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# Mindfulness Based Stress Reduction Techniques in Chronic Illness

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## **Doctor of Nursing Practice**

*Nannette W. Glenn, Ph.D.*

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Dr. Nannette Glenn, Dean of the  
College of Graduate and Professional  
Studies

Date: 01 / 10 / 2023

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Abilene Christian University

School of Nursing

Mindfulness-Based Stress Reduction Techniques in Chronic Illness

A doctoral project submitted in partial satisfaction

of the requirements for the degree of

Doctor of Nursing Practice

by

Anna Celia Gil, MSN, FNP-C

February 2023

## **Dedication**

This study is dedicated to my father Dr. Francisco Gil, who was a wholehearted supporter of all my endeavors. His tireless work helping individuals with chronic illness manage the physical and psychological effects of their diseases is the inspiration behind these pages.

To my beautiful boy Damian and my husband Miguel Angel Ochoa. Your patience, encouragement, and understanding have made the completion of this study possible. I am eternally grateful.

## **Acknowledgments**

Words cannot express my gratitude towards my committee chair Dr. Linda Gibson for her patience and guidance. I additionally would like to thank my defense committee whose positive and encouraging feedback continuously fueled the progress of this study to its completion.

It cannot go without saying that my family has been of enormous support and have been my unwavering pillars of strength. I would especially like to thank my husband Miguel Angel Ochoa for being my most enthusiastic cheerleader. I could not have done this without him. My mother Celia Gil and sister Catalina Gil-Prewitt have also provided continuous encouragement and have been extremely understanding of my full schedule.

Finally, I am grateful to God for the opportunity to be a part of a profession of healing and for the strength to continue to give to others daily.

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## Abstract

Chronic stress and its effect on both physical and mental health have been a topic of increasing interest in the past several decades. There is mounting evidence that recurrent, persistent stress of both a physiologic and psychological nature leads to a dysfunction in the hypothalamic pituitary axis (HPA), the system which helps the body recover and adapt to short term stress. In long term stress, this HPA dysfunction leads to impairment of the immune and neuroendocrine systems resulting in chronic low-grade inflammation. This type of chronic inflammation acts as a precursor to several chronic illnesses, such as diabetes, hypertension, cancer, and mental illness. To compound this problem, individuals who already live with chronic illness are more susceptible to this type of chronic stress due to the burden of chronic disease management. This leads to an exacerbation of an already present health condition and increases morbidity and the risk of mortality. Since psychological stress is an overall subjective condition, individual perception of how difficult a stressor is to predict, manage, and control is a key factor in determining how detrimental it will be. In this study, the researcher proposed to determine whether utilizing mind-body therapies, in this case mindfulness-based stress reduction (MBSR) techniques, would help decrease the perception of chronic disease-related stress within the primary care setting. This is a quantitative study evaluating how perception of stress is affected by an MBSR-type intervention. This was a pretest and posttest intervention and the tool utilized was the Perceived Stress Scale (PSS) questionnaire. Each participant was given instruction on MBSR techniques and follow-up was done at a two-week interval with reevaluation of a second PSS questionnaire. All participants had a decrease in perception of stress following the intervention as well as decreased reported reactivity to unpredictable life events.

*Keywords:* stress, chronic disease, mindfulness

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## **Chapter 1: Introduction**

Chronic illness affects much of the adult population in the United States with 51% of adults having one chronic condition and at least 27.2% of adults having more than two chronic conditions (Boersma et al., 2018). Chronic disease carries a burden of increased stress, both physical and emotional, that can negatively affect quality of life. Individuals with chronic illness often live with deep-seated fears about the future and a sense of uncertainty regarding how their disease will progress (Lebel et al., 2020). Current practice does not account for this fear and anxiety specific to chronic illness, and this often results in individuals having a diagnosis of major depression. This in turn brings about a cascade of further treatments, such as medication and traditional cognitive behavioral therapy (CBT), often creating more anxiety related to yet another chronic condition. Primary care providers are the initial and ongoing point of contact that chronically ill individuals have available to assist in navigating their diseases, so strategies to minimize chronic disease-related anxiety and depression must be initiated there.

### **Background**

Quality of life in chronic illness is affected by several factors, including disease symptoms, number of medications that need to be taken, limitations on activities of daily living, and sensations of fear and uncertainty about the future. The literature provides examples of marked improvement in quality of life in chronic pain patients who have implemented mindfulness-based stress reduction (MBSR) techniques. Given this finding, it is likely that applying MBSR techniques to other chronic conditions would yield similar results.

MBSR was developed by Jon Kabat-Zinn specifically for use with patients dealing with chronic pain in an effort to make more readily available techniques that are predominantly utilized within religious communities (mindful, 2022). It is the use of deep breathing,

visualization, and movement-based meditation to return the mind and body to a calm state in which stress can be understood and managed more effectively. Traditionally, MBSR was developed to be an 8- to 9-week course in which patients learn to apply the techniques of MBSR to their daily life, particularly when stress levels are elevated. Another application of MBSR is to choose components of the course for patients to apply as needed during times of high stress or when chronic illness exacerbation occurs. It should be noted, however, that MBSR is most effective when used daily to keep stress at a manageable level.

Prolonged exposure to chronic stress, even in healthy individuals, can lead to feelings of despair and hopelessness, resulting in burnout and emotional exhaustion (Armon et al., 2014). Additionally, a component of chronic disease-related stress is fatigue related to disease-related stress, which in turn, prevents the patient from engaging in healthy lifestyle choices, such as exercise and preparing meals which would have a positive impact on their chronic disease state (Hirsch & Sirois, 2016). Decreasing perceived stress, increasing sensations of hope and the perception of wellness may have a positive impact on the patient's ability to care for themselves and engage in healthier lifestyle choices. The impact of this would likely be a better quality of life and in some cases may even result in a more controlled disease state.

### **Nature of the Project**

This educational project was modeled after MBSR courses developed by Kabat-Zinn for the purpose of helping individuals with chronic pain manage their stress levels. MBSR has never been formally applied in the primary care setting, and its application is unique in that this portion of care had previously been referred to mental health professionals. This qualitative study was largely phenomenological as it focused on how individuals with chronic illness experience stress related to their disease and the effect of MBSR techniques on this experience. The subjective

nature of the study requires that it be qualitative with results being evaluated by a pretest and posttest of patient's perception pre- and postintervention.

### **Scope and Limitations**

This study was limited to one primary care practice in a low-income community in San Diego, California. The patient population in this study was predominantly Hispanic, all with at least one chronic illness and all on managed care or government insurance programs, such as Medicaid and Medicare.

### **Statement of the Problem**

According to a report on the CDC's website, at least 51% of adults in the United States have one chronic illness and 27.2% have multiple chronic illnesses (Watson et al., 2022). Primary care is the hub of the healthcare system and where most chronic diseases are managed. Patients also have a closer relationship to their primary care provider as compared to other members of the healthcare team so helping patients manage the stress and emotional effects of chronic illness falls to the primary care office. Patients often reach out to primary care providers with concerns regarding how their chronic diseases are affecting their daily lives. Because there is a relationship of trust between patients and their primary care provider, the stage is set to implement stress management techniques that will benefit these individuals. Stress reduction and management of depression and anxiety has largely been referred to psychology professionals in the past. As the population of insured individuals increases and with it access to healthcare, there continues to be a worsening shortage of mental health professionals, and this component of the patient's health falls back to the primary care provider. Advanced practice nurses working in primary care have the holistic focus to implement MBSR with chronically ill patients in order to improve the quality of life and overall well-being of patients. The nursing model focuses on

overall wellness as that described by the World Health Organization (WHO), which is not simply the absence of disease but entails the complete mental, physical, and social well-being (WHO, 2020). Although individuals with chronic illness will no longer be physically free of disease, a balance can be achieved where there is a sense of overall well-being.

### **Purpose of the Study**

The purpose of this DNP project was to implement MBSR techniques, specifically focused deep breathing, in the primary care setting for chronically ill patients experiencing disease-related stress. The expected outcome was that patients who utilized these techniques would note a decrease in perceived stress and would report a greater sense of hope related to their disease state.

### **Research Question**

RQ1: Will MBSR techniques, such as deep breathing, implemented within the primary care setting for chronically ill individuals, decrease perceived stress levels within a two-week time period as opposed to no intervention.

### **Definition of Key Terms**

**Body distress.** Patterns of multiple and disturbing bodily sensations with no specific pathologic explanation (Conversano, 2019).

**MBSR.** Mindfulness-based stress reduction, a technique utilized to create mind-body awareness in order to decrease perception of stress (Niazi & Niazi, 2011).

**Mindfulness.** The basic human ability to be fully present, aware, and not overly reactive to outside events or stimuli (mindful, 2020).

**Stress.** A feeling of emotional or physical tension resulting in frustration, anger, or nervousness in the long term (Medlineplus, 2021).

## Summary

The issue of chronic disease-related stress affects individuals both physically and emotionally and leads to decreased quality of life. The person's focus on the possibility of future worsening or further disability leads to further significant distress. This chronic stress leads individuals with chronic illness to feel hopeless and limits their enjoyment of life, leading to depression and anxiety, often to a point of affecting the control of their disease state. Individual lifestyle choices are also affected by this distress, because depression often will cloud judgement and poor decisions are made regarding diet and daily movement. Depression and anxiety may also lead to isolation, which further negatively impacts quality of life. MBSR assists the individual in returning to a state of mental and physical awareness in order to decrease anxiety and depression both in the short term and as a cumulative effect in the long term. Including MBSR in primary care for the chronically ill individual may alleviate anxiety and depression, bring an awareness of the present moment to the patient, and overall decrease the perception of stress thereby improving quality of life. The nursing model, which focuses on holistic wellness, will benefit from the inclusion of mindfulness in daily practice because these techniques address yet another facet of patient well-being. MBSR techniques will allow the advanced practice nurse focus on a whole-person approach to wellness in the chronically ill patient.



## **Chapter 2: Literature Review**

Chronic disease-related stress is an ongoing problem affecting many individuals in the United States and worldwide. Living with chronic illness can lead to anxiety and depression as patients try to navigate the complex healthcare system and deal with the uncertainty of their disease processes. The purpose of this intervention was to integrate MBSR techniques in the primary care setting for chronically ill individuals to decrease their perception of stress brought about by chronic illness. The research question was as follows: Will MBSR techniques, such as deep breathing, implemented within the primary care setting for chronically ill individuals, decrease perceived stress levels within a two-week time period as opposed to no intervention? The nature of the project was a short intervention of guided deep breathing and mindfulness at the start of the primary care visit. Results were evaluated by a pretest and posttest administered to the patient by the medical assistants within the clinic. This took place within one primary care clinic.

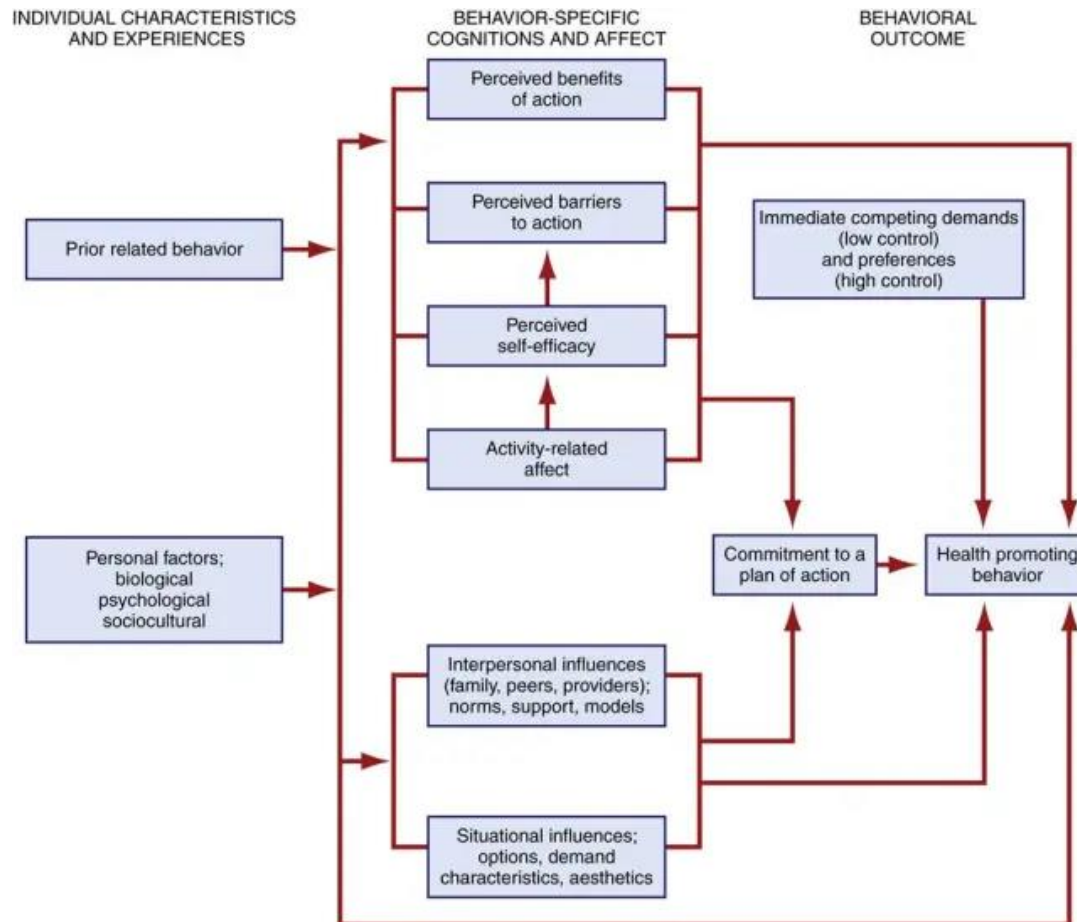
### **Literature Search Methods**

The literature review for the proposed project focused on showing how MBSR has been utilized within different areas of healthcare and how it has been effective. A search was performed with a timeline no greater than 8 years in the past. Search engines utilized were Google Scholar, CINAHL, and PubMed. A total of thirteen relevant articles were found discussing MBSR in several healthcare settings specifically addressing the effect it has on the stress response. Although use in primary care of MBSR has been limited up to this point in time, use in other specialties has proven to be effective.

### ***Theoretical Framework Discussion***

The health promotion model (HPM) by Nola J. Pender focuses on promoting the individual's well-being in a holistic manner rather than focusing on absence of disease (Nursing-theory.org, 2020). Individuals are viewed as multidimensional and interact in different ways with their environment in their pursuit of health. In Pender's model, the individual is affected by their environment but also seeks to change the environment in order to achieve greater well-being (see Figure 1). The four assumptions of the HPM are as follows:

1. Individuals seek to regulate their own behavior.
2. Individuals, in all their biopsychosocial complexity, interact with their environment, progressively transforming the environment as well as being transformed over time.
3. Health professionals such as nurses, constitute part of the interpersonal environment, which exerts influence on people across their lifespan.
4. Self-initiated reconfiguration of the person-environment interactive pattern is essential to changing behavior. (Nursing-theory.org, 2020)

**Figure 1***Nola Pender's Health Promotion Model*

*Note.* Psych-Mental Health Hub, 2023. Nola Pender Health Promotion Model. Retrieved from <https://pmhealthnp.com/nola-pender-health-promotion-model/>

When applied to chronic illness, the HPM operates upon the premise that perception of health is a crucial factor affecting the choices individuals will make regarding health promotion (Nursing-theory.org, 2020). The individual will seek wellness behaviors based on several factors, including perceived benefit of the action, beliefs regarding current health status, their personal definition of health, perceived control over their health, and perceived self-efficacy (Nursing-theory.org, 2020). The greater the perception of self-efficacy, the greater the likelihood that the

individual will engage in behaviors that benefit their health. If the individual believes they are not able to positively impact their health, they are unlikely to make any changes to their behavior and will continue to live in a state of inertia regarding their health. Therefore, health and illness become things that happen to the patient in a passive state rather than conditions that are modifiable to some extent by the patient's choices. Bringing the individual into a state of decreased stress and anxiety may increase the perception that wellness, in the holistic definition, can be achieved and is directly affected by the individual's choices. MBSR assists in decreasing the perception of stress in order to bring the individual into a state of readiness for change. This state of readiness may improve the likelihood that individuals will make positive healthcare-related choices. Another positive effect of decreased stress is increased well-being, which improves quality of life, resulting in greater overall wellness.

## **Literature Review**

### ***Stress***

According to the APA Dictionary of Psychology, stress is “the physiological or psychological response to external stressors” with an effect noted on nearly all body systems and it brings about an effect on the emotions and actions of the individual (APA, 2022).

Physiological manifestations of stress include palpitations, dry mouth, diaphoresis, shortness of breath, fidgeting, accelerated speech, augmentation of any negative emotions already present, and when chronic, can lead to generalized fatigue (APA, 2022). With prolonged exposure to stress, individuals can develop general adaptation syndrome (GAS), a term coined by endocrinologist Hans Selye in the 1950s (Lucille, 2019). Selye postulated that when the individual is experiencing GAS, there are three stages that are experienced: Alarm, in which the body is in fight or flight mode; resistance, in which the parasympathetic nervous system attempts

to regulate the stress response; and exhaustion, the end stage in which the body's capacity to compensate for the stress is overwhelmed (Lucille, 2019). It is in this last stage where disease and psychological harm manifest with prolonged stress. According to Selye, individuals enter GAS when there is not a time for the body to enter recovery from a stressful event, such as in the case of chronic stress (Lucille, 2019). When there is no time for the body to recover and reestablish homeostasis, pathology occurs (Lucille, 2019). Chronic disease creates a state of constant stress due to fear and anxiety for the future. This constant state of fear creates a feedback loop in which the disease state breeds chronic stress, which in turn worsens the original disease state or leads to other diseases.

Agorastos and Chrousos (2022) postulated that prolonged, excessive stress will eventually surpass the ability of the body to maintain homeostasis, resulting in an increase in illness and a decreased life expectancy. Findings in this study directly correlate chronic stress to chronic disease, further supporting the premise that chronic disease is both caused and worsened by chronic stress.

A study in *Health Psychology* evaluated how affect in relation to daily stressors was correlated to increased mortality risk. In their study, Chiang et al. (2018) showed a positive correlation between negative affect in relation to daily stressors and increased mortality. Results also demonstrated a worsening of this effect with a greater increase in mortality if the individual had at least one chronic illness, confirming that perceived stress and negative daily affect increase mortality at a higher rate in those with chronic illness (Chiang et al., 2018).

Long-term stress is known to cause a persistently elevated cortisol levels despite normalization of adrenocorticotrophic hormone (ACTH) levels (Russell & Lightman, 2019). This is a dysfunctional pattern, because under acute stress, ACTH directly affects cortisol production

in a pulsatile pattern to assist the individual in the fight or flight response. When ACTH levels lower but cortisol remains elevated, this pulsatile pattern is lost and a constant high level of cortisol is the result, partially as a result of decreased cortisol metabolism (Russell & Lightman, 2019). Long-term exposure to elevated cortisol levels create dysfunction leading to conditions, such as metabolic syndrome, obesity, cancer, mental illness, cardiovascular disease, and generalized inflammation leading to greater infection susceptibility (Russell & Lightman, 2019).

### ***Mindfulness***

Mindfulness in itself is the acceptance and nonjudgement of present moment events and feelings, both physiologic and psychological (Schuman-Olivier et al., 2020). Initiating and maintaining behavior change is one of the most important factors to preventing many chronic medical and psychiatric illnesses (Schuman-Olivier et al., 2020). Creating a state of mindfulness when dealing with daily stressors as well as major stressful life events can alleviate unnecessary pain and suffering the individual may experience related to worry about the future or regret regarding past events. Understanding that the individual may stay in the present moment and create their own sense of safety is paramount when dealing with chronic illness and the uncertainty that goes along with it.

Mindfulness affects general mental health in a positive manner. Mindfulness-based interventions (MBI) have been utilized directly with individuals with a history of depression and suicidal ideation with positive results. MBIs result in clinically significant reduction in depression and suicidal thoughts (Schmelefske et al., 2022). Individuals with chronic illness are known to have increased risk for suicidality due to factors including emotional dysregulation, pain catastrophizing, and self-blame (Rogers et al., 2021). The correlation between chronic

illness and suicidality and the known improvement of suicidality with MBI is a significant positive argument for the implementation of MBI in the chronically ill population.

### ***MBSR***

Williams et al. (2015) discussed the application of MBSR by advanced practice nurses (APRN) in a variety of settings, including chronic illness, disease prevention, and chronic pain. This study found that MBSR is effective in promoting smoking cessation, dietary behavior modification for weight loss, and general sense of well-being in relation to stressful healthcare events (Williams et al., 2015). MBSR was noted to help patients with hypertension and diabetes better control disease-related stress with a secondary effect of becoming more adherent to their treatment regimens. Notable improvement was also achieved in stress levels of patients with HIV and AIDS (Williams et al., 2015). This study focused on APRNs referring out for MBSR therapies.

Crowe et al. (2016) studied whether MBSR improved physical health in chronically ill patients. Although the findings were inconclusive for physiological response, there was a notable improvement in the ability of patients to cope with chronic illness and its related stress. Although their proposed study still requires further research, there is strong evidence that stress was reduced in these individuals following an 8-week MBSR intervention. Additional findings included postintervention decrease in serum cortisol levels in one of the reviewed articles as well as downregulation of pro-inflammatory gene expression in people with breast and prostate cancer (Crowe et al., 2016).

Goren et al. (2022) performed a randomized controlled trial (RCT) utilizing MBSR for three months for patients with mild to moderate Crohn's disease. During this intervention, MBSR was taught via video conference by social workers in a one-on-one format.

Postintervention, patients reported a decrease in fatigue and increased overall quality of life due to MBSR alone (Goren et al., 2022). Those with severe symptoms benefitted the most from the intervention and noted the greatest improvement in their symptoms.

Perez-Aranda et al. (2019) conducted a RCT applying MBSR to patients with fibromyalgia in order to evaluate whether this intervention would yield a lower cost and have the same or greater efficacy as treatment as usual. MBSR was added on to the usual treatment and this was compared to the usual treatment on its own. Findings showed superior efficacy of usual treatment plus MBSR in decreasing stress and increasing quality of life as compared to usual treatment as a stand-alone therapy. In addition, MBSR was cost effective as an adjuvant therapy, yielding significant positive results with little to no increased expenditure (Perez-Aranda et al., 2019).

McCubbin et al. (2014), as part of Kaiser Permanente, studied the application of MBSR to patients with chronic pain and chronic illness and its effect on pain status, self-efficacy, depression, anxiety, somatization, psychological distress, and work productivity. McCubbin et al. also studied whether this intervention affected how health services were utilized. At the end of 18 months, there was a 50% decrease in primary care visits as well as a 50% decrease in ER visits. Patients also reported improved mental and physical functioning but there was little improvement in work productivity (McCubbin et al., 2014).

Overall, the literature shows a positive correlation between the use of MBSR and improved quality of life, decreased stress, and increased ability for self-care amongst patients with several chronic diseases across several specialties. The evidence is strong for integration of MBSR within the chronic care healthcare arena with particular interest in the area of primary care since primary care is the center of the healthcare team. Health care utilization decrease is an



important benefit of MBSR since health care expenditure takes up about 20% of U.S. gross domestic product (GDP), a number which has increased since 2020 (Centers for Medicare & Medicaid Services [CMS], 2022). An additional benefit of MBSR is its relative low cost since it can be applied by a variety of healthcare professionals. Application of MBSR directly by the primary care provider (PCP) will increase efficacy since this technique can be applied during the PCP follow-up visit and can be applied at regular intervals by the PCP without the need for any type of referral process. This provides a benefit both for the patient due to ease and saved time as well as for the PCP, because patients will have a decrease in stress and decreased need for additional visits as shown in the reviewed literature previously discussed.

### **Summary**

Overall, the literature shows a positive correlation between the use of MBSR and improved quality of life, decreased stress, and increased ability for self-care amongst patients with several chronic diseases across multiple specialties. The evidence is strong for the integration of MBSR within the chronic care healthcare arena with particular interest in the area of primary care, because primary care is at the center of the healthcare team's focus. Healthcare utilization decrease is an important benefit of MBSR, because healthcare expenditure takes up about 20% of U.S. GDP, a number which has increased since 2020 (CMS, 2022). An additional benefit of MBSR is its relatively low cost, because it can be applied by a variety of healthcare professionals. Application of MBSR directly by the primary care provider (PCP) can increase efficacy, because this technique can be applied during the PCP follow-up visit and can be applied at regular intervals by the PCP without the need for any type of referral process. This provides a benefit both for the patient due to ease and saved time, as well as for the PCP because patients

will have a decrease in stress and decreased need for additional visits as shown in the reviewed literature previously discussed.

### **Chapter 3: Research Method**

Implementation of MBSR techniques in the primary care setting is an inexpensive and effective way to manage and decrease anxiety in patients experiencing stress related to chronic disease. Decreasing stress in this population is critical for prevention of further exacerbation of chronic disease as well as development of new, stress-related illnesses. This project aimed to achieve this by implementing MBSR techniques within the primary care visit with a simple deep breathing exercise led by a clinician for chronically ill patients. Although this is not the entirety of MBSR therapy, it holds the same premise of mind-body connection and awareness. Various forms of mind-body awareness techniques, including deep breathing, progressive muscle relaxation, and visualization contribute to stress reduction and an overall sense of well-being (Toussaint et al., 2021). Stress reduction and an increased sense of well-being are paramount for patients living with chronic illness in order to improve quality of life and decrease the risk of stress-related comorbidities.

#### **Project Design**

The project design consisted of controlled, guided deep breathing, which the patient engaged in within the first three minutes of the primary care visit. Prior to the deep breathing exercises, I administered the Perceived Stress Scale questionnaire (Cohen et al., 1994). The patient was instructed to perform the same deep breathing exercises at home once daily prior to bedtime and as needed throughout the day for any feelings of stress or anxiety for a total time of two weeks. The patient then followed up with me via a short video call during which I again administered the Perceived Stress Scale questionnaire and a short interview (see Appendix C). The desired outcome was a decrease in the score of the Perceived Stress Scale as a direct correlation to daily controlled deep breathing to improve the mind-body connection. This project

design is simple and allows the patient to autonomously implement the intervention at home with only minimal instruction at the primary care visit. Verbal and written instructions were provided to the patient specifying the use of box breathing, consisting of a deep inhale which lasts four counts, holding the breath for four counts, exhaling for four counts, and holding the breath at the end for four counts (Norelli et al., 2021). I ensured the patient completed the technique correctly by guiding the patient through the initial breathing exercise during the visit.

### **Interprofessional Collaboration**

The stakeholders in this intervention consisted of the patient and me. No other stakeholders were involved in this project implementation.

### **Practice Setting**

The setting for the intervention was a small primary care clinic in the San Diego, California metropolitan area. This is a single-provider clinic with a total of 2,000 active patients at the time of the intervention. There are three bilingual medical assistants within the practice and the patient population is 90% Hispanic with a majority being low income on government assistance with managed-care health plans. The intervention took place during a usual patient follow-up appointment.

### **Target Population**

The target population for the proposed intervention was adult patients with chronic illness that have self-reported feelings of increased stress related to their disease processes. The sample size for this study was 10 participants. This sample size was chosen in the essence of time. The study was originally meant to be qualitative in nature. However, upon the decision to utilize the Perceived Stress Scale questionnaire for pretesting and posttesting, this became a quantitative

study. Although a sample size of 10 is relatively small, there have been studies which have yielded fruitful and significant results with a similar sample size (Brysbart, 2019).

### **Instruments**

The instruments utilized were the Perceived Stress Scale (see Figure 1) which has a proven reliability and validity in the use of qualitative studies (Lee, 2013). The 14-item questionnaire is noted to have superior psychometric properties, so this version was used (Lee, 2013). This was a relatively easy questionnaire to administer and took little time out of the primary care visit. The data were collected during the usual primary care visit for the initial questionnaire and was readministered two weeks later, during a telemedicine video call. The data were collected via an electronic questionnaire and each patient was assigned a number. A separate list was created with each patient's name and the correlating number as a key to knowing which questionnaire belongs to which patient. All this information was kept within a HIPAA compliant electronic medical record within the primary care clinic.

### **Analysis**

Data analysis was undertaken utilizing a paired t-test. The data were calculated based on the administration of pre- and postintervention Perceived Stress Scale questionnaires.

### ***Risks/Benefits/Protection of Human Subjects***

There were no risks to participants associated with this intervention. The benefits could include increased ability to manage stress as well as receiving instruction on a technique that has statistically significant benefits for the sympathetic nervous system (Jyotsna et al., 2013). Patient privacy was protected by keeping questionnaires in a HIPAA-protected EMR with patient numbers assigned. A separate document was generated pairing patient numbers to their names that was also saved in a password-protected format.

### ***IRB Approval***

The host institution did not require any type of IRB submission or approval since it is a single-provider primary care clinic with no institutional affiliations. There were no conflicts of interest with the administration of this study within this clinic. This study was submitted for IRB approval through Abilene Christian University (see Appendix B).

### ***Feasibility***

The timeline of two weeks was feasible for the purpose of this study. This timeline did not affect the usual operations of the primary care clinic and did not cause undue distress to the participants. The implementation of the intervention and data collection was also feasible during this time frame.

### **Summary**

The purpose of this intervention was to demonstrate the validity and efficacy of mindfulness-based stress reduction techniques within the primary care setting for chronic disease-related stress. The goal was to minimize chronic disease morbidity and improve the quality of life of individuals living with chronic illnesses. This is an important intervention for both individuals and populations. In the individual, this intervention sought to minimize daily life stress related to chronic disease. Epidemiologically, this intervention sought to decrease the healthcare burden of chronic illness by decreasing stress-related disease exacerbation. The design was a simple pretest utilizing the Perceived Stress Scale, followed by a three-minute guided deep breathing intervention and instructions on how to continue these exercises at home. Patients were then reevaluated with the Perceived Stress Scale two weeks later via telehealth along with a short interview. The simplicity of this design ensured ease of use to improve participant compliance.

Increased compliance ultimately yielded more viable results and ensured the purpose of the study was achievable.

Decreasing stress in these individuals aimed to increase the ability of the patient to cope with the long-term burden that accompanies living with chronic illness. The deleterious effects of long-term stress are well-documented and known to have a negative impact on quality of life and life expectancy. Finding a simple way to minimize this stress burden with minimal cost to the system and the patient would greatly benefit the healthcare system.

## **Chapter 4: Results**

The mindfulness-based intervention in this study included a total of ten subjects. The context of this study was the integration of mindfulness within the primary care setting. The intervention consisted of deep breathing exercises that participants completed at home following initial instruction at their usual follow-up visit. Prior to the intervention, the Perceived Stress Scale questionnaire was administered to each participant, and this was completed again postintervention (see Appendix A). Participants were asked to complete deep breathing exercises for three minutes daily based on what was taught in their primary care visit. They were also instructed to continue to use the exercise throughout the day as needed if feelings of stress or anxiety arose.

### **Data Collection**

The target population was adult patients with chronic illness within one primary care clinic. The data collection tool utilized was the Perceived Stress Scale questionnaire, which was administered to participants both at the initial visit as well as at the two-week post intervention telehealth visit. Privacy was protected by keeping all demographics out of the database and only obtaining information through the clinic electronic health record (EHR). Only medical record numbers were utilized for data collection, and this was kept separate from the EHR in a locked cabinet that only I had access to.

### **Data Analysis**

Participants in this study consisted of 10 adults with chronic illnesses, including type II diabetes mellitus (DMII), hypertension, congestive heart failure, and end stage renal disease (ESRD). All participants were of Hispanic descent, and all are currently patients of the same primary care clinic. Ages of participants ranged from 38 to 80 years old. Stress complaints of



patients were multiple and were all surrounding their chronic illness. Most voiced a concern for the future of their health as well as concern for their families in the event of their deterioration. They all voiced a feeling of being “burdened” by their disease and a sensation of “burnout” related to managing their illness. Upon completion of the initial Perceived Stress Scale, all 10 participants reported a high level of nervousness and stress in the past month. This was noted as a report of this occurring “very often.” I conducted a paired-samples *t* test to determine if there was a significant difference in perceived stress scores after the intervention. There was a significant decrease in perceived stress scores (Table 1; Figure 2) from pre-intervention ( $M = 41.10$ ,  $SD = 5.82$ ) to postintervention ( $M = 33.30$ ,  $SD = 3.95$ ;  $t(9) = 5.52$ ;  $p < .001$ ).

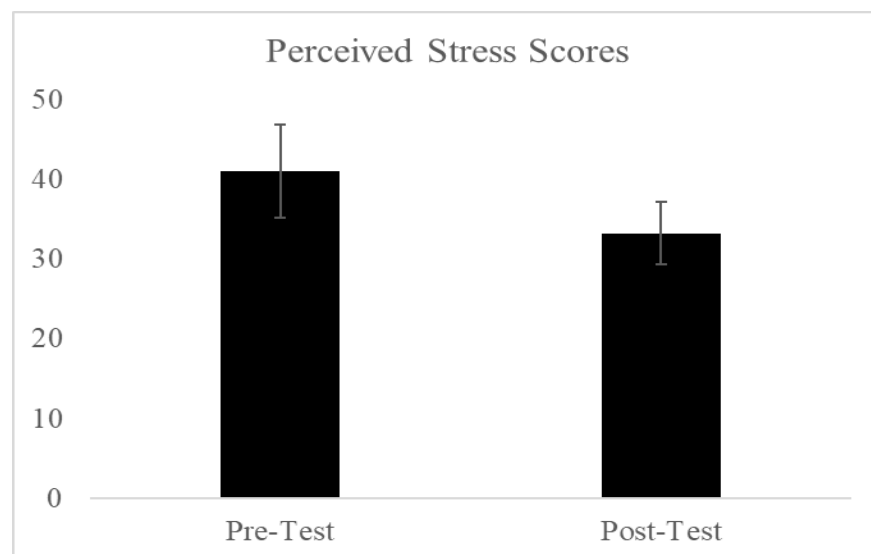
**Table 1**

*Results of Paired Samples t Test*

Test	<i>M</i>	<i>SD</i>	<i>SEM</i>	95% CI	<i>t</i>	<i>df</i>	<i>p</i>
Pretest-Posttest	7.80	4.47	1.41	[4.61, 11.00]	5.52	9	< .001

**Figure 2**

*Perceived Stress Scores*



The Perceived Stress Scale is either a 4-, 10-, or 14-question survey which is utilized to evaluate how an individual perceives or reacts to life stressors. In this study, I utilized the 14-question assessment for a more robust evaluation. Within the questionnaire, participants are asked to rate their reactions to different life scenarios ranging from their response to small annoyances to how they respond to significant stressful life events. A recurrent theme within the questionnaire is the use of the terms *unforeseen* or *unexpected*. Evaluating how individuals react to unforeseen events is crucial to understanding the amount of resilience the person still maintains and whether their nervous system is becoming overwhelmed with chronic, daily stress (Ruse, 2015).

As mentioned previously throughout this paper, there are several stages in the stress response as determined by Dr. Hans Selye. These are the alert reaction, the adaptation phase, the relaxation phase, and if the relaxation phase is not reached, the exhaustion phase. Individuals constantly pass through the alert reaction and the adaptation phase. Based on their resilience, coping mechanisms and the chronic or acute nature of the stressors in the individual's life, the person will either pass through the relaxation phase or reach exhaustion, which results in increased metabolic demands and ultimately physical illness (Ruse, 2015). MBSR guides the individual toward the relaxation phase and provides a tool to reach this state more quickly at any time to create increased resiliency for upcoming stressful life events. The reason the scale evaluates reactions to small annoyances as well as life altering events is that both, if experienced chronically, can result in the same exhaustion response. The results of this study show that MBSR is effective in promoting the relaxation phase, which in turn provides the individual the ability for greater resilience for the next stressful event.

***Limitations***

Limitations for this study include the small sample size and the fact that all patients were taken from the same primary care clinic.

**Summary**

The results of this study clearly show the significant benefit that mindfulness techniques provide to the chronically ill individual. It also gives a perspective on the ease of use of these techniques applied in the primary care setting by the patient's own primary care provider. Although this may create a social desirability bias because some patients will provide more favorable results due to the relationship with the provider; for the most part, the familiarity will create a sense of comfort and familiarity for the individual.

## **Chapter 5: Discussion, Conclusions, and Recommendations**

This study has a specific focus on the integration of MBSR techniques in the form of deep breathing within the primary care setting. The purpose was and continues to be to improve stress management in adults living with chronic illnesses. I implemented the intervention during a usual follow-up appointment by integrating a three-minute deep breathing exercise at the start of the visit. Limitations of the study included a single ethnic demographic—all individuals included were Hispanic and patients of the same primary care clinic. There was also a time limitation, because there were only two weeks between implementation and reevaluation, providing individuals only a short time to add deep breathing into their daily lives. Finally, there was a limitation in sample size. Despite this, findings were favorable toward MBSR, specifically in the form of deep breathing exercises. All the participants reported an improvement in their perceived stress level and several stated that they practiced the deep breathing exercises more often than what was recommended, because they did feel a benefit. This chapter discusses the research findings in depth, provides recommendations on how this study could translate into future research, and shows how this study relates to the DNP essentials.

### **Discussion of Findings**

The research question utilized for this study was as follows: Will MBSR techniques in the form of deep breathing implemented within the primary care setting for chronically ill individuals decrease their perceived stress levels within a two-week period as opposed to no intervention. Study results showed that out of the final eight participants, all found a benefit to the intervention and had significant reduction of perceived stress. Participants also reported an increased sense of overall well-being, greater perceived control over day-to-day problems related to their chronic diseases, and feeling a general sense of increased optimism about the future.

This study and its findings show the importance of Nola Pender's health promotion theoretical framework. The individuals in this study continue to live with chronic illness and no intervention was made to try to diminish the physiological detriments caused by their illnesses. Despite the sole focus on their psychological and emotional wellbeing, participants all reported a greater sense of physical well-being in addition to diminished stress and improvement in their mental health state. Participants also reported a greater sense of control in relation to their health. The simple act of committing to a plan of action to promote a sense of well-being provided empowerment that in turn led to other beneficial health-related decisions. Participants reported feeling more motivated to exercise and make healthier food choices. There were also those who reported an improvement in interpersonal relationships with family and friends. This is likely related to decreased stress and a greater ability for healthy social interaction. This supports Dr. Pender's theory that self-initiated health care changes that are perceived to be beneficial by the individual are the most effective in creating new behaviors.

The findings of this study support current research findings and add the component of a behavior change. Participants were further motivated to engage in other previously recommended behaviors, because their stress was diminished. These findings have future implications in clinical nursing in the realm of both primary care and acute care. Nurses can utilize these techniques to assist patients in all healthcare settings in decreasing stress levels that in turn would lead to more teachable moments. This in turn would likely lead to increased uptake of health promoting behaviors. In nursing leadership, MBSR can be applied to nursing staff in order to manage stress and decrease burnout.

Due to the limitations of both sample size and the implementation's time frame, it would be beneficial to repeat the study with a greater participant size as well as possibly a longer time

frame to see what other benefits could be gained from this intervention. Even with these limitations, the results show an overwhelming benefit to participants in a short amount of time. This intervention should be implemented in the primary care clinical setting for patients with chronic illness in order to manage stress and promote other beneficial health-related behaviors.

### **Recommendations for Future Research**

This study should be repeated with a greater sample size and greater diversity, possibly utilizing patients from a variety of different clinics and patient demographics. Other modalities of mindfulness could also be studied in the future, such as a journaling practice, movement meditation with a simple walking or stretching exercises. These practices have been proven in current literature to have a profound benefit on the brain and the ability to regulate mood (Venditti et al., 2020).

Further, the concept of mindfulness can be explored within the realm of the healthcare team. Burnout among healthcare teams is at an all-time high due to the COVID-19 pandemic. Burnout is directly caused by chronic workplace stress that is not well managed (Sharifi et al., 2021). Integrating MBSR for nurses and healthcare providers in all settings can help teach those in healthcare how to appropriately manage stress. This could potentially lead to a decrease in the burnout phenomenon.

Finally, MBSR could be applied in the setting of in-home hospice to assist families of those transitioning with the stress of watching their loved ones deteriorate. In this instance, both deep breathing and prayer or meditation could be effective in improving family coping in this challenging setting. MBSR could be applied by hospice nurses as part of their usual patient care visit. As part of the visit, once patient care is complete, nurses could spend five additional minutes discussing and applying MBSR techniques with family members and caregivers.

### **Relationship to the DNP Essentials**

DNP Essential I describes scientific underpinnings for practice. This essential speaks of how the discipline of nursing impacts the life processes of individuals and their well-being, whether they are sick or well. This essential aligns perfectly with this study, because the focus was to optimize well-being and provide individuals with the tools to function at their most optimal level, minimizing the draining component of stress.

DNP Essential III describes how the terminal degree of the DNP prepares the graduate to utilize current research to design evidence-based interventions to apply in practice. The DNP graduate will also be able to function as a practice specialist in generating research and disseminate findings to improve health care outcomes. This is applicable to this study on the basis that I implemented and applied evidence-based practices in the primary care setting.

### **Summary**

MBSR has many applications in all areas of healthcare. It has predominantly been used in the realm of addiction medicine and in the acute care setting. Applying MBSR techniques in the primary care or chronic care setting has given important insight into how this modality can benefit all individuals, especially those living with prolonged stress related to chronic disease. Findings showed a significant improvement in perception of stress and a further impetus to make other positive healthcare related changes. Though this study was small, it showed a robust positive result in favor of using MBSR in this vulnerable patient population. The problem of chronic disease-related stress was clearly addressed using MBSR and was an effective solution as noted in the results. These findings contribute to current research by broadening the scope and settings in which MBSR techniques are utilized. Based on this study, MBSR techniques can be

safely and effectively used in the primary care clinic to assist chronically ill individuals with stress perception and management.



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## Appendix A: Perceived Stress Scale Questionnaire

PSS-14 item	Factor 1	Factor 2
1. In the last month, how often have you felt anxious for something that happened unexpectedly?	-0.136	0.800
2. In the last month, how often have you felt unable to control the important things in your life?	0.229	0.466
3. In the last month, how often have you felt nervous and "stressed"?	0.359	0.712
4. In the last month, how often have you dealt successfully with day to day problems and annoyances?	0.701	-0.047
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?	0.598	0.059
6. In the last month, how often have you felt confident about your ability to handle your personal problems?	0.725	0.063
7. In the last month, how often have you felt that things were going your way?	0.585	0.219
8. In the last month, how often have you found that you could not cope with all the things that you had to do?	0.349	0.457
9. In the last month, how often have you been able to control irritations in your life?	0.522	0.126
10. In the last month, how often have you felt that you were on top of things?	0.660	0.105
11. In the last month, how often have you been angered because of things that happened were outside of your control?	0.331	0.238
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?	0.085	0.622
13. In the last month, how often have you been able to control the way you spend your time?	0.606	0.118
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0.277	0.479

The principal component method with varimax rotation was applied to extract patterns.

*Note.* Adapted from "Validation of a greek version of PSS-14; a global measure of perceived stress," by A. L. Katsarou, D. B. Panagiotakos, A. Zafeiropoulou, M. Vryonis, I. Skoularigis, F. Tryposkiadis, and C. C. Papageorgiou, 2012, *Central European Journal of Public Health*, 20(2), 104–109. (<https://doi.org/10.21101/cejph.a3698>).

## Appendix B: IRB Approval Letter

### ABILENE CHRISTIAN UNIVERSITY

*Educating Students for Christian Service and Leadership Throughout the World*

Office of Research and Sponsored Programs  
328 Hardin Administration Building, ACU Box 29145, Abilene, Texas 79699-9145  
325-674-2885



August 8, 2022

Anna Gil  
Department of Nursing  
Abilene Christian University

Dear Anna,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "Mindfulness Based Stress Reduction Techniques in Chronic Illness",

(IRB# 22-093 ) is exempt from review under Federal Policy for the Protection of Human Subjects. If at any time the details of this project change, please advise our office of the change(s) by email, so that the committee can determine whether or not the exempt status is still applicable.

I wish you well with your work!

Sincerely,

*Qi Hang*

Qi Hang (Aug 8, 2022 11:51 CDT)

ACU Institutional Review Board Chair

Additional Approvals/Instructions:

HIPAA Waiver based on the following justification:

\* The researchers assure that the protected information will not be re-used or disclosed for any other purpose than those described in this protocol.



## Appendix C: Pretest and Posttest Transcript

### Pretest Transcript

1. Can you describe what kinds of things make you feel stressed?
- 2.. Do you feel that your health plays a role in this?
3. Have you tried anything in the past to help manage your stress? What has worked and what hasn't?

### Post Test Transcript

1. Did you feel that the breathing exercises you engaged in were effective at minimizing your feelings of stress?
2. Can you name one thing that has improved in your life with the implementation of these exercises?
3. Do you think you will continue to use them on a daily basis?