Geisser	2.89	1	2.89	0.636	0.429	0.013
		Huynh-Feldt	2.89	1	2.89	0.636	0.429	0.013
		Lower-bound	2.89	1	2.89	0.636	0.429	0.013
	SS6	Sphericity Assumed	9.61	1	9.61	0.892	0.35	0.018
		Greenhouse-Geisser	9.61	1	9.61	0.892	0.35	0.018
		Huynh-Feldt	9.61	1	9.61	0.892	0.35	0.018
		Lower-bound	9.61	1	9.61	0.892	0.35	0.018
	SS7	Sphericity Assumed	1.44	1	1.44	0.502	0.482	0.01
		Greenhouse-Geisser	1.44	1	1.44	0.502	0.482	0.01
		Huynh-Feldt	1.44	1	1.44	0.502	0.482	0.01
		Lower-bound	1.44	1	1.44	0.502	0.482	0.01

Difference in Perceived Burnout as Measured by the MBI-HSS

A repeated measures ANOVA was conducted in SPSS to examine the difference between treatment effects focusing on the burnout dimensions (Emotional Exhaustion [SS1], Depersonalization subscale [SS2], and Reduced Personal Accomplishment subscale [SS3]) among labor and delivery nurses who used the program when compared to nurses who did not have access to the program. Table 12 shows the means (*M*) and standard deviations (*SD*) of the score before and after the program for nurses who participated in the program (experimental) and those who did not participate (control). For nurses who participated in the program, the post program scores were lower compared to the pre scores for SS1 and SS3. However, the post-SS2 score (M = 39, $SD = \pm 5.006$) was higher compared to pre SS2 score (M = 38.7, $SD = \pm 6.120$). For nurses who did not participate in the program, the post program score was higher compared to the pre scores for SS1, and the post scores for SS2 and SS3 were lower than the pre scores (see Table 12).

Table 12

Post Program Score Was Lower Compared to the Pre-Burnout Dimensions Score in the Experimental and Control Groups

	Experim	ental $(N = 52)$	Control $(N = 51)$			
	M	SD	M	SD		
PRE-SS1	36.6	± 8.147	34.2	± 6.166		
POST-SS1	33.2	± 4.180	37.0	± 9.125		
PRE-SS2	38.7	± 6.120	40.0	± 5.746		
POST-SS2	39.0	± 5.006	39.8	± 6.697		
PRE-SS3	13.5	± 4.531	11.7	± 3.682		
POST-SS3	11.9	± 2.764	13.3	± 5.261		

For the experimental group, the repeated measures ANOVA analysis of the effects of the participation in the program on the stress level among nurses revealed that a significant main effect of the participation in the program was only noted when the education level was considered as a covariate. Table 13 further indicates that the significant main effects were only reported in the Emotional Exhaustion dimension (F(1, 50) = 6.967, p = 0.011, $\eta^2 = 0.122$).

Source	Measure		Type III Sum of	df	Mean Square	F	Sig.	Partial Eta Squared
Burnout	Emotional	Sphericity	66.186	1	66.186	1.785	0.188	0.034
		Assumed						
		Greenhouse- Geisser	66.186	1	66.186	1.785	0.188	0.034
		Huynh-Feldt	66.186	1	66.186	1.785	0.188	0.034
		Lower-bound	66.186	1	66.186	1.785	0.188	0.034
	Depersonalization	Sphericity Assumed	0.119	1	0.119	0.007	0.935	0
		Greenhouse- Geisser	0.119	1	0.119	0.007	0.935	0
		Huynh-Feldt	0.119	1	0.119	0.007	0.935	0
		Lower-bound	0.119	1	0.119	0.007	0.935	0
	Personal	Sphericity Assumed	2.763	1	2.763	0.241	0.626	0.005
		Greenhouse- Geisser	2.763	1	2.763	0.241	0.626	0.005
		Huynh-Feldt	2.763	1	2.763	0.241	0.626	0.005
		Lower-bound	2.763	1	2.763	0.241	0.626	0.005
Burnout * Education Level	Emotional	Sphericity Assumed	258.352	1	258.352	6.967	0.011	0.122
		Greenhouse- Geisser	258.352	1	258.352	6.967	0.011	0.122
		Huynh-Feldt	258.352	1	258.352	6.967	0.011	0.122
		Lower-bound	258.352	1	258.352	6.967	0.011	0.122

Repeated Measures ANOVA Conducted to Examine the Effects of the Participation in the Program on the Burnout in the Experimental Group

Source	Measure		Type III	df	Mean	F	Sig.	Partial Eta
			Sum of		Square			Squared
	Depersonalization	Sphericity	0 076	1	0.076	0.004	0.948	0
	Depersonalization	Assumed	0.070	1	0.070	0.004	0.740	0
		Greenhouse- Geisser	0.076	1	0.076	0.004	0.948	0
		Huynh-Feldt	0.076	1	0.076	0.004	0.948	0
		Lower-bound	0.076	1	0.076	0.004	0.948	0
	Personal	Sphericity Assumed	25.888	1	25.888	2.257	0.139	0.043
		Greenhouse- Geisser	25.888	1	25.888	2.257	0.139	0.043
		Huynh-Feldt	25.888	1	25.888	2.257	0.139	0.043
		Lower-bound	25.888	1	25.888	2.257	0.139	0.043
Error (Burnout)	Emotional	Sphericity Assumed	1854.061	50	37.081			
		Greenhouse- Geisser	1854.061	50	37.081			
		Huynh-Feldt	1854.061	50	37.081			
		Lower-bound	1854.061	50	37.081			
	Depersonalization	Sphericity Assumed	887.462	50	17.749			
		Greenhouse- Geisser	887.462	50	17.749			
		Huynh-Feldt	887.462	50	17.749			
		Lower-bound	887.462	50	17.749			
	Personal	Sphericity Assumed	573.526	50	11.471			
		Greenhouse- Geisser	573.526	50	11.471			

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
		Huynh-Feldt	573.526	50	11.471			
		Lower-bound	573.526	50	11.471			

Post hoc pairwise comparisons using a Bonferroni correction were performed to further explore the reported significant main effects in the experimental group (see Table 14). The results of the pairwise comparisons indicated that the reduction in emotional burnout score after participation in the program was significant (p = 0.006). Similarly, that the reduction in Depersonalization score after participation in the program was significant (p = 0.023).

Table 14

Post Hoc Pairwise Comparisons Using a Bonferroni Correction of the Main Effects in the Experimental Group

Measure	(I)	(J)	Mean	Std.	Sig.b	95	%
	Burnout	Burnout	Differenc	Error		Confi	dence
			e (I-J)			Interv	al for
						Differ	rence ^b
						Lower	Upper
						Bound	Bound
Emotional	1	2	3.442*	1.194	0.006	1.044	5.841
	2	1	-3.442*	1.194	0.006	-5.841	-1.044
Depersonalization	1	2	-0.308	0.826	0.711	-1.967	1.352
	2	1	0.308	0.826	0.711	-1.352	1.967
Personal	1	2	1.558*	0.664	0.023	0.224	2.892
	2	1	-1.558*	0.664	0.023	-2.892	-0.224

* The mean difference is significant at the .05 level. b Adjustment for multiple comparisons: Bonferroni.

For the control group, Table 15 indicates significant main effects in the Emotional Exhaustion dimension (F(1, 49) = 5.216, p = 0.027, $\eta^2 = 0.096$). The main effects for the other dimensions were not significant. Additionally, no significant main effect of the participation in the program was reported when education level was considered as a covariate (see Table 15).

Rep	eated Measures .	ANOVA	Conducted to) Examine th	he Effe	ects of	the Part	cipation	1 in the I	Program	on the	Burnout i	n the C	ontrol C	Froup
										- 0					

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Burnout	Emotional	Sphericity	238.556	1	238.556	5.216	0.027	0.096
		Assumed						
		Greenhouse- Geisser	238.556	1	238.556	5.216	0.027	0.096
		Huynh-Feldt	238.556	1	238.556	5.216	0.027	0.096
		Lower-bound	238.556	1	238.556	5.216	0.027	0.096
	Depersonalization	Sphericity Assumed	4.066	1	4.066	0.088	0.768	0.002
		Greenhouse- Geisser	4.066	1	4.066	0.088	0.768	0.002
		Huynh-Feldt	4.066	1	4.066	0.088	0.768	0.002
		Lower-bound	4.066	1	4.066	0.088	0.768	0.002
	Personal	Sphericity Assumed	63.208	1	63.208	3.022	0.088	0.058
		Greenhouse- Geisser	63.208	1	63.208	3.022	0.088	0.058
		Huynh-Feldt	63.208	1	63.208	3.022	0.088	0.058
		Lower-bound	63.208	1	63.208	3.022	0.088	0.058
Burnout * Education Level	Emotional	Sphericity Assumed	122.818	1	122.818	2.685	0.108	0.052
		Greenhouse- Geisser	122.818	1	122.818	2.685	0.108	0.052
		Huynh-Feldt	122.818	1	122.818	2.685	0.108	0.052
		Lower-bound	122.818	1	122.818	2.685	0.108	0.052

Source	Measure		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
	Depersonalization	Sphericity Assumed	3.311	1	3.311	0.072	0.79	0.001
		Greenhouse- Geisser	3.311	1	3.311	0.072	0.79	0.001
		Huynh-Feldt	3.311	1	3.311	0.072	0.79	0.001
		Lower-bound	3.311	1	3.311	0.072	0.79	0.001
	Personal	Sphericity Assumed	31.349	1	31.349	1.499	0.227	0.03
		Greenhouse- Geisser	31.349	1	31.349	1.499	0.227	0.03
		Huynh-Feldt	31.349	1	31.349	1.499	0.227	0.03
		Lower-bound	31.349	1	31.349	1.499	0.227	0.03
Error (Burnout)	Emotional	Sphericity Assumed	2241.202	49	45.739			
		Greenhouse- Geisser	2241.202	49	45.739			
		Huynh-Feldt	2241.202	49	45.739			
		Lower-bound	2241.202	49	45.739			
	Depersonalization	Sphericity Assumed	2262.395	49	46.171			
		Greenhouse- Geisser	2262.395	49	46.171			
		Huynh-Feldt	2262.395	49	46.171			
		Lower-bound	2262.395	49	46.171			
	Personal	Sphericity Assumed	1025.003	49	20.918			
		Greenhouse- Geisser	1025.003	49	20.918			

Source	Measure		Type III Sum of	df	Mean Square	F	Sig.	Partial Eta Squared
			Squares		-			-
		Huynh-Feldt	1025.003	49	20.918			
		Lower-bound	1025.003	49	20.918			

Post hoc pairwise comparisons using a Bonferroni correction were performed to further explore the reported significant main effects in the control group (see Table 16). The results of the pairwise comparisons indicated that the increase in emotional burnout score after participation in the program was significant (p = 0.038).

Table 16

Post Hoc Pairwise Comparisons Using a Bonferroni Correction of the Main Effects in the

Measure	(I)	(J)	Mean	Std.	Sig.b	95% Confidence	
	Burnout	Burnout	Differenc	Error		Interval for	
			e (I-J)			Difference	
						Lower	Upper
						Bound	Bound
Emotional	1	2	-2.863*	1.339	0.038	-5.554	-0.171
	2	1	2.863*	1.339	0.038	0.171	5.554
Depersonalization	1	2	0.176	1.346	0.896	-2.528	2.881
	2	1	-0.176	1.346	0.896	-2.881	2.528
Personal	1	2	-1.529	0.906	0.098	-3.35	0.291
	2	1	1.529	0.906	0.098	-0.291	3.35

Control Group

Summary of Findings

The study findings indicated that the BREATHE web-based program can be an effective means for reducing nurses' perceived stress and burnout. It is evident from the pre surveys that these nurses do experience various levels of stress and burnout related to their work and work environments. The nurses that accessed the BREATHE program demonstrated moderate improvement in several areas of the NSS, which is consistent with the results of Hersch et al. (2016), which showed a decrease in stress measured by the utilization of the NSS survey. Several

subscales showed an improvement, including the stress related to Death and Dying, Conflict with Physicians, Inadequate Preparation, Lack of Support, Conflict with Other Nurses, and Workload. These nurses also demonstrated an improvement in the post survey scores for Emotional Exhaustion and reduced Personal Accomplishment as it relates to the MBI-HSS survey.

These improved scores solidify the need for organizations to provide the tools to assist nurses in decreasing their stress and burnout levels. Job stress has a negative effect on the quality of life related to nurses' health. This negative effect can also hinder their performance and reduce the quality of care they provide, which may ultimately affect the outcomes of patient care. According to the statistics provided by the International Council of Nurses, the costs of workrelated stress are estimated at \$200–300 million annually in the United States, and nearly 90% of employees' medical problems are attributed to job stress (Hassard et al., 2018). Therefore, due to the unavoidable stressors in nursing, it is essential to prevent the psychological and behavioral effects on nurses to improve their quality of life and care performances. Nurse burnout and stress play a pivotal role in patients' health. Therefore, it is imperative that situations causing stress and burnout be addressed. Additionally, healthcare organizations must partner with nurses in assisting them in managing and dealing with stressful situations.

CHAPTER V

RECOMMENDATIONS AND CONCLUSIONS

The purpose of this study was to explore the effects of a web-based stress management program on the stress and burnout levels of nurses working in high-risk labor and delivery units. This study utilized and evaluated the outcomes for a web-based stress management program designed for nurses. The BREATHE program includes modules on recognizing and evaluating stress, stress management strategies, and tools. The first hypothesis for this study was to determine if the program was effective in decreasing stress as measured by the NSS. The second hypothesis for this study was to determine if the program was effective in decreasing burnout as measured by the MBI-HSS. Participants in this study were divided into two groups, experimental and control groups, using a pretest-posttest method.

The findings of this study showed that individuals in the experimental group managed their stress better and were more responsive with improved outcomes as compared to those in the control group. The outcomes of the research showed that there is a significant positive relationship between stress management and the usage of the BREATHE program. Although there was no significant relationship for the Depersonalization co-variables, the other two variables, including Emotional Exhaustion and Personal Accomplishment, were statistically significant, suggesting that the program is suitable for nurses. Other co-variables, such as educational background, also reportedly affected the relationship between the main variables. However, the outcomes of this study showed that the BREATHE web-based application is suitable for stress management and burnout among nurses in high-risk labor and delivery units.

Discussion of the Findings

The outcomes of this research show that there is a significant reduction in emotional burnout for nurses who took part in the web-based program. There was a significant reduction in the Depersonalization score for participants in the experimental group as compared to those in the control group who were not initially enrolled in the program. The outcomes of this study failed to establish a relationship between emotional burnout and educational background, suggesting that the web-based program reduces emotional burnout and increases the overall output of nurses irrespective of their understanding or educational achievement. Compared to previous literature in this study area, the findings of this research are similar to those of Wolever et al. (2012), who argued that by deploying the BREATHE software, nurses are more likely to experience mindfulness, reducing their overall employee stress and sleep train. The application of the web-based platform also allows nurses, according to Eisen et al. (2008), to experience inperson relaxation, promoting the health of nurses and allowing them to achieve their institutional goals. This study also proves that the BREATHE program is effective in addressing burnout and can therefore be used in various organizations to assist in stress management. Thus, it adds to the gap in research, as Eisen et al. (2008) proposed, contributing to the coping and intervention strategies that nurses often adopt to address emotional burnout among other workplace stressors. This study adds to the research that web-based interventions are not only effective but also assist in recovery and overall attainment of nurses' goals.

Nurses who adopt the BREATHE web-based program as part of their day-to-day activities are more likely to experience a reduction in Emotional Exhaustion and Personal Accomplishment. However, Depersonalization scores were reportedly higher, suggesting that the intervention does not fully address stress management among registered nurses working in high-

risk labor and delivery units. Although this study failed to establish the relationship between Depersonalization and the treatment effects suggested, evidence suggests that the program is appropriate for the other two variables (Emotional Exhaustion and Personal Achievement). Compared to nurses who did not use the BREATHE program, participating in the program helps to address different levels/dimensions of burnout, including Emotional Exhaustion and reduced personal accomplishment. In comparison to previous literature related to this study area, the outcomes of this research are contrary to those of Efendy et al. (2021) and White et al. (2019). For instance, Efendy et al. (2021) argued that the web-based application proposes relaxation techniques such as meditation to alleviate symptoms of stress in general. Progressive relaxation, as suggested by White et al. (2019), also aids in releasing tension and thus enhancing stress management. The findings of this study reported a similar outcome, as the post program scores were lower for Death and Dying, Conflict with Physicians, Inadequate Preparation, Lack of Support, Conflict with Other Nurses, and Workload dimensions. Thus, supporting the use of the program to reduce stress. Therefore, nurses can use the program to relieve stress, lower blood pressure, and incorporate alertness to their surroundings. Future studies should focus on areas such as Depersonalization instead of emotional burnout as a broad research subject.

Although the effect of the web-based intervention is widely considered significant, other factors, such as educational background, are perceived as key co-variables and may influence overall benefits. The findings of this study, for example, showed that even though the program has a statistically significant effect, the educational background may expose other areas such as Emotional Exhaustion. For instance, nurses' education levels could potentially influence the effect of the program and stress management. Previous findings in this research area report contradictory findings, failing to determine the effect of co-variables such as educational

background on the effect of the stress management program for nurses. Hersch et al. (2016), for instance, argued that nurses who have access to the program are less likely to experience a reduction in burnout and other forms of nursing stress. Wolever et al. (2012) and Lee et al. (2007) also reported positive effects of using the web-based intervention for nurses, suggesting that it is a more effective method of coping with stress as compared to other alternatives. The outcomes of this study shed light on other unknown variables that affect the implementation of web-based interventions for stress management among nurses in high-risk labor and delivery units. There is a need, therefore, for future researchers to focus on other variables that affect the successful use of this intervention, including educational background or technological understanding and know-how.

High-risk labor and delivery nurses who utilize the BREATHE web-based program for stress management are less likely to be suicidal, have Conflict with Physicians, and have Workload dimensions issues according to the results of this study. The outcomes of this study showed that nurses who use this program are more relaxed, cooperate with other medical service providers within their environment, and often seek support. Comparisons between participants in the experimental versus the control groups showed significant changes, with nurses using the program less likely to develop suicidal thoughts or tendencies.

The differences in perceived burnout as measured by the MBI-HSS also showed that nurses who used the scale had higher scores post-program suggesting that MBI-HSS can be suitable for the measurement of stress. Although educational level was considered a key factor in the relationship, evidence showed that stress levels among nurses were significantly reduced for individuals in the experimental group. With a statistically significant reduction in the burnout score, the outcomes of this research showed that nurses are more likely to focus on their roles,

coordinate with other employees and improve their overall service delivery through the MBI-HSS.

Compared to previous literature, the findings of this research are consistent with those of Lazarus and Folkman (1984) and Teo et al. (2013), suggesting that a transitional model with a reduction in perceived stress is feasible for implementation in stress management. The literature review of stress within the workplace indicated that Lazarus and Folkman's transaction model of stress coping may be used to examine an individual's physical, psychological, and coping responses (Lazarus & Folkman, 1984). Although previous models emphasize the relationship between workplace stressors and coping mechanisms, there is a similarity in terms of post-intervention within a specific timeframe. Both the MBI-HSS and NSS allow participants to enter their data based on perspectives and physical information. There is a growing need, however, to factor in new facets such as educational background, which reportedly have an impact on the individual level of stress management.

Conclusions and Implications

The findings of this study showed that the BREATHE program is an effective online platform for stress management and burnout among nurses in high-risk labor and delivery units.

 The BREATHE Stress Management program includes various modules focusing on recognizing and evaluating stress, strategies, and tools. The outcomes of this research indicated that the BREATHE web-based program can effectively reduce nurses' perceived stress and burnout. There is sufficient evidence showing that nurses in high-risk labor and delivery units experience various levels of stress and burnout related to their work and work environments.

- 2. The nurses who accessed the BREATHE program showed moderate improvement in several areas of the NSS and showed a decrease in stress measured by the utilization of the NSS. Several subscales indicated improvement, including the stress related to Death and Dying, Conflict with Physicians, Inadequate Preparation, Lack of Support, conflict with others, and Workload.
- 3. Participants showed an improvement in the post-survey scores for Emotional Exhaustion and reduced Personal Accomplishment as it relates to the MBI-HSS survey. The improved scores solidify the need for organizations to provide the tools to assist nurses in decreasing their stress and burnout levels. Job stress has a negative effect on the quality of life-related to nurses' health.
- 4. As a result, the negative effects can also hinder their performance and reduce the quality of care they provide, which may ultimately affect patient care outcomes. Therefore, due to the unavoidable stressors in nursing, it is essential to prevent the psychological and behavioral effects on nurses in an effort to improve their quality of life and care performances.
- 5. The findings of this study reported a similar outcome, except for Depersonalization among the areas of emotional burnout. Although there are slight differences in facets, the BREATHE application for nurses in high-risk labor and delivery units is still considered effective. Nurses can therefore use the program to relieve stress, lower blood pressure, and incorporate alertness to their surroundings.
- 6. The outcomes of this research failed to determine a relationship between emotional burnout and educational background, suggesting that the web-based application reduces emotional burnout and increases the overall output of nurses irrespective of

their understanding or educational achievement. Even though this study failed to establish the relationship between Depersonalization and the treatment effects suggested, there was evidence suggesting that the platform is suitable for the other two variables. Compared to nurses who did not access the BREATHE web-based platform, participating in the program aids in addressing different levels and dimensions of burnout, including Emotional Exhaustion and reduced Personal Accomplishment.

- 7. Further, nurses who had access to the program were more likely to experience a reduction in burnout and other forms of nursing stress. The positive effects of using the web-based intervention suggest that it is a more effective method of coping with stress as compared to other alternatives.
- 8. The BREATHE program provides a more refined tool for improving stress management in high-risk labor and delivery units by improving patient safety and reducing the adverse effects of burnout among nurses. The MBI-HSS allows users to enter their data based on perspectives and physical information and is more accurate in comparison to the NSS.
- 9. The outcomes of this study enlighten stakeholders in all areas of healthcare. Other unknown variables affect the implementation of web-based interventions for stress management among nurses in high-risk delivery units. With a statistically significant reduction in the burnout and stress scores, the outcomes of this research showed that nurses are more likely to focus on their roles, coordinate with other employees and improve their overall service delivery.
10. Although having a comprehensive in-person stress management course for nurses would be ideal, the current nationwide staffing challenges, hinder the ability to reach a large population of nurses. Therefore, the ability to provide an online program that allow nurses to participate when it is most convenient for them, improves the chances for participation. Participation in a web-based nurse stress intervention program is not only an acceptable alternative to face-to-face programs, but it is also more convenient. This is in alignment with research showing that web-based programs can be an effective and practical method to education in health care.

Recommendations

The outcomes of this study showed that the application of the web-based application BREATHE in the management of stress among nurses in high-risk labor and delivery units is effective. The following recommendations can therefore be applied labor and delivery units and other healthcare settings.

- Healthcare organizations should use this technology allowing nurses to manage stress effectively regardless of their locations within the nation. Traditional stress management approaches have also been factored into the development and design of the web-based intervention, making it a handy tool for stress management.
- 2. There is a need, therefore, for healthcare organizations to create awareness among nurses on the importance of reducing stress and burnout. The findings of this study showed that most of the nurses in high-risk labor and delivery units undergo various workplace stressors, which affect their overall performance. By educating them through a wide range of platforms, nurses can realize the potential of using this effective tool in building their mental health and well-being. Training and educational

awareness also help nurses to recognize their mental issues and utilize various approaches, including the BREATHE application.

- 3. The first step to creating awareness of this program is to provide nurses in general, with skills to evaluate their mental health and develop key strategies to address them. Seminars, conferences, and workshops allow nurses to understand the importance of mental health issues at work, communicate with their peers, and utilize new forms of technology, including the BREATHE software, to manage stress. Equipping them with the use of this program could potentially help improve nurses' well-being and patient care outcomes due to their decreased stress and burnout levels.
- 4. Future studies should examine other facets that affect the successful implementation of various web-based applications for stress management. The present study reported the influence of other co-variables in the MBI-HSS, including educational level and Depersonalization. Although the effects of these co-variables may be minimal or less impactful, there is a need to undertake research studies in this context. Studies generalize emotional burnout as a single concept, failing to realize other compounding facets, such as Emotional Exhaustion or Personal Accomplishment. Stress levels also have nominal scales, which allow researchers to quantify their impact on nurses, especially those in high-risk labor and delivery units.
- 5. Further research should also focus on mixed research methodologies. For instance, in the current study, qualitative research would provide key insights on the MBI-HSS, post research to provide user-based suggestions for improvement of the tool.
- 6. Future researchers should develop studies on both qualitative and quantitative methodologies to provide insightful and comparative reviews on the effectiveness of

102

online tools for stress management. Further, participants should be drawn from other high-risk units to enhance the diversity of the participants. For instance, the current study only relies on participants from high-risk labor and delivery units, in which participants may opt for similar approaches for stress management. Therefore, a diverse participant background is vital for generalized study outcomes.

REFERENCES

- Abriyani, R. (2012). The role of historical collective memory and group identity in paradigm and behavior change. *International Journal of Psychology*, *47*(S1), 694-743. https://doi.org/10.1080/00207594.2012.709129
- Adib-Hajbaghery, M., & Sharifi, N. (2017). Effect of simulation training on the development of nurses and nursing students' critical thinking: A systematic literature review. *Nurse Education Today*, 50, 17-24. <u>https://doi.org/10.1016/j.nedt.2016.12.011</u>
- Akbar, R. E., Elahi, N., Mohammadi, E., & Khoshknab, M. F. (2017). How do the nurses cope with job stress? A study with grounded theory approach. *The Journal of Caring Sciences*, 6(3), 199-211. <u>https://doi.org/10.15171/jcs.2017.020</u>
- Akinwolere, O. (2016). *Psychological stress in critical care nurses*. [Doctoral dissertation, Walden University].

https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?referer=https://www.googl e.com/ &httpsredir=1&article=4237&context=dissertations

- Allexander, D., Bernstein, A. M., Walker, E., Hunter, J., Roizen, M. F., & Morledge, T. J. (2016). A web-based mindfulness stress management program in a corporate call center: A randomized clinical trial to evaluate the added benefit of onsite group support. *Journal of Occupational and Environmental Medicine*, 58(3), 254-264. <u>https://doi.org/10.1097/JOM.00000000000680</u>
- Al-Maqbali, M., Al-Sinani, M., & Al-Lenjawi, B. (2021). Prevalence of stress, depression, anxiety, and sleep disturbance among nurses during the COVID-19 pandemic:
 A systematic review and meta-analysis. *Journal of Psychosomatic Research*, *141*, 110343. <u>https://doi.org/10.1016/j.jpsychores.2020.110343</u>

American Academy of Pediatrics & The American College of Obstetricians and Gynecologists. (2017). *Guidelines for perinatal care* (Eighth edition). Washington, D.C.

American College of Obstetricians and Gynecologists. (2016). Levels of maternal care.

https://www.acog.org/Clinical-Guidance-and-Publications/Obstetric-Care-Consensus-

Series/Levels-of-Maternal-Care

American College of Obstetricians and Gynecologists. (2021). Why should I get the COVID-19 vaccine while I'm pregnant? <u>https://www.acog.org/-</u> /media/project/acog/acogorg/womens-health/files/infographics/why-should-i-get-the-

covid-19-vaccine-while-im-pregnant.pdf

American Nurses Association. (2011). ANA health and safety survey.

https://www.nursingworld.org/practice-policy/work-environment/health-safety/healthsafety-survey/

American Psychological Association. (2017). *Stress in America. The state of our nation. Stress in America Survey.* <u>https://www.apa.org/news/press/releases/stress/2017/state-nation.pdf</u>

Applebaum, D., Fowler, S., Fiedler, N., Osinubi, O., & Robson, M. (2010). The impact of environmental factors on nursing stress, job satisfaction, and turnover intention. *Journal of Nursing Administration*, 40(7-8), 323–328.

https://doi.org/10.1097/NNA.0b013e3181e9393b.

- Ariella, S. (2023). *The 15 most common jobs in America*. <u>https://www.zippia.com/advice/the-</u> most-common-jobs-in-america/#the-15-most-common-jobs-in-america
- Arora, K., Mauch, J., & Gibson, K. (2020). Labor and delivery visitor policies during the COVID-19 pandemic: Balancing risks and benefits. *Journal of the American Medical Association*, 323(24), 2468–2469. <u>https://doi.org/10.1001/jama.2020.7563</u>

- Babapour, A., Gahassab-Mozaffari, N., & Fathnezhad-Kazemi, A. (2022). Nurses' job stress and its impact on quality of life and caring behaviors: A cross-sectional study. *BioMed Central, 21, 75.* <u>https://doi.org/10.1186/s12912-022-00852-y</u>
- Beck, C. T. & Gable, R. K. (2012). A mixed methods study of secondary traumatic stress in labor and delivery nurses. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 41(6), 747–760. <u>https://doi.org/10.1111/j.1552-6909.2012.01386.x</u>
- Beckstead, J. W. (2002). Confirmatory factor analysis of the Maslach burnout inventory among Florida nurses. *International Journal of Nursing Studies*, 39(8), 785-792, https://doi.org/10.1016/S0020=7489(02)00012-3
- Biggs, A., Brough, P., & Drummond, S. (2017). Lazarus and Folkman's psychological stress and coping theory. In C. L. Copper & J. C. Quick (Eds.), *The handbook of stress and health: A guide to research and practice* (pp. 349-364). John Wiley & Sons Ltd. <u>https://doi.org/10.1002/9781118993811.ch21</u>
- Burke, R. J., & Greenglass, E. R. (2012). Hospital restructuring, work-family conflict, and psychological burnout among nursing staff. *Psychology & Health*, 16(5), 583-594. https://doi.org/10.1080/08870440108405528
- Cabrera, M. A., Karamsetty, L., & Simpson, S. A. (2020). Coronavirus and its implications for psychiatry: A rapid review of the early literature. *Psychosomatics*, 61(6), 607–615. <u>https://doi.org/10.1016/j.psym.2020.05.018</u>

Centers for Disease Control and Prevention. (2014, June 6). Stress at work.

https://www.cdc.gov/niosh/docs/99-101/default.html

Centers for Disease Control and Prevention. (2022, October 25). *Pregnant and recently pregnant people*. <u>https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/pregnant-</u>

people.html#:~:text=of%20Severe%20IIlness-

<u>,If% 20you% 20are% 20pregnant% 20or% 20were% 20recently% 20pregnant% 2C% 20you%</u> 20are,one% 20that% 20causes% 20COVID% 2D19.

Champion, L., Economides, M., & Chandler, C. (2018). The efficacy of a brief app-based mindfulness intervention on psychosocial outcomes in healthy adults: A pilot randomised controlled trial. *PloS One*, *13*(12), e0209482.

https://doi.org/10.1371/journal.pone.0209482

- Chao, S. F., McCallion, P., & Nickle, T. (2011). Factorial validity and consistency of the maslach burnout inventory among staff working with persons with intellectual disability and dementia. *Journal of Intellectual Disability Research*, 55(5), 529-536. https://doi.org/10.1111/j.1365-2788.2011.1413.x
- Chen, C., Elliot, A. J., & Sheldon, K. M. (2019). Psychological need support as a predictor of intrinsic and external motivation: The mediational role of achievement goals. *Educational Psychology*, 39(8), 1090–1113.

https://doi.org/10.1080/01443410.2019.1618442

- Colonnello, V., Carnevali, L., Russo, P., Ottaviani, C., Cremonini, V., Venturi, E., &
 Mattarozzi, K. (2021). Reduced recognition of facial emotional expressions in global burnout and burnout depersonalization in healthcare providers. *PeerJ*, *9*, e10610.
 https://doi.org/10.7717/peerj.10610
- Copanitsanou, P., Fotos, N., & Brokalaki, H. (2017). Effects of work environment on patient and nurse outcomes. *British Journal of Nursing*, 26(3), 172–176. <u>https://doi.org/10.12968/bjon.2017.26.3.172</u>

- Cronin, M. A., & George, E. (2020). The why and how of the integrative review. *Organizational Research Methods*, 26(1). <u>https://doi.org/10.1177/1094428120935507</u>
- Dall'Ora, C., Ball, J., Reinius, M., & Griffiths, P. (2020). Burnout in nursing: A theoretical review. *Human Resource Health 18*, 41.

https://doi.org/10.1186/s12960-020-00469-9

De Hert, S. (2020). Burnout in healthcare workers: Prevalence, impact, and preventative strategies. *Local and Regional Anesthesia*, *13*, 171–183.

https://doi.org/10.2147/LRA.S240564

- Dehnhard, I., Weichselgartner, E., & Drampen, G. (2013). Researcher's willingness to submit data for data sharing: A case study on a data archive for psychology. *Data Science Journal*, 12, 172-180. <u>https://doi.org/10.2481/dsj.12-037</u>
- Department of Professional Employees. (2013). *The biggest causes of nurse burnout and what* you can do. <u>https://www.mywellbeingindex.org/blog/the-biggest-causes-of-nurse-</u> <u>burnout-and-what-you-can-</u>

<u>do#:~:text=A%20survey%20conducted%20in%202012,the%20age%20of%2030%20ex</u> perienced

dos Santos Alves, D. F., da Silva, D., & de Brito Guirardello, E. (2017). Nursing practice
 environment, job outcomes and safety climate: A structural equation modelling analysis.
 Journal of Nursing Management, 25(1), 46-55. <u>https://doi.org/10.1111/jonm.12427</u>

Dyrbye, L., Shanafelt, T., Sinsky, C., Cipriano, P., Bhatt, J., Ommaya, A., West, C., & Meyers, D. (2017). Burnout among healthcare professionals: A call to explore and address this underrecognized threat to safe, high-quality care. *National Academy of Medicine Perspectives*, 7(7). <u>https://doi.org/10.3390/ijerph191811807</u>

- Ebert, D., Heber, E., Berking, M., Riper, H., Cuijpers, P., Funk, B., & Lehr, D. (2016). Selfguided internet-based and mobile-based stress management for employees: Results of a randomized controlled trial. *Occupational and Environmental Medicine*, 73(5), 315-323. https://doi.org/10.1136/oemed-2015-103269
- Ebstein, A. (2015). The relationships among coping, occupational stress, and emotional intelligence in newly hired nurses in an oncology setting. [Doctoral dissertation, Rutgers, The State University of New Jersey].

https://rucore.libraries.rutgers.edu/rutgers-lib/47697/PDF/1/play/

- Efendy, I., Afriany, M., & Lubis, S. (2021). The effectiveness of stress management and physical activity to working stress reduction on nurses. *Journal La Medihealtico*, 2(2), 16-22. <u>https://doi.org/10.37899/journallamedihealtico.v2i2.310</u>
- Eisen, K. P., Allen, G. J., Bollash, M., & Pescatello, L. S. (2008). Stress management in the workplace: A comparison of a computer-based and an in-person stress-management intervention. *Computers in Human Behavior*, 24(2), 486-496.

https://doi.org/10.1016/j.chb.2007.02.003

- Farquharson, B., Bell, C., Johnston, D., Jones, M., Schofield, P., Allan, J., Ricketts, I., Morrison, K., & Johnston, M. (2013). Nursing stress and patient care: Real-time investigation of the effect of nursing tasks and demands on psychological stress, physiological stress, and job performance: Study protocol. *Journal of Advanced Nursing*, 69(10), 2327-2335. <u>https://doi.org/10.1111/jan.12090</u>
- Finkelstein, A., Zhou, A., Taubman, S., & Doyle, J. (2020). Health care hotspotting A randomized, controlled trial. *The New England Journal of Medicine*, 382(2), 152–162. <u>https://doi.org/10.1056/NEJMsa1906848</u>

Folkman, S., & Greer, S. (2000). Promoting psychological well-being in the face of serious illness: When theory, research and practice inform each other. *Psycho-Oncology*, *9*(1), 11-19.

https://doi.org/10.1002/(sici)1099-1611(200001/02)9:1<11::aid-pon424>3.0.co;2-z

- Ford, S. (2020, April 29). Nursing Times survey reveals negative impact of COVID-19 on nurse mental health. *Nursing Times*. <u>https://www.nursingtimes.net/news/mentalhealth/exclusive-survey-reveals-negative-impact-of-covid-19-on-nurse-mental-health-29-04-2020/</u>
- Freshwater, D., & Cahill, J. (2010). Care and compromise: Developing a conceptual framework for work-related stress. *Journal of Research in Nursing*, 15(2), 173-183. <u>https://doi.org/10.1177/1744987109357820</u>
- Freudenberger, H. (1974). Staff burn-out. *Journal of Social Issues*, 30(1), 159-165. https://doi.org/10.1111/j.1540-4560.1974.tb00706.x
- Friganović, A., Selič, P., Ilić, B., & Sedić, B. (2019). Stress and burnout syndrome and their associations with coping and job satisfaction in critical care nurses: A literature review. *Psychiatria Danubina*, 31(Suppl 1), 21–31.
- Galanis, P., Vraka, I., Fragkou, D., Bilali, A., & Kaitelidou, D. (2021). Nurses' burnout and associated risk factors during the COVID-19 pandemic: A systematic review and meta-analysis. *Journal of Advanced Nursing*, 77(8), 3286–3302.
 https://doi.org/10.1111/jan.14839
- Glanz, K., & Schwartz, M. D. (2008). Stress, coping, and health behavior. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education: Theory, research, and practice* (pp. 211–236). Jossey-Bass.

Gooch, K. (2018, April 24). Study: 92% of nurses report moderate to very high stress levels. Becker's Hospital Review.

https://www.beckershospitalreview.com/hr/study-92-of-nurses-report-moderate-to-veryhigh-stress-levels.html

Gray-Toft, P. & Anderson, J. (1981). The nursing stress scale: Development of an instrument. *Journal of Behavioral Assessment*, 3(1), 11-23. <u>https://doi.org/10.1007/BF01321348</u>

Guttman, P. (2016). Illustration of the transactional model of stress and coping of Richard Lazarus. Wikipedia.
<u>https://commons.wikimedia.org/wiki/File:Transactional_Model_of_Stress_and_Coping_-</u>

<u>Richard_Lazarus.svg</u>

- Haddad, L. M., Annamaraju, P., & Toney-Butler, T. J. (2023). Nursing shortage. In *StatPearls*. StatPearls Publishing. <u>https://www.ncbi.nlm.nih.gov/books/NBK493175/</u>
- Hassard, J., Teoh, K., Visockaite, G., Dewe, P., & Cox, T. (2018). The cost of work-related stress to society: A systematic review. *Journal of Occupational Health Psychology*, 23(1), 1-17. https://doi.org/10.1037/ocp0000069
- Harvey, S. B., Modini, M., Joyce, S., Milligan-Saville, J. S., Tan, L., Mykletun, A., Bryant, R., Christensen, H., & Mitchell, P. (2017). Can work make you mentally ill? A systematic meta-review of work-related risk factors for common mental health problems. *Occupational and Environmental Medicine*, 74, 301-310. https://doi.org/10.1136/oemed-2016-104015

Hersch, R. K., Cook, R. F., Deitz, D. K., Kaplan, S., Hughes, D., Friesen, M. A. & Vezina, M. (2016). Reducing nurses' stress: A randomized controlled trial of a web-based stress

management program for nurses. Applied Nursing Research, 32, 18-25.

https://doi.org/10.1016/j.apnr.2016.04.003

- Hetzel-Riggin, M., Swords, B., Tuang, H., Deck, J., & Spurgeon, N. (2020). Work engagement and resiliency impact the relationship between nursing stress and burnout. *Psychological Reports*, 123(5), 1835-1853. <u>https://doi.org/10.1177/0033294119876076</u>
- Hochschild, A. R. (1983). *The managed heart:Commercialization of human feeling*. University of California Press.
- Holland, P., Tham, T. L., Sheehan, C., & Cooper, B. (2019). The impact of perceived workload on nurse satisfaction with work-life balance and intention to leave the occupation. *Applied Nursing Research*, *49*, 70–76. https://doi.org/10.1016/j.apnr.2019.06.001
- Jamal M. & Baba V. V. (2000). Job stress and burnout among Canadian managers and nurses: An empirical examination. *Canadian Journal of Public Health*, 91, 454–458. <u>https://doi.org/10.1007/BF03404828</u>
- Johnson, D. W., Jones, M. C., Charles, K., McCann, S. K., & McKee, L. (2013). Stress in nurses: Stress-related affect and its determinants examined over the nursing day. *Annals* of Behavioral Medicine, 45(3), 348-356. <u>https://doi.org/10.1007/s12160-012-9458-2</u>
- The Joint Commission. (2019). *Developing resilience to combat nurse burnout* (Quick Safety, Issue 50). The Joint Commission, Division of Healthcare Improvement. <u>https://www.jointcommission.org/-</u>

/media/tjc/newsletters/quick safety nurse resilience final 7 19 19pdf.pdf

- Jordan, T. R., Khubchandani, J., & Wiblishauser, M. (2016). The impact of perceived stress and coping adequacy on the health of nurses: A pilot investigation. *Nursing Research and Practice*, 2016, 1-11. <u>https://doi.org/10.1155/2016/5843256</u>
- Kahn, R. L., Wolfe, D. M., & Quinn, R. P. (1964). Organizational stress: Studies in role conflict and ambiguity. Wiley.
- Kinman, G., & Jones, F. (2005). Lay representations of workplace stress: What do people really mean when they say they are stressed? Work & Stress, 19(2), 101-120. <u>https://doi.org/10.1080/02678370500144831</u>
- Kuribayashi, K., Takano, A., Inagaki, A., Imamura, K., & Kawakami, N. (2022). Effect of stress management based on cognitive–behavioral therapy on nurses as a universal prevention in the workplace: A systematic review and meta-analysis protocol. *BMJ Open*, *12*(9), E062516. <u>https://doi.org/10.1136/bmjopen-2022-062516</u>
- Laal, M., & Aliramaie, N. (2010). Nursing and coping with stress. International Journal of Collaborative Research on Internal Medicine & Public Health, 2, 168-181.
- Labrague, L., Nwafor, C., & Tsaras, K. (2020). Influence of toxic and transformational leadership practices on nurses' job satisfaction, job stress, absenteeism, and turnover intention: A cross-sectional study. *Journal of Nursing Management*, 28(5), 1104–13. https://doi.org/10.1111/jonm.13053
- Lazarus, R. S. & Folkman, S. (1984). Stress, appraisal, and coping. Springer.
- Lee, M. H., Holzemer, W. L., & Faucett, J. (2007). Psychometric evaluation of the nursing stress scale (NSS) among Chinese nurses in Taiwan. *Journal of Nursing Measurement*, 15(2), 133-144. <u>https://doi.org/10.1891/106137407782156381</u>

- Li, H., Cheng, B., & Zhu, X. P. (2018). Quantification of burnout in emergency nurses: A systematic review and meta-analysis. *International Emergency Nursing*, 39, 46–54. <u>https://doi.org/10.1016/j.ienj.2017.12.005</u>
- Loh, E. (2018). Medicine and the rise of the robots: A qualitative review of recent advances of artificial intelligence in health. *BMJ Leader*, 2(2), 59-63. <u>https://doi.org/10.1136/leader-2018-000071</u>
- Lorente, L., Vera, M., & Peiró, T. (2020). Nurses´ stressors and psychological distress during the COVID-19 pandemic: The mediating role of coping and resilience. *Journal of Advanced Nursing*, 77(3), 1335-1344. https://doi.org/10.1111/jan.14695
- Makary, M., & Daniel, M. (2016). Medical error-the third leading cause of death in the US. British Medical Journal, 3. <u>https://doi.org/10.1136/bmj.i2139</u>

Maslach, C. (1982). Burnout: The cost of caring. Prentice Hall.

- Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach burnout inventory manual* (3rd ed.). CPP, Inc.
- Maslach, C., & Leiter, M. P. (2016). Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry: Official Journal of the World Psychiatric Association*, 15(2), 103–111. <u>https://doi.org/10.1002/wps.20311</u>
- Mehta, N., & Devarakonda, M. V. (2018). Machine learning, natural language programming, and electronic health records: The next step in the artificial intelligence journey? *The Journal* of Allergy and Clinical Immunology, 141(6), 2019–2021.e1.

https://doi.org/10.1016/j.jaci.2018.02.025

Miguel-Puga, J., Cooper-Bribiesca, D., Avelar-Garnica, F., Sanchez-Hurtado, L., Colin-Martínez, T., Espinosa-Poblano, E., Anda-Garay, J., González-Díaz, J., Segura-Santos, O., Vital-Arriaga, L., & Jáuregui-Renaud, K. (2021). Burnout, depersonalization, and anxiety contribute to post-traumatic stress in frontline health workers at COVID-19 patient care, a follow-up study. *Brain and Behavior*, *11*(3), e02007.

https://doi.org/10.1002/brb3.2007

- Milliken, T. F., Clements, P. T., & Tillman, H. J. (2007). The impact of stress management on nurse productivity and retention. *Nursing Economics*, *25*, 203-210.
- Moss, M., Good, V., Gozal, D., Kleinpell, R., & Sessler, C. (2016). An official critical care societies collaborative statement: Burnout syndrome in critical care healthcare professionals: A call for action. *American Journal of Critical Care, 25*(4), 368-376. <u>https://doi.org/10.1016/j.chest.2016.02.649</u>
- Moustaka, E. & Constantinidis, T. (2010). Sources and effects of work-related stress in nursing. *Health Science Journal*, *4*(4).
- Najimi, A., Goudarz, A. M., & Sharifirad, G. (2012). Causes of job stress in nurses: A crosssectional study. *Iranian Journal of Nursing and Midwifery Research*, 7(4), 301-305.
- National Cancer Institute. (2020). Social support.

https://cancercontrol.cancer.gov/brp/research/constructs/social-support

- Nicholas, J., Bell, I. H., Thompson, A., Valentine, L., Simsir, P., Sheppard, H., & Adams, S. (2021). Implementation lessons from the transition to telehealth during COVID-19: A survey of clinicians and young people from youth mental health services. *Psychiatry Research*, 299, 113848. <u>https://doi.org/10.1016/j.psychres.2021.113848</u>
- Nicholls, E. M., Hermann, R. M., Giordano, N. A., & Trotta, R. L. (2021). Secondary traumatic stress among labor and delivery nurses. *MCN: The American Journal of Maternal/Child Nursing*, 46(1), 14-20. <u>https://doi.org/10.1097/nmc.0000000000674</u>

- Ozbay, F., Fitterling, H., Charney, D., & Southwick, S. (2008). Social support and resilience to stress across the life span: A neurobiological framework. *Current Psychiatry Reports*, 10(4), 304–310. <u>https://doi.org/10.1007/s11920-008-0049-7</u>
- Pepito, J., & Locsin, R. (2018). Can nurses remain relevant in a technologically advanced future? *International Journal of Nursing Sciences*, 6(1), 106–110. https://doi.org/10.1016/j.ijnss.2018.09.013
- Pettker, C., & Grobman, W. (2015, July). Obstetric safety and quality, *Obstetrics & Gynecology*, *126*(1), 196-206. <u>https://doi.org/10.1097/AOG.00000000000918</u>
- Pipe, T. B., Bortz, J. J., Dueck, M., Pendergast, D., Buchda, V., & Summers, J. (2009). Nurse leader mindfulness meditation program for stress management: A randomized controlled trial. *Journal of Nursing Administration*, 39, 130-137.

https://doi.org/10.1097/NNA.0b013e31819894a0

- Poghosyan, L., Clarke, S., Finlayson, M., & Aiken, L. (2010). Nurse burnout and quality of care: Cross-national investigation in six countries. *Resource Nursing Health*, 33(4), 288-298. <u>https://doi.org/10.1002/nur.20383</u>
- Reilly, J. R., & Fitzpatrick, J. J. (2009). Perceived stress and sense of belonging in doctor of nursing practice students. *Journal of Professional Nursing*, 25(2), 81-96. <u>https://doi.org/10.1016/j.profnurse.2008.10.002</u>
- Richardson, K. M., & Rothstein, H. R. (2008). Effects of occupational stress management intervention programs: A meta-analysis. *Journal of Occupational Health Psychologists*, *13*(1), 69-93. <u>https://doi.org/10.1037/1076-8998.13.1.69</u>
- Rickard, G., Lenthall, S., Dollard, M., Opie, T., Knight, S., Dunn, S., Wakerman, J., MacLeod,M., Seiler, J., & Brewster-Webb, D. (2012). Organizational intervention to reduce

occupational stress and turnover in hospital nurses in the Northern Territory, Australia. *Collegian*, *19*(4), 211–221. <u>https://doi.org/10.1016/j.colegn.2012.07.001</u>

- Roberts, R. K., & Grubb, P. L. (2013). The consequences of nursing stress and the need for integrated solutions. *Rehabilitation Nursing*, *39*(2), 62-69. <u>https://doi.org/10.1002/rnj.97</u>
- Rodziewicz, T. L., Houseman, B., & Hipskind, J. E. (2023). Medical error reduction and prevention. In *StatPearls*. StatPearls Publishing.

https://www.ncbi.nlm.nih.gov/books/NBK499956/

- Schlak, A. E., Aiken, L. H., Chittams, J., Poghosyan, L., & McHugh, M. (2021). Leveraging the work environment to minimize the negative impact of nurse burnout on patient outcomes. *International Journal of Environmental Research and Public Health*, 18(2), 610. <u>https://doi.org/10.3390/ijerph18020610</u>
- Shah M. K., Gandrakota, N., Cimiotti, J. P., Ghose, N., Moore, M., & Ali, M. K. (2021).
 Prevalence of and factors associated with nurse burnout in the US. *JAMA Network Open*, 4(2), e2036469. <u>https://doi.org/10.1001/jamanetworkopen.2020.36469</u>
- Shariatkhah, J., Farajzadeh, Z., & Khazaee, K. (2017). The effects of cognitive-behavioral stress management on nurses' job stress. *Iranian Journal of Nursing and Midwifery Research*, 22. 398-402. <u>https://doi.org/10.4103/1735-9066.215683</u>
- Sillero, A., & Zabalegui, A. (2018). Organizational factors and burnout of perioperative nurses. *Clinical Practice and Epidemiology in Mental Health*, 14, 132–142. <u>https://doi.org/10.2174/1745017901814010132</u>
- Smiley, R. A., Allgeyer, R. L., Shobo, Y., Lyons, K. C., Letourneau, R., Zhong, E., Kaminski-Ozturk, N., & Alexander, M. (2023). The 2022 national nursing workforce survey.

Journal of Nursing Regulation, 14(1), S1 - S90.

https://doi.org/10.1016/S2155-8256(23)00047-9

Steinhoff, M. (2015). Pilot study: Stress in emergency department nurses and effect on quality of life.

https://csusmdspace.calstate.edu/bitstream/handle/10211.3/138644/SteinhoffMary_Sprin g2015.pdf?sequence=1

- Talaee, N., Varahram, M., Jamaati, H., Salimi, A., Attarchi, M., Kazempour Dizaji, M., Sadr, M., Hassani, S., Farzanegan, B., Monjazebi, F., & Seyedmehdi, S. M. (2022). Stress and burnout in health care workers during COVID-19 pandemic: Validation of a questionnaire. *Journal of Public Health*, *30*(3), 531–536.
 https://doi.org/10.1007/s10389-020-01313-z
- Teo, S., Pick, D., Newton, C., Yeung, M., & Chang, E. (2013). Organizational change stressors and nursing job satisfaction: The mediating effect of coping strategies. *Journal of Nursing Management*, 21(6), 878-887. <u>https://doi.org/10.1111/jonm.12120</u>
- Torraco, R. (2016). Writing integrative literature reviews: Using the past and present to explore the future. *Human Resource Development Review*, *15*(4), 404 428. https://doi.org/10.1177/1534484316671606
- U.S. Bureau of Labor Statistics. (2018, January 2). 2018 home: U.S. Bureau of Labor Statistics. https://www.bls.gov/opub/mlr/2018/
- Vahey, D. C., Aiken, L. H., Sloane, D. M., Clarke, S. P., & Vargas, D. (2004). Nurse burnout and patient satisfaction. *Medical Care*, 42(2), II – 57. <u>https://doi.org/10.1097/01.mlr.0000109126.50398.5a</u>

- Van Straten, A., Cuijpers, P., & Smits, N. (2008). Effectiveness of a web-based self-help intervention for symptoms of depression, anxiety, and stress: Randomized controlled trial. *Journal of Medical Internet Resource*, 10(7). <u>https://doi.org/10.2196/jmir.954</u>
- Wakim, N. (2014). Occupational stressors, stress perception levels, and coping styles of medical surgical RNs: A generational perspective. *The Journal of Nursing Administration*, 44(12), 632-639. <u>https://doi.org/10.1097/NNA.00000000000140</u>
- Watanabe, N., Furukawa, T. A., Horikoshi, M., Katsuki, F., Narisawa, T., Kumachi, M., Oe,
 Y., Shinmei, L., Noquchi, H., Hamazaki, K., & Matsuoka, Y. (2015). A mindfulnessbased stress management program and treatment with omega-3 fatty acids to maintain a healthy mental state in hospital nurses (Happy Nurse Project): Study protocol for a randomized controlled trial. *Trials*, *16*, 36. <u>https://doi.org/10.1186/s13063-015-0554-z</u>
- Webb, T. L., Joseph, J., Yardley, L., & Michie, S. (2010). Using the internet to promote health behavior change: A systematic review and meta-analysis of the impact of theoretical basis, use of behavior change techniques, and mode of delivery on efficacy. *Journal of Medical Internet Research*, 12(1), e4. <u>https://doi.org/10.2196/jmir.1376</u>
- West, C. P., Dyrbye, L. N., Rabatin, J. T., Call, T. G., Davidson, J. H., Multari, A.,
 Romanski, S. A., Hellyer, J. M., Sloan, J. A., & Shanafelt, T. D. (2014). Intervention to
 promote physician well-being, job satisfaction, and professionalism: A randomized
 clinical trial. *JAMA Internal Medicine*, *174*(4), 527-533.
 https://doi.org/10.1001/jamainternmed.2013.14387
- White, E. M., Aiken, L. H., & McHugh, M. D. (2019). Registered nurse burnout, job dissatisfaction, and missed care in nursing homes. *Journal of the American Geriatrics Society*, 67(10), 2065–2071. <u>https://doi.org/10.1111/jgs.16051</u>

- Whittemore, R., & Knafl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing*, 52(5), 546–553. <u>https://doi.org/10.1111/j.1365-2648.2005.03621.x</u>
- Wolever, R., Bobinet, K., McCabe, K., Mackenzie, E., Fekete, E., Kusnick, C., & Baime, M. (2012). Effective and viable mind-body stress reduction in the workplace: A randomized controlled trial. *Journal of Occupational Health Psychology*, *17*(2), 246-258. https://doi.org/10.1186/1472=6882-12-S1-P87
- Yu, Q. (2018). Biological clock: The oscillator of gene expression. Science China Life Sciences, 61(1), 128–130. <u>https://doi.org/10.1007/s11427-017-9239-6</u>
- Zimmet, P., Alberti, K. G. M. M., Stern, N., Bilu, C., El-Osta, A., Einat, H., & Kronfeld-Schor, N. (2019). The circadian syndrome: Is the metabolic syndrome and much more! *Journal* of Internal Medicine, 286(2), 181–191. <u>https://doi.org/10.1111/joim.12924</u>

APPENDIX A

TEXAS WOMAN'S UNIVERSITY

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER



Institutional Review Board Office of Research 6700 Fannin, Houston, TX 77030 713-794-2480 irb-houston@twu.edu https://www.twu.edu/institutional-review-board-irb/

- DATE: September 14, 2022
- TO: Ms. Shellie Nelson Nursing - Houston
- FROM: Institutional Review Board (IRB) Houston
- Re: Extension for The effectiveness of a web-based stress management intervention program designed for reducing burnout and stress in nurses working in high risk labor and delivery units (Protocol #: 20201)

The request for an extension of the IRB approval for the above referenced study has been reviewed by the TWU IRB (operating under FWA00000178). This study was originally approved on August 23, 2018 and has been renewed. Approval for this study expires on September 7, 2023.

If applicable, agency approval letters must be submitted to the IRB upon receipt prior to any data collection at that agency. If subject recruitment is on-going, a copy of the approved consent form with the IRB approval stamp is enclosed. Please use the consent form with the most recent approval date stamp when obtaining consent from your participants. A copy of the signed consent forms must be submitted with the request to close the study file at the completion of the study.

Any modifications to this study must be submitted for review to the IRB using the Modification Request Form. Additionally, the IRB must be notified immediately of any unanticipated incidents. All forms are located on the IRB website. If you have any questions, please contact the TWU IRB.

cc. Dr. Paula Clutter, Nursing - Houston Dr. Sandra Cesario, Nursing - Houston

APPENDIX B

TEXAS WOMAN'S UNIVERSITY CONSENT TO PARTICIPATE IN RESEARCH

Title: <u>The Effectiveness of a Web-based Stress Management Intervention Program for</u> <u>Reducing Burnout and Stress for Registered Nurses working in High-Risk Labor and Delivery</u> <u>Units</u>

Investigator:	Shellie Nelson, MS, RN	snelson5@twu.edu	913/406-4439
Advisor:	Sandra Cesario, PhD, RNC-OB, FAAN	Nscesario@twu.edu	713/794-2110

Explanation and Purpose of the Research

My name is Shellie Nelson, and this research study is part of a class requirement for completion of my dissertation in the Doctoral program at Texas Woman's University. You are being asked to join and take part in this study because you are a registered nurse who is actively practicing as a labor and delivery nurse in a high-risk setting. Actively practicing means that you are currently working in a job that requires you be a registered nurse providing care for patients.

Participation in this research is voluntary, and you may stop participating at any time. There will be no penalty to you if you decide not to participate, or if you start the study and decide to stop early.

This consent form explains what you have to do if you are in the study. It also describes the possible risks and benefits. Please read the form carefully and ask as many questions as you need to, before deciding about this research. You can ask questions now or anytime during the study.

Description of Procedures

As a participant in this study, you will be asked to complete a demographic questionnaire which should take approximately five minutes, a survey pertaining to stress and one pertaining to burnout, each will take approximately 10 minutes. After the completion of the surveys, you will participate in a web-based stress management program consisting of six courses lasting approximately 30 minutes. You will be given thirty days to complete the courses. Once the courses have been completed, you will be asked to take the stress and burnout surveys once more. All surveys and interventions will be completed via the internet at a time convenient for your schedule. Therefore, a reliable device (computer or cell phone) will be needed to complete the study.

Potential Risks

Possible risks of participating in this study include loss of confidentiality, loss of time, coercion, and fatigue.

Loss of Confidentiality: The treatment of the information you provide will be confidential although there is some risk that the information might be released. In order to minimize these risks, your name will not be used. Instead, you will use a randomly assigned number for all surveys and correspondence. You are free to give only the information you choose to share.

Confidentiality will be protected to the extent that is allowed by law. There is a potential risk of loss of confidentiality in all email, downloading, electronic meetings, and Internet transactions. The researchers may publish the results of the study. Your name will not be used in any publication or presentation about the study. The researchers will respect your time.

Loss of time: The surveys will take place at a place and time convenient to you. The total time to complete the entire process is 3.5 hours.

Coercion: Your participation in this study is completely voluntary. If you decide to not participate or stop participating there will be no penalties.

Fatigue: Participants will be able to take a break during the intervention if needed.

Initials

Participation and Benefits

Your involvement in this study is completely voluntary and you may withdraw from the study at any time. Following the completion of the study you will receive five continuing education hours for your participation offered by the University of Texas Medical Branch. If you would like to know the results of this study, we will email them to you. *

Questions Regarding the Study

You should keep a copy of the signed and dated consent form that is returned to the principal investigator. You will be given a copy of this signed and dated consent form to keep. If you have any questions about the research study, you should ask the researchers; their phone numbers are at the top of this form. If you have questions about your rights as a participant in this research or the way this study has been conducted, you may contact the Texas Woman's University Office of Research at 713-794-2480 or via e-mail at IRB-houston@twu.edu.

Signature of Participant

Date

*If you would like to know the results of this study, tell us where you want them to be sent:

Email: _____

APPENDIX C

DEMOGRAPHIC QUESTIONNAIRE

Stress and Burnout Study: Demographic Information

I would like to start by asking you some general questions about yourself.

Sex

 \Box Male = (1) \Box Female = (2) \Box Nonbinary = (3) \Box Prefer not to answer = (4)

Race

 $\Box \text{ White} = (1) \qquad \Box \text{ Black} = (2) \qquad \Box \text{ Hispanic} = (3) \qquad \Box \text{ Asian} = (4)$ $\Box \text{ American Indian} = (5) \qquad \Box \text{ Pacific Islander} = (6) \qquad \Box \text{ Other} = (7)$

Marital Status

□ Married or domestic partnership = (1) □ Divorced = (2) □ Widowed = (3)□ Separated = (4) □ Single, never married = (5)

Age

 $\Box 20-29 = (1)$ $\Box 30-39 = (2)$ $\Box 40-49 = (3)$ $\Box 50-59 = (4)$ $\Box 60 \text{ or older} = (5)$

Work Status

 $\Box \text{ Full-time} = (1)$ $\Box \text{ Part} - \text{time} = (2)$ $\Box \text{ Per Diem} = (3)$

Education Level

Diploma = (1)
Associate Degree Nursing = (2)
Bachelor's Degree Nursing = (3)
Graduate Degree (Master's) = (4)
Doctoral Degree = (5)

How many years of working experience do you have?

 \Box Less than one year = (1) \Box 1 - 3 years = (2) \Box 4 - 5 years = (3) \Box 6 - 10 years = (4) \Box 11 - 15 years = (5) \Box Greater than 15 = (6)

What level is your maternal child health center?

□ Level 4 = (1)
□ Level 3 = (2)
□ Level 2 = (3)
□ Level 1 = (4)

What shift do you work?

 $\Box 7a - 7p (days) = (1)$ $\Box 7p - 7a (nights) = (2)$ $\Box 7a - 3p (days) = (3)$ $\Box 3p - 11p (evenings) = (4)$ $\Box 11p - 7a (nights) = (5)$ $\Box Other (specify ____) = (6)$

How many jobs do you currently have?

□ One = (1) □ Two = (2) □ More than two = (3)

APPENDIX D

ITEMS AND SCORING FOR MASLACH BURNOUT INVENTORY - HUMAN SERVICES

SURVEY

Maslach Burnout Inventory – Human Services Survey

Instructions: On the following pages are 22 statements of job-related feelings. Please read each statement carefully and decide if you ever feel this way about your job. If you have never had this feeling, write the number "0" (zero) in the space before the statement. If you have had this feeling, indicate how often you feel it by writing the number (from 1 to 6) that best describes how frequently you feel that way. Please make sure you include your participant identification number.

How Often:	0	1	2	3	4	5	6
	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

Last 4-digits of your cell number: _____

How often 0-6 Statements

- 1. I feel emotionally drained from my work.
- 2. I feel used up at the end of the workday
- 3. _____ I feel fatigued when I get up in the morning and have to face another day at work
- 4. I can easily understand how my recipients feel about things
- 5. _____ I feel I treat some recipients as if they were impersonal objects
- 6. Working with people all day is really a strain for me
- 7. _____ I deal very effectively with the problems of my recipients
- 8. I feel burned out from my work
- 9. I feel I'm positively influencing other people's lives through my work
- 10. I've become more callous toward people since I took this job
- 11. I worry that this job is hardening me emotionally
- 12. I feel very energetic
- 13. _____ I feel frustrated by my job
- 14. _____ I feel I'm working too hard on my job
- 15. I don't really care what happens to some recipients
- 16. Working with people directly puts too much stress on me
- 17. _____ I can easily create a relaxed atmosphere with my recipients
- 18. I feel exhilarated after working closely with my recipients
- 19. I have accomplished many worthwhile things in this job

- 20.I feel like I'm at the end of my rope21.In my work, I deal with emotional problems very calmly22.I feel recipients blame me for some of their problems

APPENDIX E

ITEMS AND SCORING FOR THE NURSING STRESS SCALE (NSS)

Nursing Stress Scale (NSS)

Instructions: On the following pages are 34 statements of situations that commonly occur on a hospital unit. Please read each statement carefully and decide how often if ever you have found the situations to be stressful. If you have never found them to be stressful, write the number "1" (one) in the space before the statement. If you have found it to be stressful, indicate how often by writing the number (from 2 to 4) that best describes how frequently you feel that way. Please make sure you include your participant identification number.

How Often	1	2	3	4
	Never	Occasionally	Frequently	Very frequently

Last 4-digits of your cell number: _____

How Frequency (1 2 3 4) Often

Death and Dying

- 1. Performing procedures that patients experience as painful
- 2. Feeling helpless in the case of a patient who fails to improve
- 3. Listening or talking to a patient about his/her approaching death
- 4. _____ The death of a patient
- 5. _____ The death of a patient with whom you developed a close relationship
- 6. _____ Physician not being present when a patient dies
- 7. Watching a patient suffer

Conflict with Physicians

- 8. _____ Criticism by a physician
- 9. Conflict with a physician
- 10. _____ Fear of making a mistake in treating a patient
- 11. _____ Disagreement concerning the treatment of a patient
- 12. Making a decision concerning a patient when the physician is unavailable

Inadequate Preparation

- 13. Feeling inadequately prepared to help with the emotional needs of a patient's family
- 14. Being asked a question by a patient for which I do not have a satisfactory answer
- 15. Feeling inadequately prepared to help with the emotional needs of a patient

Lack of Support

- 16. Lack of an opportunity to talk openly with other unit personnel about problems on the unit
- 17. Lack of an opportunity to share experiences and feelings with other personnel on the unit
- 18. Lack of an opportunity to express to other personnel on the unit my negative feelings toward patients

Conflict with Other Nurses

- 19. Conflict with a supervisor
- 20. Floating to other units that are short-staffed
- 21. Difficulty in working with a particular nurse (or nurses) outside the unit
- 22. Criticism by a supervisor
- 23. Difficulty in working with a particular nurse (or nurses) on the unit

Workload

- 24. Breakdown of computer
- 25. _____ Unpredictable staffing and scheduling
- 26. Too many non-nursing tasks required, such as clerical work
- 27. _____ Not enough time to provide emotional support to a patient
- 28. _____ Not enough time to complete all of my nursing tasks
- 29. Not enough staff to adequately cover the unit

Uncertainty concerning treatment

- 30.
 Inadequate information from a physician regarding the medical condition of a patient
- 31. A physician ordering what appears to be inappropriate treatment for a patient
- 32. A physician not being present in a medical emergency
- 33. Not knowing what a patient or a patient's family ought to be told about the patient's condition and its treatment
- 34. Uncertainty regarding the operation and functioning of specialized equipment

Thank you in advance for your participation

APPENDIX F

PARTICIPANT RECRUITMENT EMAIL

Dear Potential Participant,

My name is Shellie Nelson, I am currently a doctoral student at Texas Women's University School of Nursing. As a nurse, I find it extremely important to not only take care of our patients, but also ourselves as well. I am conducting research to determine the effectiveness of a webbased intervention program on the level of burnout and the stress experienced by labor and delivery nurses working in high-risk patient care settings. As a nurse practicing in a labor and delivery unit at a level three or four facility, you are in an ideal position to provide valuable firsthand information from your own perspective.

Results from the survey will help support the need for organizations to provide stress management intervention programs in an effort to reduce nurse stress and burnout. By agreeing to participate in this study, you will be directed to a consent form. Your participation is completely voluntary and has no impact on your employment.

Participants will receive web-based interventions that are approximately 30 minutes in length. These videos are designed to be watched in a quiet place at your leisure. In addition, you will be given two questionnaires about your perceived level of burnout and stress both before and after the intervention program. Your responses to the questions will be kept confidential. Each participant will be assigned a number code to help ensure that personal identifiers are not revealed during the analysis and write up of the findings.

For your participation, you will be entered into a drawing to win registration to the next Association of Women's Health, Obstetrics and Neonatal Nurses' State Conference or one of 5 - \$50 AMAZON gift cards once you have completed the final questionnaires. If you would like to participate, simply email <u>snelson5@twu.edu</u> to begin the process.

I would be happy to answer any questions or concerns you may have about this study. I can be reached at snelson5@twu.edu.

Thank you very much for helping me with this important study.

Sincerely,

Shellie Nelson

Shellie Nelson, MS, RN Nursing Doctoral Candidate Texas Woman's University

APPENDIX G

PARTICIPANT RECRUITMENT FLYER

ARE YOU STRESSED AND BURNT OUT AT WORK?

Shellie Nelson a graduate student at *Texas Woman's University* is conducting research to evaluate the effect stress management programs have on decreasing the levels of stress and burnout experienced by nurses working in high risk labor and delivery settings.



Who can participate?

Registered Nurses

Practice in Texas or California

Currently working in high-risk labor and delivery patient care settings

What would I receive if I participated in the study?

Entered into a drawing to win: Registration for AWHONN State Conference 1 of 5 - \$50 Amazon Gift Cards

If you are interested in learning more about this study, please contact Shellie Nelson MS, RN at (913) 406-4439 or snelson5@twu.edu