

The Effects of Mindfulness Program on Hypertension: A Guideline Approach

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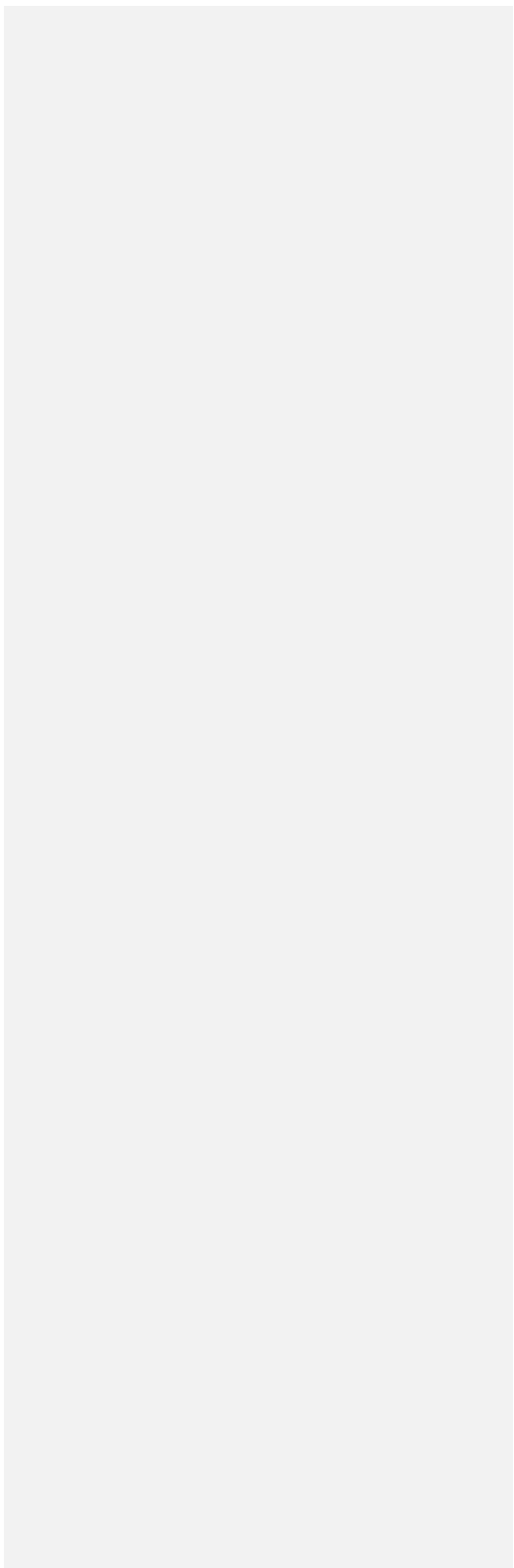
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**Abstract**

Hypertension is the third leading cause of death in the world and a major public health issue worldwide. According to the Centers of Disease Control and Prevention, one in three US adults have hypertension and only half of this population have controlled hypertension. Hypertension increases the risk of cardiovascular disease, stroke and overall mortality. Hypertension can be controlled through lifestyle modifications and medications. Mindfulness training intervention is a lifestyle change and a non-pharmacological approach to decreasing hypertension. The objective of this quality improvement project was to standardize medical providers approach in the delivery of mindfulness education for patients diagnosed with primary hypertension at a primary care clinic. The indirect aim was to decrease hypertension in patients' receiving this evidence-based mindfulness training program. Pender's Health Promotion Model and Donabedian Model were utilized for this project. The Mindful Attention Awareness Scale (MAAS) was delivered to medical providers before and after training and showed improved awareness of mindfulness. These providers were then directed to utilize their training to teach patients mindfulness techniques. A paired t-test analysis was utilized to compare the patient's blood pressure reading values at the time of initial evaluation and again at a 4-week interval. The project demonstrated a statistically significant decrease in both diastolic and systolic hypertension with the use of mindfulness techniques at a four-week interval. This project demonstrates that mindfulness training in primary care may be an effective tool in reducing blood pressure in patients with primary hypertension.

### **Introduction and Background**

Blood pressure is the force of the blood pushing against the vessel walls as the blood travels through the body. When the pressure inside a blood vessel becomes too high, it may result in damage. This high pressure is known as hypertension (National Heart, Lung, and Blood Institute [NHLBI], n.d.). Normal adult blood pressure is defined as a systolic blood pressure (SBP) of 120 mm Hg and a diastolic blood pressure (DBP) of 80 mm Hg (Joint National Committee (JNC):7th Report). The American Heart Association (AHA) and American College of Cardiology (ACC) have collaborated in developing a new hypertension guideline. Which define hypertension as SBP greater than 130 mm Hg and DBP greater than 80 mm Hg. According to Centers for Disease Control and Prevention (CDC), 1 in 3 US adults or about 75 million people have high blood pressure, and only about half of this population have blood pressure under control. Hypertension increases the risk of cardiovascular disease and stroke, which are the leading cause of death for Americans (CDC, n.d.). Globally, more than 1 in 5 adults have hypertension with complications that account for 9.4 million deaths worldwide annually (World Health Organization [WHO], 2015).

NIH reported that hypertension with complications can be controlled through medications and lifestyle modifications. Lifestyle changes are effective methods to lower blood pressure and include healthy eating habits, physical activity, weight loss, and smoking cessation (NIH, n.d.). Treating hypertension has a beneficial effect on the overall mortality and cardiovascular morbidity. There are two common methods in hypertension treatment. The first method is the pharmacological approach, where an antihypertensive medication is prescribed, and the second method is the non-pharmacological approach, which is based on lifestyle modifications. According to Noone, Dwyer, Murphy, Newell, & Molloy (2018), physical activity interventions

may be just as effective in lowering hypertension mortality. Mindfulness training, which is also part of a physical activity, can be used as an alternative treatment for improving hypertension. This non-pharmacological intervention approach is inexpensive, convenient and beneficial in lowering high blood pressure. According to Blom, Baker, How, Dai, Irvine, Abbey, Tobe (2014), situational stressors have been associated with high blood pressure so relaxation therapy, such as a mindfulness training program, may help decrease hypertension.

#### **Problem Statement**

Hypertension is a major public health issue worldwide and is the third leading cause of death in the world. Many people with undiagnosed hypertension are asymptomatic. Since hypertension does not have easily recognizable signs, it is also known as a “silent killer” (Nejati, Zahiroddin, Afrookhteh, Rahmani, & Ho veida, 2015). Hypertension is also known to be the major risk factor of global cardiovascular disease mortality and morbidity (Zhou, Xi, Zhao, Wang, & Veeranki, 2018). According to Kostas (2018), hypertension is accountable for approximately 9.4 million deaths worldwide annually, and it is estimated that hypertension expenditures will reach one trillion dollars globally in the coming years. Studies also showed that hypertension is a leading preventable risk factor for cardiovascular disease and deaths (Kostas, 2018). In addition, McNaughton, Self, Zhu, Janke, Storrow, & Levy (2015) examined the burden of hypertension-related emergency department (ED) visits in the United States. The study showed that there is an estimated incidence rate increase of 5.2% yearly for hypertension-related visits and 4.4% per year for ED visits with hypertension as the primary diagnosis. Additionally, the cost of hypertension associated hospitalization was \$113 billion, or 15% of all hospital costs from 2003-2006 (McNaughton et al., 2015). It is, therefore, a priority for the healthcare system

to focus on effective and therapeutic interventions that can help reduce the morbidity and mortality rates to this population group.

### **The Purpose Statement**

The purpose of the project is to reduce high blood pressure in hypertensive patients by implementing an evidence-based mindfulness training program educational guideline at the project site. A mindfulness training program is a healthy lifestyle modification, which has limited adverse effects (Wright et al., 2018). Mindfulness training is a non-pharmacological approach to improve health outcomes (Nejati et al., 2015). In addition, mindfulness training is a cost-effective method for use in patients with hypertension. A study showed that its effectiveness was measured in a pilot study in a college school campus (Wright et al., 2018). The positive results of the mindfulness training program can be shared with others and replicated for future use in other population groups. This intervention plan can help decrease the morbidity and mortality rate in cardiovascular disease and decrease staggering healthcare costs of hypertension (Zhou et al., 2018).

### **Project Question**

Will implementing a mindfulness training program educational guideline and measuring the providers mindfulness training experience be beneficial in patients with hypertension over a four-week period? PICOT model was used in formulating the DNP project question. Population that is utilized will be the stakeholders or the providers at the family practice clinic. Intervention will be the implementation of the mindfulness training program educational guideline at the project site. Comparison of the intervention will be no implementation of the mindfulness training program. Outcome will be the measurement of the providers mindfulness experience and

satisfaction in implementing the mindfulness training program to patients with hypertension.

Timeframe will be a four-week period to achieve the observed outcome.

### **Objectives**

This DNP project seek to achieve the following objectives at the family practice clinic:

- 1) Develop a mindfulness educational guideline tool to be implemented in a family practice clinic
- 2) Improve providers mindfulness experience by providing a mindfulness training that will include pre and post evaluation.
- 3) Evaluate effectiveness of mindfulness educational guideline tool on patient blood pressure by performing a chart audit before and after the 4-week implementation.

### **Significance of Evidence**

Hypertension is a major health concern that currently affects 68 million adults in the United States (Cohen et al., 2013) and worldwide hypertension results in up to 7.8 million deaths annually (Posadzki, Cramer, Kuzdzal, Lee, & Ernst, 2014). The literature identifies hypertension as the leading cause of early morbidity and mortality in both developed and underdeveloped countries (Posadzki et al., 2014). Hypertension is a frequently diagnosed cardiovascular disease worldwide and the incidence is rising among adolescents and adult population (Yang, Wu, & Wang, 2017). According to Yang et al. (2017), there will be an estimated 23.3 million deaths on hypertension in 2030 and around 80% of those deaths will have a residual effect in low-and-middle-income countries. Research showed that even with the pharmacological treatment advancement, about two-thirds of the population still has uncontrolled hypertension (Posadzki, Cramer, Kuzdzal, & Lee, 2014). In addition, some patients avoid drug treatments while others experience adverse effects on medication (Posadzki, et al.,2014). According to Yang et al.

(2017), the Joint National Committee (JNC) recommended that population with medication difficulties use non-pharmacological interventions such as: exercise, physical activity, and lifestyle modifications for hypertension management. Posadzki et al. (2014) stated that some patients choose to try this non-pharmacological treatment. While drug therapy is the preferred treatment for persistent hypertension, national guidelines support the benefits of non-pharmacological treatments for managing hypertension (Cohen et al., 2013). According to Cohen et al. (2013), non-pharmacological therapy inspires the patient to be self-sufficient, create and maintain a healthier lifestyle, with fewer adverse side effects than medication interactions.

### **Search Terms**

A search for literature review was initiated to utilize available resources for the topic area. The keywords used were “hypertension”, “high blood pressure”, “mindfulness”, “meditation”. Inclusion criteria were scholarly journals, peer-reviewed, randomized controlled trials, English language, and worldwide articles within the past 5 years. Exclusion criteria were non-scholarly journals, non-peer-reviewed, non-English language, and articles more than 5 years old. Databases searched include CINAHL, PubMed, Scopus, Medline, Allied Health and Science, Cochran library, and ProQuest. There were over 1,100 articles returned. After reviewing the results, there were several peer-reviewed journals that were utilized as resources for the DNP project.

### **Literature Review**

According to the literature hypertension is an asymptomatic condition, and studies revealed that it eventually affects quality of life for affected individuals (Wolff, Brorsson, Midlov, Sundquist, & Strandberg, 2017). Prevention and management of hypertension is a worldwide public health issue (Park & Han, 2017). According to Park & Han (2017), the goals



of hypertension management are to decrease mortality and inhibit hypertension-related diseases, such as stroke and ischemic heart disease. The literature shows that a pharmacological approach using antihypertensive medications is the current preferred treatment for hypertension (Park & Han, 2017) Physicians have noticed that hypertensive patients also suffer from psychological stress and stress can activate a physiological response in the sympathetic nervous system, which can raise blood pressure (Park & Han, 2017). There are recent studies that indicate that high blood pressure can also be lowered by utilizing alternative non-pharmacological means, such as lifestyle modification and stress management (Park & Han, 2017). Park and Han (2017) stated these non-pharmacological approaches include: meditation, breathing exercises, yoga, tai chi, and mindfulness training.

#### **Addressing the Problem with Current Evidence**

Randomized controlled trials (RCT) have indicated that other alternative exercises such as yoga, tai chi, meditation and mindfulness training may influence blood pressure in hypertensive patients and lower blood pressure. (Yang et al., 2017). Wolff et al. (2017) added that these alternatives non-pharmacological approach may help avoid medication treatments and help improve the patient's overall health. Mindfulness training utilizes increased awareness through focused attention on a present moment experience and a direct reflection of the current sensory and mental occurrence without interruptions (Morone, Moore, & Greco, 2017). Literature shows that mindfulness-based stress reduction (MBSR) program was initiated in 1979 and is currently becoming well-known to communities and medical centers. MBSR is used for stress reduction and treatment for chronic conditions such as hypertension, coronary artery disease, anxiety, depression, post-traumatic stress disorder, chronic pain (Morone et al., 2017). Additionally, a pilot study by Kumar, Lathif, & Raghavan (2017) determined that MBSR

improves blood pressure in hypertensive patients, as well as blood sugar in patients with type 2 diabetes mellitus (Kumar et al., 2017). Another research finding by Tomfohr, Pung, Mills, & Edwards (2015) indicated that increased levels of mindfulness training has a positive correlation with decrease blood pressure and physiological response to stressors through changes in cortisol levels (Tomfohr et al., 2015). A study by Loucks, Britton, Howe, Eaton, & Buka (2015) demonstrated a positive relationship between mindfulness training and cardiovascular health and concluded that it can have an impact on health promotion programs (Loucks et al., 2015). Victorson, Hankin, Burns, Weiland, Maletich, Sufrin, Brendler (2017) added that mindfulness training promotes effective coping skills in individuals with stress and chronic disease uncertainties (Victorson et al., 2017). In addition, there is a research by Park & Han (2017) that suggested these alternative non-pharmacological modalities may be a safer option than pharmacotherapy (Park & Han, 2017). According to Morone et al. (2017), the National Health Interview survey now gathers data on mindfulness meditation as part of an alternative and complementary medicine supplement. The research was focused on patients with chronic diseases such as hypertension, obesity, coronary artery disease, diabetes mellitus, stress, anxiety, depression, and chronic pain. Conventional treatments were not providing satisfactory relief to these participants. Inclusion of the study were female, white, well-educated participants in United States with chronic conditions. Morone et al. (2017) noted that mindfulness meditation training is becoming popular due to its easy access in group classes, online resources, and digital media. Also, individuals who join in mindfulness training are more likely to practice a healthy lifestyle, improve in reducing stress, and promote healthy well-being (Morone et al., 2017). Evidence shows that the cost-effectiveness of the mindfulness training program can offer a low-cost intervention program to individuals and that it facilitates improvement in the short and long-

term social, emotional, and mental health outcomes (Kuyken et al., 2017). Multiple studies show that mindfulness training, yoga, tai chi have statistical and clinical significance in the reduction of blood pressure in hypertensive patients and patients with chronic diseases (Baker et al., 2013; Michael et al., 2018; Nejati, et al., 2015; Park & Han, 2017; Posadzki et al., 2014; Solano Lopez, 2018; Tyagi & Cohen, 2014; Yang et al., 2017).

### **Current Management**

The current approach to hypertension intervention at the practice site is to the combination of a pharmacological and non-pharmacological approach based on the national guidelines. Stakeholders at the practice site mentioned that a non-pharmacological approach is part of the initial treatment for newly diagnosed hypertension, which includes physical activity, low sodium diet, and weight loss. However, if the non-pharmacological approach is not effective and persistent hypertension continues after 3-4 months, then a pharmacological approach is initiated. This is an opportunity for stakeholders at the practice site to include mindfulness training program to patients with hypertension as part of the non-pharmacological approach protocol.

### **Current Recommendations**

The current recommendation for hypertension is the pharmacological approach, such as thiazide diuretic, ACE inhibitor or angiotensin-II receptor antagonist, or calcium channel blocker. These are the first line treatment options for hypertension (Epocrates, n.d.). According to Pickut et al., (2015), mindfulness training can be integrated into the patient's daily practice and daily mindful activities, such as eating, walking, doing household chores, and coping with stress. Pickut et al. (2015) added that mindfulness training enables the individual to strengthen their internal resources and help reestablish a degree of self-determination (Pickut et al.,

2015). Vestal (2017) also supplemented that this mindfulness practice can be easily taught to a wide range of patient populations, such as: children, adult, elderly, people with physical limitations, emotional and mental health issues, and individuals with chronic diseases (Vestal, 2017). Vestal (2017) further explained that this mindfulness practice can be taught in a short period. Participants can do mindfulness training from a standing or sitting position because it requires no special equipment, and it is also a good modality for research (Vestal, 2017).

### **Issues still under investigation**

Multiple research studies indicate that mindfulness training showed a great significance in lowering high blood pressure in hypertensive patients. However, one literature review found that showed a short term MBSR program did not clinically make a significant effect in decreasing the blood pressure in stage I hypertensive patients who did not take blood pressure medications (Blom et al., 2014). Therefore, it is imperative to have a long term MBSR program to be able to observe a clinical significance, and a larger sample size is needed to provide stronger evidence that will replicate the findings of prior studies. Morone et al. (2017) added that there is limited information on the duration, quantity, and consistency of mindfulness meditation which may impact the outcome, hence, the importance of further research studies to explore more benefits on the mindfulness training program. Also, Tomfohr et al. (2015) suggested that further research is needed to better understand the correlation between mindfulness training and health and to further explore the physiological variables (Tomfohr et al., 2015). Thus, more correlational research studies are needed to investigate the relationship between mindfulness training program and the effects on health. Park and Han (2017) recommended that more research is vital to investigate the mechanism that influences blood pressure. Therefore, more research study is needed to duplicate the research findings and identify

more mechanism that lowers the blood pressure during mindfulness training.

### **Significance of the Problem and Project Purpose**

Hypertension is a worldwide health concern, because it affects all ages and has a major impact on the quality of life in hypertensive patients. Combinations of pharmacological and non-pharmacological approaches are the common treatment for hypertension. There is an increasing evidence that individuals with hypertension have selected alternative, non-pharmacological interventions to improve health. Research showed that one of the alternative interventions is a mindfulness training program. This training is a non-pharmacological approach to lowering blood pressure. It is cost effective and evidence-based practice. The purpose of this DNP project is to evaluate the effectiveness of a mindfulness training program in patients with hypertension at the family practice clinic.

### **Theoretical Framework**

#### **Historical Development of the Theory**

Nursing theorist Nola Pender developed the Health Promotion Model (HPM), which assists individuals to avoid illness through behavior and choices. Pender stated that if individuals participate in their self-care, then illnesses and diseases can be prevented, thereby enhancing overall health. Her goal in nursing care was modified to the optimal health of the individual. Pender supported her HPM theory through her research, teaching, presentations, and writings (Tomey & Alligood, 2002). In 1975, Pender published "A Conceptual Model for Preventive Health Behavior", where individuals choose their own healthcare decisions (Tomey & Alligood, 2002). According to Tomey & Alligood (2002), a six-year study funded by the National Institute of Health (NIH) tested the validity of HPM. The NIH established the Health Promoting Lifestyle Profile to study the health-promoting behavior of working adults, older adults, cardiac

rehabilitation patients, and ambulatory cancer patients. The study showed support of the HPM theory and therefore, other studies were done to investigate the predictive capability of the HPM theory for health-promoting lifestyles, exercise, and nutritional practices (Tomey & Alligood, 2002). Pender has contributed significant leadership in the advancement of nursing research in the United States. Pender advocated for the NIH to create a National Center for Nursing Research, and she was actively involved in its development in 1981 (Tomey & Alligood, 2002).

The HPM was established when Pender observed healthcare professionals doing interventions only after the occurrence of an illness, rather than promoting the prevention of illness (Pender, Murdaugh, & Parsons, 2011). Pender believed that an individuals' quality of life can be improved by preventing the occurrence of illness. Hence, the HPM was developed to supplement other models that advocate prevention. Her first version of the HPM was published in 1982 and revised in 1996 based on additional experimental findings. She also advocated interdisciplinary research, translating research into science-based practice, and associating nursing research to create health policy (Tomey & Alligood, 2002).

The HPM defines health as a positive and active state, instead of merely the absence of illness. Pender et al. (2011) noted that HPM highlights positive motivational methodology. Pender created the positive motivational model after her research showed that most models were based on negative motivations. Pender's goal was to incorporate health-promoting behavior into the conceptual framework of the HPM. This type of conceptual framework can provide guidelines for further nursing research (Pender et al., 2011).

#### **Applicability of Theory to Current Practice**

The applicability of the HPM theory assists understanding the major factors of health behaviors that promote healthy lifestyles. The HPM theory inspires researchers to observe

different variables that can impact health behaviors. The HPM can be utilized as a foundation to organize nursing protocols and interventions. For example, a study by Reeder, Childs, Gibson, Williams, & Williams (2017) used the HPM to evaluate the African American women in the awareness and prevention of cardiovascular disease. HPM was applied to assess factors that influence health promoting behaviors. Some of the study questions that were asked examined the risks associated with heart disease, such as obesity, lack of exercise, intake of fatty foods, and smoking. The study showed how the participant's health-promoting behaviors affected their cardiovascular health status (Reeder et al., 2017).

### **Majors Tenets**

The major tenets of the HPM explore five key concepts: person, environment, nursing, health, and illness (Tomey & Alligood, 2002). A person is an entity that reacts to its environment and generates its own human potential. The environment is defined as the social- physical context where life is revealed. Individuals can direct the environment to make a positive setting in order to assist in health-promoting behaviors. Pender states that there is a mutual exchange between a person and their environment. Nursing is a collaborative effort with patients, families, and communities to attain optimal health. Health is the realization of human potential through goal-oriented behavior, self-care, and a relationship with others. Illnesses are events that delay the individual's ongoing pursuit for health (Tomey & Alligood, 2002).

Pender also noted that the HPM is multidimensional in nature, where an individual interacts with the environment to maintain health. The HPM highlights these areas: individual characteristics and experiences, behavior specific perceptions, and behavioral outcomes. The HPM asserts that an individual has unique characteristics and experiences that affect actions. Behavior-specific perception variables have significant motivational importance that can be

modified in nursing actions. The desired behavioral outcome is the result of HPM. Pender noted that these behaviors can have an impact on improving health and better life quality (Tomey & Alligood, 2002).

### **Theory Application to the DNP Project**

Healthcare in the United States is rapidly changing. In order to include health promotion as an integral part of wellness, it may be necessary to have a revolution in healthcare (Old, 2014). Pender's HPM can be integrated into this DNP project. One of the tenets of HPM is for individuals to find ways to regulate their own behavior. Health promoting behaviors can be utilized to the hypertensive population to create new healthy behaviors and positive health outcomes. One of the variables that can influence health-promoting behavior is the individual's perception of the issue. Perception alteration can produce a change in health behavior that can bring a positive health promotion (Robson & Troutman-Jordan, 2014). In addition, HPM defines how an individual's behaviors and experiences impact overall health outcome. According to Esposito, Rhodes, Besthoff, & Bonuel (2016), behavioral outcomes consist of an individual's commitment to an action plan that leads to a health-promoting behavior.

Rico, Trujillo, & Gallego (2017) stated that it is imperative to encourage health-promoting lifestyles and take an action plan to attain a positive behavioral outcome to prevent an illness or reduce the progression of illness (Rico et al., 2017). Mindfulness training is one of the healthy lifestyles that can create health-promoting behaviors. Mindfulness training can promote healthy behaviors that can help prevent the progression of hypertension. Rico et al. (2017) mentioned that when health-promoting behaviors are supported by significant others, the level of commitment and engagement of the participants are enhanced (Rico et al., 2017). Sousa & Fonseca (2015) added that the greater the commitment to a specific action plan, the greater the



probability that the health-promoting behavior is maintained over time (Sousa & Fonseca, 2015). Additionally, Koehne (2015) indicated that the HPM is a valuable framework for integrating interventions that individuals would select to do, feel capable of doing, feel confident in completing. Taken together, these three triads will lead to enhanced health and well-being. Hence, individuals can improve their health and self-efficacy (Koehne, 2015). Sevinc & Argon (2018) stated that self-efficacy is important for individuals to effectively enhance their health status. Pender noted that the HPM is based on perceived self-efficacy that incorporates the nursing and behavioral science to provide an understanding of how an individual learns and promote their health (Sevinc & Argon, 2018).

### **Implementation Science**

The Donabedian model will be utilized to guide the implementation of this project. Donabedian model was developed in 1966 with the framework of a quality management guidelines in healthcare. Three essential elements: structures-processes-outcomes of care were identified as quality assessment guidelines (Donabedian, 1966). According to Voyce, Gouveia, Medinas, Santos, & Ferreira (2015), the Donabedian model adopts the three essential elements to assist in the implementation process. A structure is defined as the place where medical care takes place or service is provided. Process denotes the set of activities that are being implemented. An outcome is the result of the health and well-being of individuals (Donabedian, 1980). The Donabedian model has been used in various healthcare models such as outcome measurement in nursing practice for patient outcomes in health promotion, injury and illness prevention, and suffering alleviation (Jones, 2016). The structures-processes-outcome (SPO) model was used as a quality assessment initiative in supporting the documentation in nursing practice and patient

outcomes (Jones, 2016). This framework will serve as a guide for integrating the literature and implementing this DNP Project.

For the DNP Project, the structure will comprise the project site, where the implementation of the project will take place. The process utilized for this project will be to work collaboratively with the stakeholders at the family practice clinic. The stakeholders will implement the mindfulness training program to the hypertensive patients at the project site. Desired outcomes have been identified for this site, which include the effectiveness of mindfulness training program in decreasing the blood pressure in the hypertensive population at the project site. Another desired outcome will be the stakeholder's satisfaction in implementing the mindfulness program at clinic.

### **Project Design**

This DNP project will incorporate a quality improvement (QI) project design. The project design will be focused on a QI initiative with the goal of reducing blood pressure in hypertensive patients by implementing an evidence-based mindfulness program. The Donabedian Structure-Purpose-Outcome (SPO) model will be utilized in this QI initiative (Moran et al., 2017). The project site, stakeholders, participants, and educational guideline materials (such as PowerPoint and brochure) will be part of the structural phase. A pre-test evaluation on mindfulness will be administered, and data collected. The project lead will utilize a PowerPoint presentation that will provide training to the providers regarding hypertension and mindfulness. A post-test evaluation will then be administered, and data collected. The providers will then disseminate the brochure materials to 100% of the patients seen at the clinic with a diagnosis of hypertension over a four-week period. A policy change will be created at the project site to ensure that providers will adhere to implementing the tool within the clinical site. In addition, the project lead will complete a chart

audit before and after the four-week implementation of the mindfulness educational guideline to examine changes in blood pressure in hypertensive patients.

**Population of interest**

The population of interest will be the providers at the family practice clinic in Southern Nevada. There is one physician, one nurse practitioner, one clinic manager, two medical assistants, one front desk staff, one biller, and one scheduler at the project site. Inclusion criteria include healthcare providers, who are employed at the project site and attend the training regarding hypertension and mindfulness. The exclusion criteria include healthcare providers at the project site, who do not attend the training. Patients diagnosed with hypertension are an indirect population of interest. Inclusion criteria for the indirect population include all patients with hypertension, with or without pharmacological treatment. Exclusion criteria include patients without diagnosis of hypertension

**Setting**

The DNP project will be implemented at a family practice clinic located in the west area of Las Vegas, Nevada. Each provider at the project site can see a maximum of thirty patients per day. The healthcare clinic provides care to patients who have chronic conditions such as hypertension, diabetes mellitus, chronic pain, anxiety, and depression. The family practice clinic also provides wellness and annual check-ups. The primary insurance payor for patients at this site is the commercial PPO insurance such as Cigna, United Healthcare, Aetna, Blue Cross & Blue Shield. A permission letter for implementing the DNP project at this family practice clinic has been obtained from the organizational leader (see Appendix A).

**Stakeholders**

The stakeholders for this DNP project are the organizational leader, providers, clinic staff, and patients with hypertension. The organizational leader is the director of the family practice clinic who allowed this DNP project to be implemented at this clinic. Providers will be disseminating the mindfulness educational protocol to hypertensive patients seen at this family practice clinic. The providers will undergo the educational training on hypertension and mindfulness protocol three times before the implementation process begins.

**Recruitment Method**

The recruitment method for this project design was direct recruitment that consisted of meeting with staff and providers to provide information about the DNP project. Since this is a QI project, all providers will implement the mindfulness educational protocol at the project site. The project lead will conduct chart audits that will include individuals who are currently patients at the project site.

The project training for the providers and staff will occur during their lunch break, and lunch will be provided by the project lead as an incentive for attendance. This presentation will be repeated three times in a two-week interval before the start of the implementation process to ensure providers confidence in disseminating the DNP Project to patients with hypertension. The project lead will provide lunch during each presentation. Confidentiality will be adhered according to the project site policy.

**Chart Recruitment**

Chart recruitment will include all patients with the diagnosis of hypertension at this project site who are being seen with their providers during the four-week implementation process. The charts that will be reviewed in the EMR will have the billing codes of hypertension.

The hypertension inclusion criteria include primary or essential hypertension (I10) with or without medication treatment. Exclusion criteria include secondary hypertension such as pulmonary hypertension (I27.0), hypertension complicating pregnancy (O10-O11), and hypertension involving vessels of brain (I60-I69) and eyes (H35.0). Confidentiality of the patient charts will be adhered to according to the confidentiality policy standard at the project site. Charts will be de-identified using a numerical coding. The charts that will be included in the audit will include patients from 20 and 70 years old, which is the majority population of the hypertensive patients at this project site.

### **Tools and Instrumentation**

#### **Mindfulness Training Program**

The project lead will utilize a mindfulness educational guideline based on evidence in multiple literature review studies. Mindfulness training programs will include mindful movement, mindful meditation, mindful breathing, mindful eating, mindful walking, mindfulness of emotions and thoughts, and body scanning that have shown a positive outcome in decreasing blood pressure and overall health (Frazer & Stathas, 2015; Mahfouz et al., 2018; Warren, Smith, & Ashwell, 2017; Yang, Wu, & Wang, 2017). Participants will receive free resources on mindfulness training program and mobile mindfulness app that have been scientifically validated. They can utilize these free resources during the four weeks implementation process.

In addition, a mindfulness training program guideline will be created by the project lead to be utilized by the providers at the project site. This guideline will be utilized during the implementation phase of the DNP project (see Appendix B). The project team will review the free mindfulness resources and guideline for applicability to the DNP Project.

**Pre and Post Questionnaire**

The project lead will utilize the Mindfulness Attention Awareness Scale (MAAS) (see Appendix C) by Brown & Ryan (2003) as the pre and post questionnaire tool. The MAAS will be used to evaluate the providers mindfulness experience before and after the educational session on mindfulness educational guideline. The MAAS is a 15-item single-dimension tool that measures trait mindfulness. The MAAS also determines the frequency of open and receptive attention and awareness of continuing events and experiences (Brown & Ryan, 2003). Response options ranged from 1 (almost always) to 6 (almost never). To score the MAAS questionnaire, the average of the 15 items is computed (Carlson & Brown, 2005). In Brown and Ryan study (2003), the MAAS interval consistency was  $\alpha \geq 0.82$  and a 4-week test-retest reliability was interclass  $r = 0.81$ . The MAAS has the longest empirical track record as a valid measure of trait mindfulness (Black, Sussman, Johnson, & Milam, 2012). Approval for use of the MAAS questionnaire was obtained via email from the author (see Appendix D). It is expected that the educational training session on mindfulness will improve the mindfulness experience of the providers.

**Educational Mindfulness PowerPoint**

The project lead will also develop a PowerPoint to be utilized as a training modality to providers disseminating the DNP Project. The PowerPoint will be based on evidence from the literature review (see Appendix E for PowerPoint presentation), and it will include information on hypertension and mindfulness. The hypertension information provided will include: its prevalence, morbidity and mortality rate, its treatment, and the cost in the healthcare industry. The mindfulness information provided will include evidence-based mindful meditation, mindful breathing, mindful eating, mindful movement, body scanning, mindful walking, and mindfulness

of emotions and thoughts, and are part of the mindfulness training protocol. Providers will undergo this mindfulness educational training guideline before disseminating it to patients with hypertension. The project team will review the PowerPoint presentation for applicability to the DNP Project. The PowerPoint educational training will be presented to providers at the project site, before disseminating the mindfulness educational guideline. It will take thirty minutes and it will be presented two times in a one-week interval before the implementation of the DNP Project.

#### **Educational Mindfulness Brochure**

The project lead will also develop a mindfulness brochure that will include information on evidence-based mindfulness and its positive research outcomes. It also includes information on mindful meditation, mindful eating, mindful walking, and body scanning based on literature reviews. In addition, the brochure will include free scientifically validated resources that are commonly used in the community, and these resources can be utilized by the participants (see Appendix F). The project team and the organizational leader will review the mindfulness brochure for approval and applicability to the DNP Project.

#### **Chart Audit Tool**

The project lead will develop a chart audit tool that will be utilized before and after the implementation at the project site. The audit tool will include a de-identified numerical coding for the hypertensive patients, participant's age and gender, and pre and post blood pressure readings of the participants (see Appendix G).

#### **Data Collection**

The data collection procedure will consist of pre and post mindfulness evaluations of the providers, as well as pre and post implementation chart audits. The project lead will conduct the

pre and post mindfulness evaluation to the providers, as well as the pre and post implementation chart audits. The pre and post implementation chart audits and data collection will include 30 charts that meet the inclusion criteria.

The project variables will be collected from the patient charts that meet the criteria. The independent variable is the systolic and diastolic blood pressure reading, and the dependent variable is the patient with hypertension. This will allow the project lead to compare blood pressures and assess whether the mindfulness program is successful in decreasing hypertension. Providers will hand out the mindfulness educational guideline brochure that include free resources of mindfulness training program and mindfulness mobile app. The organizational leader stated that as part of the family practice standard policy, patients will be asked to return to the clinic after four weeks to follow-up on their blood pressure, if at the time of the visit, the systolic blood pressure equal or greater than 140 mm Hg and diastolic blood pressure equal or greater than 90 mm Hg. The follow-up visit will be coded as a nurse visit so it will not incur another visit payment for the patients. The data will be compiled into an Excel spreadsheet created by the project lead and analysis will be done using the SPSS software.

#### **Implementation Timeline**

Once the DNP project is approved by the DNP project team, the project lead will start the implementation phase of the project. Below is the DNP project timeline.

Date	Activity
October 16, 2019	Printing mindfulness intervention guideline brochures
October 18, 2019	Collection of pre mindfulness data Mindfulness orientation (30 minutes) with PowerPoint presentation and mindfulness training to providers and staff
October 23, 2019	Mindfulness orientation (30 minutes) with PowerPoint presentation and mindfulness training to providers and staff



	Collection of post mindfulness data
October 24, 2019 to October 29, 2019	Project implementation begins which includes the following: <ul style="list-style-type: none"> <li>- Providers disseminate mindfulness intervention protocol brochures to hypertensive patients</li> <li>- Schedule one-month follow-up appointment for patients with SBP &gt;140 mm/Hg, DBP &gt;90 mm/Hg during clinic visit</li> <li>- Pre BP audit for hypertensive patients</li> <li>- Project lead will be at project site at least twice a week for questions and support of staff</li> </ul>
October 30, 2019 to November 5, 2019	Continue project implementation
DNP Project III Week 1: November 6, 2019 to November 12, 2019	Continue project implementation
DNP Project III Week 2-5: November 13, 2019 to December 10, 2019	Continue project implementation Collection of post BP audit Analysis of data Writing results and submit by December 10th
December 11-17, 2019	Create a PowerPoint presentation for dissemination of results
February 6, 2020	Dissemination of results to stakeholders PowerPoint presentation
February 14, 2020	Dissemination of results to the DNP project team and colleagues PowerPoint presentation by project lead

After the provider's mindfulness training PowerPoint presentation, providers will start handing out the mindfulness educational guideline brochure to all hypertensive patients during the four-week implementation phase. The project lead will visit the project site twice a week during the implementation phase to give support to the providers and to monitor the progress of the DNP project. If providers have questions or concerns related to the DNP project, the project lead will be easily accessible by phone and text. Data collection will be done after the four-week implementation. Data will then be analyzed using the SPSS software. Then, the DNP project results will be disseminated to stakeholders, DNP project team, and colleagues.

### **Ethics and Human Subject Protection**

The institutional review board (IRB) approval form will be completed to determine if IRB review is necessary. This QI project will not involve any direct patient care. According to Moran et al. (2017), if there is no risk to human subjects and data is de-identified, the project is exempt for IRB review. It is the expectation by the project lead that this DNP project will be considered exempt from the IRB review, since there is no risk to human subjects, data will be de-identified, and this DNP project utilizes educational brochures.

A study by Blom et al. (2014) showed benefits of mindfulness training program, which include a decrease in blood pressure in the hypertensive participants. Literature review has not shown risks to participants that joined the mindfulness training program. No compensation is given to hypertensive participants, who are the indirect population of interest. Hypertensive patient participants will be assured that the outcome of the DNP project will not affect their patient care, and confidentiality will be strictly observed per organization standard policy. Providers, who are the direct population of interest, will get a free lunch provided by the project lead as an incentive for attending the PowerPoint presentation on mindfulness training program.

Data will be de-identified using numerical coding and will be stored in a secure file that meets the standard for security at the project site. Chart audit data will be collected twice, once before the start of the DNP project and at the end of the four-week implementation.

### **Plan for Analysis/Evaluation**

The MAAS data will be collected for analysis before the first mindfulness training with the providers, and then after the second mindfulness training with the providers. According to Carlson & Brown (2005), the MAAS is scored by computing the average of the 15-item scales. The higher MAAS score is associated with lower mood disturbance and stress

symptoms; hence, indicate greater mindfulness (Carlson & Brown, 2005). The paired t-test will be conducted using the SPSS to evaluate the effectiveness of the mindfulness training with the providers. The 2-tailed significance, which is the probability (p) value will be utilized for analysis. If the p value is less than 0.05, there is a significant difference that mindfulness training is effective with the providers. On the contrary, if the p value is greater than 0.05, then there is no significant difference that mindfulness training is effective with the providers.

The chart audits will be collected twice utilizing the EMR at the project site. The first chart audit will be done before the implementation of the mindfulness educational protocol intervention to the hypertensive patients. The second chart audit will be done after the four-week implementation of the mindfulness educational protocol intervention to patients with hypertension. The pre and post data will then be compiled in a spreadsheet created by the project lead. The data analysis will be done using SPSS. The paired t-test will be conducted to evaluate the effectiveness of the mindfulness educational protocol intervention to the hypertensive patients. The 2-tailed significance, which is the probability (p) value will be utilized for analysis. If the p value is less than 0.05, there is a significant difference that mindfulness educational protocol intervention is effective in lowering the blood pressure in hypertensive patients. On the other hand, if the p value is greater than 0.05, then there is no significant difference that mindfulness educational protocol intervention is effective in lowering blood pressure in hypertensive patients. These analyses were in accordance to the recommendation of the statistician (see Appendix H).

### **Significance and Implications for Nursing**

Hypertension remains a community health concern and a significant cause of morbidity and mortality in the U.S. (Mueller et al., 2015). Mindfulness training programs are one of the non-pharmacological approaches that can be utilized in decreasing blood pressure in hypertensive patients. Mindfulness is a form of mental discipline that, with consistent practice, may help reduce a person's tendency to exaggerate stressful situations and trigger an elevated blood pressure (Frazer & Stathas, 2015). Literature review identifies a mindfulness training program as one of the evidence-based practices that can reduce hypertension. Since it is a non-pharmacological approach, it does not have adverse effects (Wright et al., 2018). It is also easy for individuals of any age. Mindfulness intervention promotes positive health outcome, and in a long run, it will help decrease the healthcare cost.

Mindfulness educational protocol intervention will benefit the nursing profession because it can make an impact on patient care for the hypertensive patient population. A study by Sara et al. (2015) showed mindfulness training program can also be effective in other metabolic syndrome such as diabetes mellitus, chronic pain, and psychological well-being. In addition, mindfulness intervention can be a good tool to be utilized in health promotion and disease prevention, and it can be disseminated to all patients in any clinical practice settings. Mindfulness intervention can also be utilized as one of the solutions in decreasing blood pressure in the hypertensive population. This is a powerful tool that is so simple to do, and yet, it can create a significant difference in our community, the nursing profession, and the healthcare industry.

### **Analysis of Results**

The goals of this QI project were to develop an evidence-based mindfulness educational guideline brochure to be disseminated at the project site, to improve the provider's mindfulness experience before implementing the mindfulness educational guideline to the hypertensive patients, and to reduce high blood pressure in patients with hypertension at the project site.

An educational PowerPoint presentation (see Appendix E) on hypertension and mindfulness training was presented by the project lead to the providers and staff in two different sessions, one week apart. The MAAS questionnaire by Brown & Ryan (2003) was utilized as the pre and post mindfulness evaluation for the providers that attended the training. The two providers answered the MAAS questionnaire survey before the first mindfulness educational presentation and training, and after the second mindfulness educational presentation and training. To score the MAAS questionnaire survey, the average of the 15 items was calculated (Carlson & Brown, 2005). The average of the lowest possible score was 1 and the average of highest possible score was 6. The evidence-based mindfulness educational guideline brochure (see Appendix F) was approved by the organizational leader and the DNP project team before the implementation of the DNP project. There were two providers, one clinic manager, and five staff that attended the two separate educational PowerPoint presentations during their lunch break. Providers disseminated the mindfulness educational guideline brochure to patients with primary hypertension (I10) with ages ranging from 20-70 years old over a four-week period. The project lead audited charts on EMR for pre and post blood pressure (BP) readings on patients with primary hypertension (I10), and de-identified the data collected (See Appendix G).

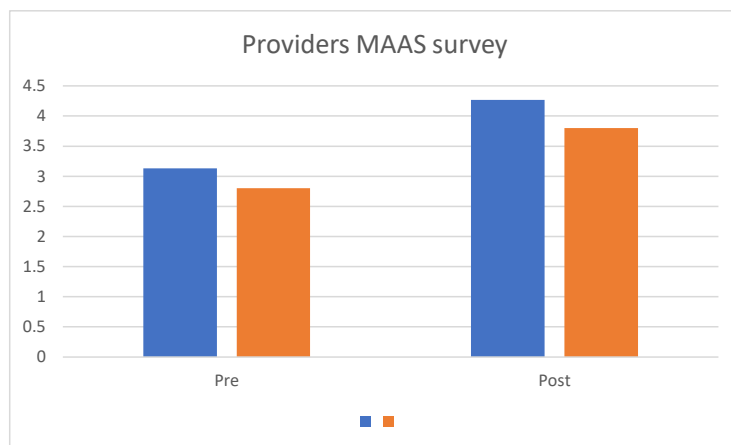
A paired-sample t-test was conducted using the IBM Statistical Package for the Social Sciences (SPSS) software to evaluate the impact of the providers mindfulness training

experience, and to evaluate whether there was a statistically significant difference between the pre and post MAAS questionnaire survey. Table 1 and Table 2 show the results of the paired-sample t-tests.

Table 1

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre	2.96	2	.233	.165
	Post	4.03	2	.332	.235

Table 2



Legend: Provider 1 blue bar; Provider 2 brown bar

The paired-sample t-tests showed a statistically significant improvement from pre-MAAS survey (M=2.96, SD=.233) to post-MAAS survey (M=4.03, SD=.332),  $t(1) = -15.3$ ,  $p$  value  $< .05$ , which shows an improvement in the providers mindfulness experience after the educational mindfulness training. The average decrease in the MAAS survey was -1.07 with a

95% confidence interval ranging from -1.95 to -.180 (Pallant, 2013). Table 3 shows the result of the paired-sample t-tests.

Table 3

**Paired Samples Test**

Paired Differences

	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 Pre- Post	-1.07	.098	.070	-1.95	-.180	-15.28	1	.042

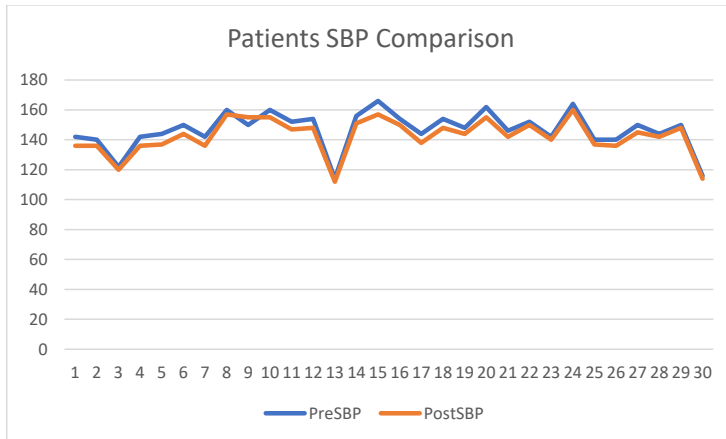
A paired-sample t-tests were performed using the SPSS to evaluate the effectiveness of the mindfulness educational guideline brochure in the systolic blood pressure (SBP) and diastolic blood pressure (DBP) for patients with primary hypertension (I10), and to evaluate whether there was a statistically significant difference between pre-SBP, post-SBP and pre-DBP, post-DBP readings. Table 4 and Table 5 show the results of the paired-sample t-tests on the pre-SBP and post-SBP

Table 4

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PreSBP	146.67	30	12.42	2.26
	PostSBP	142.17	30	11.58	2.11

Table 5



Paired-sample t-tests showed a statistically significant decrease in SBP from pre-SBP (M=146.67, SD=12.42) to post-SBP (M=142.17, SD=11.58),  $t(29) = 13.17$ ,  $p < .05$ , which shows an improvement in patients SBP after the implementation of the mindfulness educational guideline intervention. The average decrease in SBP was 4.50 with a 95% confidence interval ranging from 3.80 to 5.19 (Pallant, 2013). The eta squared statistic was .83, indicating a large effect size (Cohen, 1988). Table 6 shows the result of the paired-sample t-tests.

Table 6



**Paired Samples Test**

Paired Differences

	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 PreSBP- PostSBP	4.50	1.87	.342	3.80	5.19	13.17	29	.000

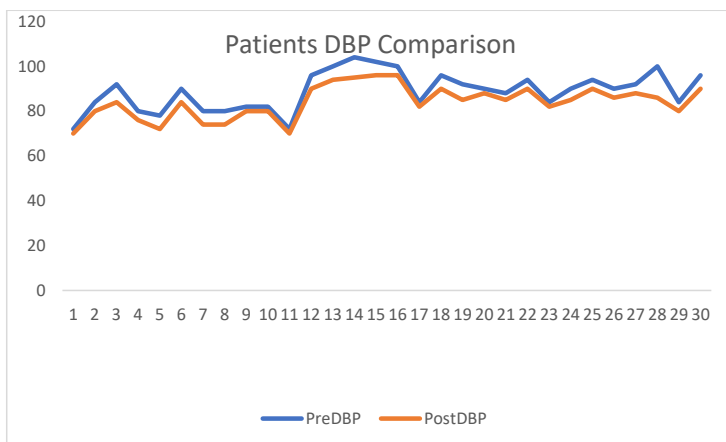
Table 7 and Table 8 show results of the paired-sample t-tests on pre-DBP and post-DBP

Table 7

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PreDBP	89.07	30	8.48	1.54
	PostDBP	84.13	30	7.40	1.35

Table8



The paired-sample t-tests showed a statistically significant decrease in DBP from pre-DBP (M=89.07, SD=8.48) to post DBP (M=84.13, SD=7.40),  $t(29) = 10.67$ ,  $p$  value  $<.05$ , which illustrate an improvement in patient's DBP after the implementation of the mindfulness educational guideline intervention. The average decrease in DBP was 4.93 with a 95% confidence interval ranging from 3.98 to 5.87. The eta squared statistic was .76, which indicated a large effect size (Cohen, 1988). Table 9 shows the result of the paired-sample t-tests

Table 9

### Paired Samples Test

#### Paired Differences

	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 PreDBP- PostDBP	4.93	2.53	.462	3.98	5.87	10.67	29	.000

### Discussion of the Findings

Hypertension is a major health issue that is linked to lifestyle (Arani, Taghadosi, & Gilasi, 2017). Multiple studies have shown a direct association between hypertension and lifestyle factors such as diet, low physical activity, and maladaptive coping skills (Arani et al., 2017). Mindfulness training lowers blood pressure in hypertensive patients through a program that complements behavioral lifestyle modification (Solano-Lopez, 2018). The mindfulness educational guideline was successfully implemented at the project site for those patients with primary hypertension. During the six-week DNP project implementation, the project lead was at the project site between four to five times a week to provide positive support to the stakeholders, who disseminated the mindfulness educational guideline brochure to their patients with primary

hypertension. The project lead also encouraged the stakeholders to share their feedback and to ask questions as they continue to implement the DNP project at the project site. After the four-week mindfulness training at home, the patients were encouraged to share their feedback with the stakeholders. The patients reported that they felt a sense of calmness, less stress, better sleep, and more mindful of their breathing and current thoughts and emotions. Providers also gave feedback that they noticed positive outcomes with their patients that participated in the mindfulness training at home. According to Ponte-Marquez et al. (2019), mindfulness training assists participants to become less judgmental and more accepting of themselves (Ponte-Marquez et al., 2019).

The project site had two providers, as well as one clinic manager and five staff members. The mindfulness training was provided to everyone at the project site. However, since the providers disseminated the mindfulness educational guideline brochure to their hypertensive patients, they were the only one that had to answer the pre and post MAAS questionnaire survey. The clinic manager and staffs were invited to participate in the mindfulness training to get their buy-in and support on the DNP project. The pre and post MAAS questionnaire scores were compared by utilizing the paired-sample t-tests that showed a p-value of  $<0.05$ . The result showed a significant improvement in the providers mindfulness experience after the educational training.

Chart audits on EMR for pre-BP readings was obtained for 27 clinic days during the dissemination of the DNP project. The pre-BP data collected was 100. The chart audit on EMR for post-BP readings was obtained for 11 clinic days during the dissemination of the DNP project. The post-BP data collected was 30 (See Table 10)

Table 10

	Pre BP EMR chart audit	Post BP EMR chart audit
<b>Week 1</b> October 25 to November 1, 2019	25	
<b>Week 2</b> November 4 to November 8, 2019	20	
<b>Week 3</b> November 11 to November 15, 2019	20	
<b>Week 4</b> November 18 to November 22, 2019	15	15
<b>Week 5</b> November 25 to November 29, 2019	16	12
<b>Week 6</b> December 2 to December 3, 2019	4	3
<b>Total</b>	100	30

Providers disseminated the mindfulness educational guideline brochure to their patients with primary hypertension. Patients with primary hypertension returned to clinic after one-month, if their SBP was greater or equal to 140 mm/Hg or DBP was greater or equal to 90 mm/Hg. The de-identified pre and post BP reading values were compared by utilizing the paired-sample t-tests that showed a p-value of <0.05. The results showed a significant improvement in blood pressure after the one-month implementation of the mindfulness educational guideline intervention. The average decrease in SBP was 4.50 and the average decrease in DBP was 4.93 in a four-week period. The free mindfulness training provided in the brochure was an eight-week program. As hypertensive patients continue to consistently practice the mindfulness training program at home, their blood pressure will continue to decrease. These findings are comparable to the studies of Bell (2015), Ponte-Marquez et al. (2019), Solano-Lopez (2018), Wright et al. (2018).

#### **Significance/Implications for Nursing**

Hypertension is a modifiable symptom that can be controlled through pharmacological or

non-pharmacological methods (Ali et al., 2018). It is one of the most non-communicable disease urgencies that can be prevented and treated globally. Hypertension is significantly affecting the health of the general population and it has a greater impact on cardiovascular mortality (Loucks et al. 2019). In the United States, only half of the population has controlled hypertension (Loucks et al., 2019). Even with the advances in hypertension prevention and treatment, a high proportion of hypertensive patients continue to exist (Solano-Lopez, 2018). The treatment goal of hypertension is prevention and reduction of its morbidity and mortality. This can be accomplished through lifestyle modification, either alone or in combination with pharmacological therapy (Arani et al., 2017). Lifestyle modifications, such as mindfulness training interventions, showed a positive outcome in patients with hypertension (Younge et al., 2015). A study by Jazaieri, Mcgonigal, Jinpa, Doty, & Goldin (2014) concurred that mindfulness intervention is a non-pharmacological approach used to lower hypertension.

The significance of this DNP project is to reduce high blood pressure in the hypertensive patient population by utilizing a non-pharmacological approach, the mindfulness training intervention. Mindfulness training intervention illustrates advantages in mental and physical health outcomes (Villalba et al., 2019). Since it is a non-pharmacological approach to control hypertension, mindfulness training is cost effective and without adverse effects (Wright et al., 2018). It can also achieve a positive health outcome in a short period of time (Vestal, 2017). Multiple literature review illustrates mindfulness training intervention as an evidence-based practice that improves hypertension. In addition, it promotes a positive health outcome, and can help decrease associated costs in the healthcare industry.

The mindfulness educational guideline was approved by the organizational leader and made into a policy at the project site. Providers are expected to disseminate this mindfulness

educational guideline to all their patients that will benefit from the positive outcome of the mindfulness training intervention. Active participation and adherence to this policy by the providers is imperative in making this mindfulness training intervention a long-term success. Also, hypertensive patients can have their BP readings through chart audits after the completion of the eight-week mindfulness program, as well as six months later, and one year later to continue monitoring the effects of mindfulness training intervention.

Mindfulness educational guideline intervention will make an impact to the nursing profession because it will enhance the quality of life of the hypertensive patient population. It can also be utilized as a health promotion, disease prevention, and chronic care management intervention for the patient population with various health conditions. A study by Ponte-Marquez et al. (2019) showed that mindfulness training intervention also had a positive effect in patients with anxiety, depression, and high stress level patients. This mindfulness training intervention is cost effective and does not require sophisticated equipment, hence it is easy to improve the community's population health by implementing it in a variety of clinical settings, conferences, workshops, community outreach events, schools, and churches.

#### **Limitations**

There were several limitations that were identified during this QI project. One important limitation identified was time in collecting the post BP readings. The mindfulness educational brochure was disseminated for 6 weeks; however, only two weeks were available in gathering the post BP reading data since patients performed the mindfulness training at home for one-month before returning to the clinic. More data would have been collected if there was enough time for all participants to return to the clinic after their one-month at-home mindfulness training. One hundred brochures were disseminated to the participants and only thirty

participants returned after the one-month period. The second limitation identified was some participants were unable to return to the clinic for their post BP readings after one-month secondary to transportation issues, illness, or admission to the hospital. The third limitation identified was a small sample of providers at the project site. There were only two providers that disseminated the mindfulness educational guideline brochure to their hypertensive patients.

### **Project Design**

Since these limitations were identified early, the project lead encouraged the providers to disseminate the mindfulness educational brochures once the project team approved the QI project. The project lead encouraged the stakeholders to provide feedback and to ask questions as they continued to implement the QI project to make adjustments during the implementation process. Moran et al. (2017) mentioned that it is normal to create adjustments as the QI project progresses. The organizational leader approved the mindfulness educational guideline as a policy to promote providers compliance in disseminating the mindfulness intervention to all patients that may benefit from it.

### **Recruitment Sample**

This QI project utilized convenience sampling of participants, which consisted of two providers. The mindfulness educational training was initially provided on October 17, 2019 and repeated on October 24, 2019. The hypertensive patients at the project site were the indirect population of this QI project. The providers disseminated the mindfulness educational guideline brochures to all primary hypertensive patients during the one-month implementation process.

### **Data Analysis**

Paired-sample t-tests were utilized to compare the pre and post MAAS survey data for the providers, and pre and post BP reading values for the patients with hypertension. Data resulted in

a significant improvement after the mindfulness intervention. However, after the one-month implementation, only thirty participants returned to the clinic for the post-BP readings. There was a total of one hundred participants for the pre-BP readings.

#### **Dissemination**

The results of the QI project will be disseminated through a PowerPoint presentation to the stakeholders at the project site during lunch break on February 6, 2020. This QI project will be presented to instructors and colleagues at Touro University Nevada (TUN) on February 14, 2020 at 9 am. A poster presentation will be created for the Research Day at TUN on March 12, 2020. In addition, the project lead was invited to present this QI project in the Asian American/Pacific Islander Nurses Association (AAPINA) nursing conference this year with date to be announced. Furthermore, this QI project will be submitted to the National Conference for Nurse Practitioner in Spring 2020. Lastly, the QI project will be submitted to the Doctoral of Nursing Practice Repository.

#### **Project Sustainability**

Based on the positive outcome of this QI project, the organizational leader and stakeholders at the project site decided to continue the mindfulness educational intervention to all their patients and continue to monitor the positive effects in a yearly or as needed basis. The project lead is willing to support, collaborate with the stakeholders, and to serve as a consultant for future improvement of this QI project. Providers adherence to this lifestyle modification and non-pharmacological approach policy will enhance the sustainability of this mindfulness intervention at the project site.



### **Conclusion**

As the prevalence of hypertension continue to rise globally (Nejati et al., 2015), it is imperative to continue to find ways to control hypertension through pharmacological and non-pharmacological methods (Ali et al., 2018) to decrease its morbidity, mortality, and an increasing cost associated with hypertension in the healthcare industry. Mindfulness intervention is a non-pharmacological approach that have shown positive results in decreasing hypertension (Jazcieri et al., 2014). This QI project illustrated that implementing the evidence-based mindfulness educational guideline improved the blood pressure of the hypertensive patients. However, further study is needed to investigate the mechanism of how the mindfulness intervention influences blood pressure.

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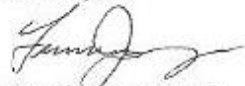
Appendix A: Permission Letter

Francis Jimenez, M.D. Family Medicine  
2810 West Charleston Boulevard Suite 47, Las Vegas, NV 89102  
702-258-4402

To Whom It May Concern:

Lea Ramos, a Doctorate Nursing Practice student at Touro University Nevada has the permission to implement her DNP Project at this healthcare facility.

Sincerely,



Francis Jimenez, M.D.

8/9/2019

Appendix B: Mindfulness Guideline

**Purpose:** To develop a mindfulness guideline for the stakeholders at the project site that can be

**Objectives:**

- To design a mindfulness guideline as a resource to the stakeholders during and after the implementation phase of the DNP Project.
- To decrease blood pressure in patients with hypertension by utilizing the mindfulness guideline
- To promote mindfulness to stakeholders and hypertensive patients at the project site
- To establish a mindfulness guideline to patients with primary hypertension

**Indications:** Primary hypertension, SBP greater or equal to 140 mm Hg, DBP greater or equal to 90 mm Hg

**Contraindications:** Secondary hypertension.

**Steps:**

Assessment:

- Healthcare providers will identify patients with hypertension during the clinic visit
- Healthcare providers will assess if patients have primary hypertension (inclusion) or secondary hypertension (exclusion)

Plan:

- Healthcare providers will decide if hypertensive patients are eligible for the non-pharmacological approach of hypertension management

Interventions:

- Healthcare providers will discuss mindfulness to eligible patients with hypertension

- Healthcare providers will hand out an evidence-based mindfulness brochure (see Appendix F) to patients with primary hypertension to practice at home
- Healthcare providers will ask patients to return for a follow-up check up after four-weeks, if SBP is greater or equal to 140 mm Hg, or DBP greater or equal to 90 mm Hg at the time of clinic visit
- Healthcare providers will answer patient questions as needed

## The Mindful Attention Awareness Scale (MAAS)

Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

1	2	3	4	5	6
almost always	very frequently	somewhat frequently	somewhat infrequently	very infrequently	almost never

\_\_\_\_\_ 1. I could be experiencing some emotion and not be conscious of it until sometime later.

\_\_\_\_\_ 2. I break or spill things because of carelessness, not paying attention, or thinking of something else.

\_\_\_\_\_ 3. I find it difficult to stay focused on what's happening in the present.

\_\_\_\_\_ 4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.

\_\_\_\_\_ 5. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.

\_\_\_\_\_ 6. I forget a person's name almost as soon as I've been told it for the first time.

\_\_\_\_\_ 7. It seems I am "running on automatic," without much awareness of what I'm doing.

\_\_\_\_\_ 8. I rush through activities without being really attentive to them.

\_\_\_\_\_ 9. I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.

\_\_\_\_\_ 10. I do jobs or tasks automatically, without being aware of what I'm doing.

\_\_\_\_\_ 11. I find myself listening to someone with one ear, doing something else at the same time.

\_\_\_\_\_ 12. I drive places on 'automatic pilot' and then wonder why I went there.

\_\_\_\_\_ 13. I find myself preoccupied with the future or the past.

\_\_\_\_\_ 14. I find myself doing things without paying attention.

\_\_\_\_\_ 15. I snack without being aware that I'm eating.

## Re: Form Submission - Contact form - Asking permission to use the MAAS questionnaire

Inbox



**Kirk Warren Brown** <kwbrown@vcu.edu>

Mon, Jul 29, 12:25 PM (4 days ago)

to me

Yes you are welcome to use the MAAS for your study. You can find the scale, along with background normative and other information, on the 'Lab > Tools for Researchers' page of my Lab website, the link for which is below. The 'Publications' page has papers related to the validation of the MAAS. See especially Brown and Ryan (2003).

All the best with your research,

Kirk

Kirk Warren Brown PhD  
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Director • COBE Contemplative Science and Education Core  
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T 804.828.6754 F 804.828.2237  
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Senior Editor, [Oxford Handbook of Hypo-egoic Phenomena \(2016\)](#). Oxford U Press.  
Senior Editor, [Handbook of Mindfulness \(2015\)](#). Guilford Press.  
Academic Editor, PLOS ONE

Appendix E: PowerPoint Presentation



**EDUCATIONAL  
PRESENTATION ON  
HYPERTENSION &  
MINDFULNESS PROGRAM**

LEA RAMOS, APRN-BC

APRIL 2, 2019

## HYPERTENSION

-  Asymptomatic condition
-  Major public health issue
-  Affects 68 million adults in US
-  Major risk factor of global cardiovascular disease
-  Approximately 9.4 million deaths annually in the world



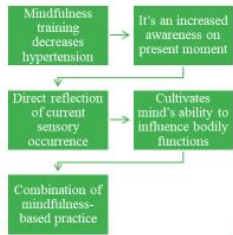
## HYPERTENSION



- Leading preventable risk factor for cardiovascular disease
- Pharmacological & nonpharmacological approaches
- Pharmacological therapy is preferred treatment
- Nonpharmacological intervention
- Nonpharmacological therapy lowers blood pressure



## MINDFULNESS TRAINING PROGRAM



## MINDFULNESS TRAINING

Sit with eyes closed. Pay attention to thoughts. Attention to breathing. Accept the present moment

## MINDFUL BREATHING



-  Slow and mindful breathing
-  Breath from the diaphragm
-  To check if one is breathing through the chest or belly

## BODY SCANNING



Body	Body scanning technique
Discover	Discover where's tension and pain
Identify	Identify reaction to tension and pain

## MINDFUL EATING

Mindful eating technique

- ▶ Being aware of present moment when eating



## OTHER MINDFULNESS PRACTICE

- Mindful movements
- Mindful walking
- Mindfulness of emotions
- Mindfulness of thoughts



## MINDFULNESS GUIDELINE

**Purpose:** To develop a mindfulness guideline that can be utilized as a non-pharmacological approach in lowering the blood pressure in hypertensive patients

**Objectives:**

- To decrease blood pressure in patients with hypertension by utilizing the mindfulness guideline brochure
- To promote mindfulness to stakeholders and hypertensive patients at this primary care clinic
- To establish a mindfulness guideline to patients with hypertension

**Indications:** Primary hypertension, SBP greater than 140 mm Hg, DBP greater than 90 mm Hg

**Contraindications:** Secondary hypertension

**Steps:**

**Assessment:**

- Healthcare providers will identify patients with hypertension during clinic visit
- Healthcare providers will assess if patients have primary hypertension (inclusion) or secondary hypertension (exclusion)

**Plan:**

- Healthcare providers will decide if hypertensive patients are eligible for non-pharmacological approach of hypertension management
- Healthcare providers will discuss mindfulness to eligible patients with hypertension
- Healthcare providers will hand out an evidence-based mindfulness brochure to patients with hypertension
- Healthcare providers will ask patients to return to clinic for a follow-up check up after four weeks, if SBP is greater than or equal to 140 mm Hg, or DBP is greater than or equal to 90 mm Hg at the time of visit



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Appendix F: Mindfulness Brochure



**MINDFUL MEDITATION**

- Increased awareness through focused attention on experiencing the present moment.
- A direct reflection of current sensory and mental occurrence without interruptions.
- A cultivation of the mind's ability to influence bodily functions.

**MINDFUL RESEARCH**

- Multiple studies indicate that mindfulness training decreases blood pressure in hypertensive patients and other chronic diseases.
- Slow and mindful breathing helps decrease the heart rate and therefore helps lower the blood pressure.
- Mindful movements like yoga exercises helps decrease blood pressure.
- Other mindfulness practices like mindful walking, mindful eating, mindful of emotions and thoughts help focus in the present moment.

FREE MINDFULNESS TRAINING  
<https://Palousemindfulness.com>  
 Mindfulness App: The Mindfulness App, Relax, Calm, Focus and Sleep.

**MINDFUL BREATHING**

- Comfortably sit or lay down and begin to breathe from the diaphragm. Breathing from the diaphragm (belly) helps anchor your thoughts to the present moment.
- Check if you are breathing from the chest or belly, place one hand on the chest and the other hand on the belly and feel which one expands as you inhale and contracts as you exhale. If you feel you are breathing from the chest, breathe deeply while focusing on expanding the belly as you inhale and contract the belly as you exhale.
- Slowly breath in through your nose and count five seconds in your mind and slowly breath out through your mouth and count five seconds in your mind.
- Complete a five cycles of Mindful Breathing: inhaling and exhaling is one full cycle.

**MINDFUL MEDITATION**

- Sit or lay down in a comfortable position in a quiet place with eyes closed for 10 minutes daily (may increase up to 20-30 minutes).
- Pay close attention to your slow rhythmic breathing.
- Acknowledge the thoughts that come up, notice if they are positive or negative, then bring your attention back to your breath.
- Be at peace with all thoughts and feelings in the present moment.

**MINDFUL EATING**

- Mindful eating helps to make good food choices, develops an awareness of physical and psychological hunger, and brings into consciousness satiety cues which can promote healthful eating in response to those cues.
- It is remaining in the present moment when you are eating, paying close attention to the effect of food in the senses, and noting physical and emotional sensations while eating.

**MINDFUL WALKING**

- Mindful walking helps to maintain focus in the present moment as you raise your leg and place your foot with each step.
- The goal is to bring your awareness physical sensations, thought processes, and emotional responses without losing focus of each relaxed breath.

**BODY SCANNING**

- Body scanning is used during mindfulness training while in the act of meditation. It involves bringing your attention to the body starting from your head and slowly moving down to your feet, becoming aware of physical sensations in different parts of your body.
- It helps you discover where you hold tension, acknowledge areas of pain, and identifies how you react to tension and pain.
- The goal is to learn how to keep your mind in the present moment that leads to feelings of control and acceptance.

Appendix G: Chart Audit

Subject	AGE	GEN	Pre BP	Post BP
1	45	M	142/72	136/70
2	60	F	140/84	136/80
3	65	M	122/92	120/84
4	63	F	142/80	136/76
5	64	M	144/78	137/72
6	67	F	150/90	144/84
7	58	M	142/80	136/74
8	67	F	160/80	157/74
9	59	F	150/82	155/80
10	64	F	160/82	155/80
11	70	F	152/72	147/70
12	45	F	154/96	148/90
13	34	M	114/100	112/94
14	54	F	156/104	151/95
15	59	M	166/102	157/96
16	62	F	154/100	150/96
17	25	M	144/84	138/82
18	62	F	154/96	148/90
19	53	M	148/92	144/85
20	43	M	162/90	155/88
21	43	M	146/88	142/85
22	68	F	152/94	150/90
23	53	F	142/84	140/82
24	43	M	164/90	160/85
25	56	M	140/94	137/90
26	51	F	140/90	136/86
27	29	F	150/92	145/88
28	59	M	144/100	142/86
29	59	M	150/84	148/80
30	31	F	116/96	114/90

Appendix HStatistics Review of Project DesignC. Vanier, Ph.D., Touro University Nevadacheryl.vanier@tun.touro.edu

I reviewed your proposed data collection and statistical analysis. Some of the text below is my effort to paraphrase your study as I understand it, while in other instances there are some recommendations for clarifying or improving the design or statistical approaches. If I get something wrong, consider whether it was a miscommunication or if you haven't completely thought through that piece of the study. Please contact me if anything is unclear.

Here's my understanding of your design: You will provide mindfulness training to providers and assess what they know before and after the training. [Independent variable: before/after test, Dependent variable: test score; the data will be paired, so paired t-test, sign test, or Wilcoxon signed rank test- Good job!]

Providers will then disseminate brochures to patients, and 30 chart audits will look at their blood pressure before and 4 weeks after.

- I have a question here: given that it takes more than one visit to establish hypertension, and that blood pressure can vary quite a bit by person:
  - o Are you going to pull a single chart and get the blood pressure readings for one person before and after (a paired design)? This would be best.
  - o Will it be noted in the chart that the person got the brochure, or are you going forward with a sort of 'intention to treat' analysis?
  - o Do you have exclusion criteria for people who started on blood pressure medications between your before and after measurements?
  - o Don't you need to take the average or maximum values for 2-3 visits to get reliable numbers? Blood pressure from one visit may be very misleading. Did you allow enough time to get those numbers?

[I think: Independent variable: before/after test, Dependent variable: average blood pressure (you

can do systolic and diastolic separately, or perhaps MAP); the data will be paired, so paired t-test (probably), or possibly a sign test, or a Wilcoxon signed rank test]

### **Guidelines for implementation of protocol/education projects**

This guide is focused on a project in which a group of practitioners/other individuals responsible for triage or care are educated in some way. The improvement in patient treatment/outcomes is then assessed from a chart review.

**Project design:** This type of design has two phases and correspondingly two populations of interest. The phases are treated separately below.

#### **Phase I. Educate/Implement the program**

Population of Interest: the practitioners or others being educated

Variables: Before/after intervention quiz scores, perhaps? Best practice would be to have quizzes that weren't precisely the same, so you know they didn't just learn your quiz. This could also take the form of observing behaviors before and after.

- Both the program you present and the instrument you use to collect information should be validated in some way. If can find published items that are already validated, great. At the very least, make sure that the program and instrument have been reviewed by a couple of knowledgeable individuals to make sure the information therein is complete (content validity), relevant, and correct.

Analysis: A paired t-test or Wilcoxon test comparing before and after scores. If behaviors (yes/no) you may want a McNemar's test.

#### **Phase II. Measure impact on patients through chart review**

Population of Interest: patients

Variables: Before/after intervention referrals/outcomes/etc.?

Analysis: A t-test or Mann-Whitney test comparing before and after, if the data are at least ordinal. If nominal data (such as yes/no), you may want a Fisher's exact test or chi-square test. If you have a more complicated design, you will need more complicated statistics.