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Knowledge of the 2017 American Heart Association Hypertension Guidelines

Kelsey Creel

Kristan Kelly

Linda Turner

Knowledge of the 2017 American Heart Association

Hypertension Guidelines

By

Kelsey Creel

Kristan Kelly

Linda Turner

A Project

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Graduate Committee Approval

The Graduate Committee of
Kelsey Creel, Kristan Kelly, and Linda Turner
hereby approves their research project as meeting
partial fulfillment of the requirements for the Degree of
Master of Science in Nursing

Date_____

Approved_____

Committee Chair

Approved_____

Committee Member

Approved_____

Committee Member

Approved:

_____

Director of Graduate Studies

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Abstract

The primary purpose of this project was to determine the knowledge of nurse practitioners in Mississippi regarding the 2017 American Heart Association Hypertension Guidelines. Following approval by the Institutional Review Board (IRB), the researchers utilized a descriptive, quantitative survey design to evaluate the knowledge of Mississippi nurse practitioners of the 2017 American Heart Association Hypertension Guidelines in regards to diagnosis and management of hypertension. Utilizing social media, the researchers targeted specific Facebook sites for nurse practitioners who practice in the state of Mississippi. Data was gathered through SurveyMonkey using a questionnaire. The data gathered from the completed questionnaires were then subjected to analysis. Data were analyzed to determine if the nurse practitioner was knowledgeable of blood pressure diagnosis and management according to the 2017 American Heart Association Hypertension Guidelines. To be considered knowledgeable in management and/or diagnosing hypertension, the provider had to score 80 percent in each portion of the survey. More than half of the nurse practitioners who participated were considered knowledgeable in managing hypertension according to the 2017 American Heart Association Hypertension Guidelines. Out of the 52 surveyed, 30 nurse practitioners were considered knowledgeable in diagnosing hypertension according to the 2017 American Heart Association Hypertension Guidelines. 28 of the 52 practitioners were considered knowledgeable in managing hypertension using the 2017 American Heart Association Hypertension Guidelines. Based on the results, overall nurse practitioners are knowledgeable of the 2017 American Heart Association Hypertension Guidelines.

Table of Contents

Chapter I

Dimensions of the Problem

Hypertension is a nationwide health issue that continues to rise in prevalence each year. During 2015–2016, the prevalence of hypertension was 29.0 percent, with percentages increasing with age; age group 18–39 was estimated to be at 7.5 percent; age group 40–59 was estimated to be at 33.2 percent; and age group 60 and over was estimated to be 63.1 percent (CDC, 2017). Untreated or uncontrolled hypertension can lead to a higher risk for other health threats, such as heart attack, stroke, kidney failure, peripheral artery disease, and many other disease processes. While controlled hypertension is a risk factor for cardiovascular diseases, the risk can be lowered and should be a priority for anyone with a known diagnosis of hypertension. Regular blood pressure screening and education of what an individual's blood pressure target range should be is an important aspect of being a healthcare provider today. To accurately treat patients and educate them on target blood pressure ranges, it is imperative that providers remain current on the latest and most accurate blood pressure guidelines created according to the most current research. Prevention of hypertension begins with the knowledge of the recommended guidelines.

Many providers argue that the 2017 American Heart Association Hypertension Guidelines, included in Appendix A, will only increase the prevalence of hypertension diagnoses in America by diagnosing much lower blood pressures as hypertensive. These healthcare providers that are not supportive of the 2017 American Heart Association Hypertension Guidelines are more supportive of the Joint National Committee 8 hypertension guidelines that were published in 2013 (Page, 2014). The Joint National

Committee (JNC 8) guidelines (See Appendix B), published in 2014 advise higher blood pressure goals and less use of several types of antihypertensive medications. JNC 8 states that in patients 60 years or older who do not have diabetes or chronic kidney disease, the goal blood pressure level is <150/90 mm Hg, and in patients 18 to 59 years of age without major comorbidities, and in patients 60 years or older who have diabetes, chronic kidney disease (CKD), or both conditions, the revised goal blood pressure level is <140/90 mm Hg. (AHA, 2017) Tables are provided in Appendices A and B comparing the JNC 8 hypertension parameters (See Appendix B) to the AHA 2017 hypertension parameters (See Appendix A).

The revised American Heart Association guidelines were developed with nine health professional organizations and were published by a panel of 21 scientists and health experts who reviewed more than 900 published studies (AHA, 2017). The American Heart Association has stated that normal parameters for blood pressure are systolic pressures of less than 120/80 mm Hg; elevated blood pressure parameters are systolic pressures between 120-129 and a diastolic pressure less than 80; stage one hypertension is defined by systolic pressures between 130-139 or diastolic pressures between 80-89; stage two hypertension is defined by systolic pressures of at least 140 or diastolic pressures at least 90 mm Hg; and a hypertensive crisis is defined by a systolic pressure over 180 and/or diastolic pressures over 120 (AHA, 2017). The current project's purpose was to determine if primary care providers in Mississippi are knowledgeable of the 2017 American Heart Association Hypertension Guidelines. A survey with a questionnaire was the basis of determining if these targeted providers are knowledgeable of the 2017

American Heart Association Hypertension Guidelines, which are the most current

hypertension guidelines published.

Statement of Purpose

The purpose of this research project is to determine if primary care providers in

Mississippi are knowledgeable of the 2017 American Heart Association Hypertension

Guidelines and are using these guidelines appropriately to diagnose hypertension in their

patients, see Appendix A. The American Heart Association has stated that normal

parameters for blood pressure are systolic pressures of less than 120/80 mm Hg; elevated

blood pressure parameters are systolic pressures between 120-129 and a diastolic

pressure less than 80; stage one hypertension is defined by systolic pressures between

130-139 or diastolic pressures between 80-89; stage two hypertension is defined by

systolic pressures of at least 140 or diastolic pressures of at least 90 mm Hg; and a

hypertensive crisis is defined by a systolic pressure over 180 and/or diastolic pressures

over 120 (AHA, 2017). The 2017 American Heart Association Hypertension Guidelines

have eliminated the category of prehypertension, categorizing patients as having either

elevated (120-129 and less than 80) or stage I hypertension (130-139 or 80-89). The

earlier guidelines classified 140/90 mm Hg as stage 1 hypertension are now classified as

stage 2 hypertension under the new guidelines (AHA, 2017). With the changes made to

the guidelines, it is especially important for providers to be aware of the most current

studies and published guidelines to accurately prevent, diagnose, and treat hypertension.

Significance of the Research Project

This project is significant to primary care providers treating hypertensive patients, to

research, and to health education. Primary care providers and nurses must be aware of the

ever-changing prevalence of hypertension and the way it affects patients so they can treat them in the most effective way. Studies mentioned in the American Heart Association hypertension guidelines that determine new lower guidelines for hypertension can assist primary care providers by being more proactive in the treatment of patients, which leads PCPs to being more proactive at preventing cardiovascular diseases (AHA, 2017).

This project is significant to research by leading the way for future research of hypertension, which is as important as it is common. Hypertension will continue to be researched and studied by scientists worldwide. This project can help future studies by supplying research and statistics on the 2017 American Heart Association Hypertension Guidelines.

This project is significant to education by providing more thorough teaching and evaluation of knowledge of the hypertensive guidelines that can improve the quality and efficiency of care. Education of patients is a major part of a healthcare provider's daily job and the new guidelines are especially important for them to educate their patients. The new guidelines will require stricter adherence to diet and exercise to be able to lower their blood pressure ranges. Thorough education on diet recommendations with healthier choices, smaller portions, and less sodium-rich meals must be taught. Thorough education will also need to be taught on appropriate exercise regimens with each patient diagnosed with hypertension.

Theoretical Foundation

Sister Callista Roy's Adaptation Model was the theoretical framework used in this study. The Roy Adaptation Model is significant to this project by determining if patients are adapting to the new changes in their treatment of a hypertension diagnosis set by the

2017 American Heart Association Hypertension Guidelines (Jennings, K.M.,2017).

Healthcare providers may also be adapting to new diagnosing parameters, and therefore

treating their adult hypertensive patients in lower blood pressure ranges requires them to

adjust previous guidelines. Due to hypertension being such a prominent diagnosis,

healthcare providers need to be aware of the most current guidelines for hypertension to

adapt them and to provide the most efficient care to their patients. The purpose of the

Roy's Adaptation Model of Nursing is to promote a theory of interrelated systems that

have the goal of maintaining balance between various stimuli (Jennings, K.M.,2017).

Sister Callista Roy's Adaptation Model of Nursing was developed by Sister Callista Roy

in 1976 (Gonzales,2019). Her theory has been translated into many languages and is still

used all over the world in practice, education, and research. Roy believed in approaching

treatment for each patient with a holistic view. This model is important to society because

it encourages adaptive interventions based on prior research to uphold better nursing care

and more successful patient outcomes. The Adaptation Model of Nursing is composed of

concepts including an adaptive system that determines the way that an individual

responds to changes in his or her daily life, the environment and surrounding social and

environmental factors, an individual's personal health including their diet, family history,

and exercise, and the goal of nursing, which is to provide care for each patient to reach

their healthiest being (Gonzales, 2019). Responding to changes in one's daily life can be

associated with the responsibility of taking a medication every day when an individual

might not be accustomed to that and will need to adapt to that change. A patient's

surrounding social environment could play a role in hypertensive diagnosis and treatment

by reducing the amount of social drinking and including more physical activity. An

individual's personal health relates to hypertensive diagnosis by requiring a change in diet and exercise routine. Controlling hypertension is one of the aspects of providing the best possible care for patients to help them reach their healthiest state. Roy's Adaptation Model assists nurse practitioners and healthcare workers in adapting to the diagnosing and managing hypertension according to the new lower parameters set by the 2017 American Heart Association guidelines. This project's purpose was to determine if healthcare providers are adapting to the newest hypertension guidelines set by the American Heart Association.

Research Questions

1. Are primary care providers knowledgeable of the 2017 American Heart Association Hypertension Guidelines for diagnosing adult patients with hypertension? (See Appendix A)

2. Are primary care providers knowledgeable of the 2017 American Heart Association Hypertension Guidelines for management of adult patients diagnosed with hypertension? (See Appendix A)

Definitions of Terms:

Primary care providers

Theoretical Definition: A healthcare provider (i.e., the nurse practitioner, physician's assistant, or physician) to whom a patient first goes to address a problem with his or her health. (Venes, 2017).

Operational Definition: A licensed nurse practitioner in Mississippi that diagnoses and manages patients with hypertension and answered the questionnaire. See Appendix C.

Knowledgeable

Theoretical Definition: Having or showing knowledge or intelligence. (Merriam-Webster)

Operational Definition: A score of 80% or above on questions 4-8 of the Knowledge of the 2017 American Heart Association Hypertension Guidelines Questionnaire (See Appendix C) to be considered knowledgeable of the diagnosing of hypertension according to the American Heart Association Hypertension Guidelines, and scoring 80% or above on questions 9-13 of the Knowledge of the 2017 American Heart Association Hypertension Guidelines Questionnaire (Appendix C) to be considered knowledgeable of the management of hypertension according to the 2017 American Heart Association Hypertension Guidelines See Appendix C.

American Heart Association

Theoretical Definition: Nation's oldest and largest voluntary organization dedicated to fighting heart disease and stroke. (AHA, 1924)

Operational Definition: an organization that provides the latest guidelines for treatment and management of hypertension to medical providers, with the last update on hypertension guidelines being formed in 2017. See Appendix A.

Hypertension Guidelines

Theoretical Definition: Guidelines that define a condition in which the blood pressure (BP) is higher than 140 mm Hg systolic or 90 mm Hg diastolic on three separate readings recorded several weeks apart (Venes, 2017).

Operational Definition: According to the 2017 American Heart Association Hypertension Guidelines normal parameters for blood pressure is a systolic pressure of

less than 120/80 mm Hg; elevated blood pressure parameters are systolic pressures between 120-129 and a diastolic pressure less than 80; stage one hypertension is defined by systolic pressures between 130-139 or diastolic between 80-89; stage two hypertension is defined by systolic pressures at least 140 or diastolic at least 90 mm Hg; and hypertensive crisis is defined by a systolic pressure over 180 and/or diastolic over 120. (See Appendix A)

Diagnosing

Theoretical Definition: Identify the nature of an illness or problem by examination of symptoms. (Merriam-Webster)

Operational Definition: A problem identified after subjective, objective, and physical exam performed on a patient.

Adult Patient

Theoretical Definition: One who is sick with or being treated for, an illness or injury (Venes, 2017).

Operational Definition: A person that is being seen by a nurse practitioner for a diagnosis of hypertension and is the age of 18 and above.

Management

Theoretical Definition: The process of dealing with or controlling things or people. (Merriam-Webster)

Operational Definition: Pharmacological treatment with medications and nonpharmacological treatment with lifestyle modification recommendations for patients diagnosed with hypertension.

Assumptions

For the purpose of this study, the assumptions were as follows:

1. Nurse practitioners are knowledgeable of the 2017 American Heart Association's Guidelines in their daily practice and management of hypertension.

2. The questionnaire can determine if nurse practitioners are knowledgeable of the 2017 American Heart Association's Guidelines.

3. The nurse practitioners completing the questionnaire were truthful with their answers to the questionnaire.

Summary

The questionnaire completed by nurse practitioners in Mississippi was to determine if primary care providers in Mississippi are knowledgeable of the 2017 American Heart Association Hypertension Guidelines with respect to diagnosing adult hypertensive patients and management of adult hypertensive patients. This chapter also discussed the significance to nursing, research, education, and theory.

CHAPTER II

Review of Literature

Hypertension is a nationwide health problem that continues to be an issue each year. Untreated or uncontrolled hypertension can lead to a higher risk for other health threats such as heart attack, stroke, kidney failure, peripheral artery disease, and many other disease processes. The purpose of this research project was to determine if primary care providers in Mississippi are knowledgeable of the 2017 American Heart Association hypertension Guidelines to diagnose and manage patients with hypertension. There is controversy between healthcare providers that support the 2017 American Heart Association/ American College of Cardiology (AHA/ACC) (See Appendix A) guidelines versus those who are in support of the Eighth Joint National Committee (JNC8) guidelines (See Appendix B). Research studies were reviewed to determine various methods of hypertension management. The researchers also reviewed literature from Sister Callista Roy's Adaptation Model and utilized her adaptation model as the framework for the research project. Her model was chosen to examine how the primary care providers are evolving to the new guidelines provided by the AHA/ACC. Chapter two will review how the literature correlates with what is recommended by the American Heart Association.

Literature Related Review

Sister Callista Roy's Adaptation Model was the theoretical framework used for this research project. Based on Sister Roy's Adaptation Model, adaptation to different stimuli is important for individuals to grow and change. This theory is applied to the

current research project to see if primary care providers were able to change and adapt to the new guidelines provided by the American Heart Association. There have been numerous projects done to review the Adaptation Model to identify how people adapt to different stimuli. Adibelli et al. (2018) completed a study to evaluate patients diagnosed with hypertension who were provided with education management by using the Roy's Adaptation Model. According to Roy's Adaptation Model, it is important that patients with hypertension be proactive in their own health wellness.

The hypothesis of the Adibelli et al. (2018) study was to evaluate the effectiveness of education in patients diagnosed with hypertension using Roy's adaptation model for hypertensive management. This would provide confirmation of the effectiveness of the teaching provided to patients with hypertension when applied to their health.

The methods used in this study were a pre-test, a post-test, and a quasi-experimental design with a control group. The study was completed in family health centers in Erzurum city. There were seven family health centers used in the study that had patients diagnosed with hypertension. These patients were thirty-five years old and older and were able to perform their activities of daily living independently. The study consisted of 155 patients with hypertension who were able to perform their daily living activities independently (Adibelli et al., 2018). 75 patients were randomly selected for the experimental group to visit the family center on Wednesday. Another 80 patients were randomly selected for the control group to visit on Thursday. The pre-test was given in face-to-face interviews during home visits, along with an explanation of the study. An

effective health education method was used for the experimental group; the group

members were also given home visits that the researchers believed to be more effective

and created a positive rapport between the educator and the patient. In the education

portion of the research, the presentations were based on Roy's adaptation model and

utilized the hypertension management guide that the researchers prepared. There were

numerous sessions which used different areas of Roy's model. At the end of the program,

the participants were given a booklet that was considered a refresher for them to be able

to reference in times of uncertainty. The post-test was completed two months after all the

interventions were given. There were not any educational interventions given to the

control group except for the same educational booklet that was given to the experimental

group.

Groups that were identified in the experimental group of this study included the

following: 86.7% of the participants were nonsmokers, and of those patients, 50.7% had

other diseases along with hypertension; 77.3% used their medications routinely. There

was no difference between the disease characteristics in either the experimental or control

groups. The pre- and post-test scores of the self-efficacy scale for adherence/ adaptation

to medical treatment were not statistically significant. Of the hypertensive management,

the difference between the control and experimental group's mean scores were drastically

different. The experimental group scores of the Self-Efficiency scale for

Adherence/Adaptation increased after their participation in the education program

(Adibelli et al., 2018). This would support Roy's theory of adaptation, which proves that

adaptation is crucial for health improvement.

The Adibelli et al. (2018) research study was relevant to the research project because it showed the importance in using Roy's Adaptation Theory with hypertension patients. It was noted that adaptation was beneficial for detection, prevention, and treatment of hypertension. This gave Adibelli et al. (2018) something to build upon and to compare from an educational point of view. It also allows future researchers to see how important education and adaptation is in treating and managing hypertension. This research was very helpful in guiding the current research study because a strong foundation of Roy's Adaptation Model was demonstrated through the reviewed study. The Adibelli et al. (2018) study suggests that education based on Roy's adaptation model can influence desired outcomes for patient care. It is suggested that using the Roy model should be considered in clinical practice.

Mohaissen et al. (2020) conducted a research study with the goal of determining the impact of the 2017 ACC/AHA (See Appendix A) hypertension guidelines on the prevalence and diagnosing of hypertension in young Saudi women. The new diagnostic cut-off value defined by the American Heart Association Hypertension Guidelines of ≥130/80 mmHg is to replace the previous Seventh Joint National Committee guidelines (See Appendix D) threshold of ≥ 140/90 mmHg for the diagnosis of hypertension. The research conducted in this study was to determine the effects of this new diagnostic cut off. Data collections were based on a questionnaire as the method of study for this project.

Mohaissen, et al. (2020) identified a single hypothesis, which was that the prevalence of hypertension markedly increased among young adult Saudi women with

the 2017 ACC/AHA (See Appendix A) classification for hypertension, and the main

predictors were increased BMI and heart rate. The data for this study came from re-

analyzing the results of 518 adult Saudi females between the ages of 17–29 years old who

participated in a hypertension survey conducted in 2016 on undergraduate and

postgraduate students at Princess Nourah Bint Abdulrahman University, Riyadh after

introducing the new diagnostics defined by the 2017 ACC/AHA guidelines (See

Appendix A). Participants were chosen within a time frame of January 2016 to April

2016. After gaining approval from the Institutional Review Board, the researchers

dispersed anonymous questionnaires comprising 65 questions assessing socio-

demographic characteristics, blood pressure history, and risk factors for hypertension. To

begin the studies, participants' blood pressures were taken and documented using the

National Health and Nutrition Examination Survey instructions. Three brachial BP

readings were taken at 5-minute intervals for each participant while resting, recording the

average of the second two readings, and discarding the first reading. Mohaissen, et al.

(2020) compared the differences in the prevalence of hypertension as diagnosed with the

2017/ACC/AHA (See Appendix A) with the JNC7 (See Appendix D) guidelines using

McNemar's test. The researchers analyzed the data using SAS, version 9.4.

Following analysis, the researchers determined that the first hypothesis was

statistically correct. Using the 2017/ACC/AHA (See Appendix A) classification, 27.1%

of participants would be classified as having hypertension, which is significantly higher

than the prevalence of 4.1 percent if the JNC7 (See Appendix D) classification was used.

Mohaissen, et al. (2020) found that 85% of the hypertensive patients in this study had

stage 1 hypertension (systolic BP = 130– 139 mmHg and/or diastolic BP = 80–89

mmHg), and 15 percent had stage 2 hypertension (BP ≥ 140/90 mmHg). The results from

this study show a 7-fold increase in hypertensive diagnoses correlating with the earlier

treatment of hypertension, which is expected to eventually reduce the presence of

cardiovascular mortality and morbidity.

     The study was relevant to the current research project for several reasons. The

basis of the study was hypertension screening in society. The study bolsters the

hypothesis that hypertension cases based on the new classification will increase

prevalence of the disease and management burden on the healthcare system requiring

more interventions and education by healthcare providers, not only in Saudi Arabia but

also in the United States as well. With supporting evidence from other research showing

that lower blood pressure values result in reduced mortality and morbidity, establishing

the true likelihood of hypertension and its risk factors in the community, particularly

among the young, is a necessity.

     Choi et al. (2019) completed a study to compare all-cause and cardiac mortality

using the JNC7 (See Appendix D) and the 2017 ACC/AHA guidelines (See Appendix A).

For this study, the National Health Insurance System-National Health Screening Cohort

(NHIS-HEALS) and Korea National Health, and Nutrition Examination Survey

(KNHANES) were utilized to gather data for comparison. Blood pressure ranges were

classified into three separate groups according to both sets of guidelines, and survival

rates were analyzed with Kaplan-Meier curves and log-rank tests. Blood pressure ranges

from the JNC7 (See Appendix D) guidelines differentiated the hypertension group to

blood pressures of ≥140/90 from the prehypertension group which had blood pressures of 130/80–139/89 and normal blood pressures as <130 and <80. On the contrary, the 2017 ACC/AHA guidelines (See Appendix A) showed inconsistent survival outcomes according to blood pressure ranges classification of normal blood pressure being: <120 and <80, and elevated blood pressures being: 120–129, and <80, and hypertension being diagnosed when ranges are: ≥130/80).

Study populations were followed from January 1, 2006, until the date of a cardiovascular event, death, or December 31, 2015, whichever would occur first. The authors gathered 1,021,208 participants aged 30–74 years whose data were available and excluded individuals who met any of the following criteria (n = 878,590): Younger than 30 or older than 75 years of age; history of hospitalization for a diagnosis of myocardial infarction or stroke, any type of malignant cancer; death in the year of enrollment; single medical record after 2006; and those with missing SBP, DBP, or death data. After these exclusion criteria eliminated many participants, the authors were left with 142,618 participants. Blood pressures were measured at local hospitals, each of which met the internal and external quality control procedures of the Korean Association of External Quality Assessment Service. After participants were required to rest while seated for at least 2 minutes, the blood pressures were taken by digital or automatic monitors during the health examination. All blood pressure measurements, including blood pressure data before the index period, were used to calculate mean blood pressures. The results were able to support that the increase in hypertension diagnosis was around 40.64 percent and 44.8 percent based on the 2017 AHA/ACC guidelines (See Appendix A). These results

were an increase compared to the 9.64 percent and 18.4 percent according to the guidelines from JNC7 (See Appendix D).

This study consisted of several limitations. First, although blood pressure measurement equipment in all health examination institutions received quality assessment, the lack of device uniformity and single visit measurements may have included some variability into the results. Second, the Choi et al. (2019) study utilized factors that could result in over- or under-estimation of the effect of blood pressures on clinical outcomes. Third, there was not an account for antihypertensive medications that may affect the all-cause or cardiovascular mortality and could not confirm whether those who took antihypertensive medications following the JNC7 (See Appendix D) had a significantly lower mortality than those following the 2017 ACC/AHA guidelines (See Appendix A).

Although the recent 2017 ACC/AHA guidelines (See Appendix A) recommend treating patients to reduce systolic blood pressure to be <130 mm Hg and diastolic blood pressure to be <80 mm Hg, it is still unclear whether aggressive blood pressure control results in improved clinical outcomes. In contrast to the 2017 ACC/AHA guidelines (See Appendix A), the JNC7 (See Appendix D) guidelines demonstrated a linear association between blood pressure levels and cardiovascular survival outcomes in two nationwide datasets as well as good discrimination ability in all survival outcomes. Altogether, the results suggest that the JNC7 (See Appendix D) guidelines are more appropriate than the 2017 ACC/AHA guidelines (See Appendix A) in Korean populations.

This is relevant to the current research project because it makes note of why some healthcare providers are in support of the Joint National Commission guidelines rather than the American Heart Association's recommendations. If hypertension cases are based on the new classification, it will increase disease diagnoses and strengthen the burden that is placed on healthcare providers.

Tocci et al. (2020) performed a study to investigate whether patients were being treated for hypertension based on the most recent European guidelines. This research study conveyed that in less than five years, approximately 1.4 billion people would be affected by hypertension and that more than 54% of deaths from ischemic heart disease worldwide would occur due to uncontrolled hypertension. The new guidelines from the European Society of Cardiology/European Society of Hypertension (ESC/ESH) were redefined. According to these new guidelines, the optimal systolic/diastolic BP goals should be 130-139/70-79 mmHg in individuals aged >65 years and <130 mmHg or lower, if tolerated (not <120 mmHg), in those aged 18-65 years, with the only exception of CKD patients, in which systolic BP treatment target should be <140 mmHg to 130 mmHg. The guidelines from the ESC/ESH are comparable to the ACC/AHA guidelines (See Appendix A) with similar parameters. This research group wanted to see if office blood pressures were being treated and diagnosed following the new guidelines.

The researchers set out to seek a real-life appraisal of blood pressure control in three European hypertension centers. These researchers wanted to determine if the current practice was using the new guidelines and if not, how old were the guidelines that were being used. The methodologies of this study were observational, cross-sectional,

and multicenter. Information was gathered from three excellence centers for hypertension located in low-risk areas of Southern Europe. The data was collected onsite via online access to a remote database. Data collection took place between January and April 2019. Blood pressures were obtained in the morning, after five minutes of rest, on the same arm, in a sitting position while in a quiet room, and using validated devices as recommended by the European guidelines. Three blood pressures were taken. The average of the three blood pressure measurements were considered the clinic systolic/diastolic levels. The average of the three measurements determined if the blood pressure was elevated or not.

A sample size of 14,229 individuals underwent assessment or follow-up for a blood pressure assessment. Of these individuals, 4,049 were in the normotensive area, 3,088 were untreated hypertensive patients; and 7,092 were receiving antihypertensive drug therapies. The average office systolic/diastolic blood pressure levels were significantly lower in the treated hypertensive patients than the untreated hypertensive patients. The ACC/AHA guidelines (See Appendix A) were changed due to the association of uncontrolled blood pressure and cardiac disease. With the new standards a higher percentage of hypertensive patients who had been considered "under control" are now classified as "uncontrolled." The blood pressure control rate was reduced from 45 percent to 20 percent in the overall population sample. These findings prove the need to treat hypertensive patients to prevent further complications of cardiovascular disease related to the early diagnosis and management of hypertension. It was stated that due to the limited time-lapse between data analysis and publication of new guidelines that it

cannot be excluded that treating physicians have not modified their practice according to new recommendations.

Tocci et al. (2020) used a large sample size for gathering their data. They also identified the importance for hypertension to be managed earlier due to the correlation between untreated hypertension and cardiovascular disease. This was applied to the current research project by evaluating how the guidelines were utilized in managing and treating patients with hypertension.

Carey et al. (2018) performed a study focused on several factors regarding hypertension and treatments in adults which included how often hypertension occurs in general, the recommended treatments, and how often the blood pressure is elevated above the guidelines given by the 2017 ACC/AHA (See Appendix A) versus the use of the seventh report of the Joint National Committee. According to the 2017 guidelines provided by the American College of Cardiology/ American Heart Association, there are specific parameters and recommendations for providers to follow for prevention, early detection, and the treatment plan for adults diagnosed with hypertension. The 2017 AHA/ACC guidelines (See Appendix A) include parameters for the systolic and diastolic blood pressure and has indicators on when to treat with antihypertensive medications. Early detection and prevention and the appropriate management of hypertension are key.

The hypothesis of the study by Carey et al. (2018) was that the 2017 ACC/AHA guidelines (See Appendix A) would significantly increase the diagnosis of patients with hypertension in adults in the United States. To prove this hypothesis to be true, the adults

in the study would need to be diagnosed with hypertension according to the 2017

ACC/AHA guidelines (See Appendix A) and given the appropriate treatment.

The study was conducted with adult participants using the National Health and

Nutrition Survey. The adults were required to be 20 years of age or older and without any

blood pressure readings during the study visit. Any participants who were missing self-

reported data such as age, sex, tobacco use, or medication use were automatically

removed from the study. After all invalid participants were removed, the total number of

study participants was 9,623. Data was collected using questionnaires and clinic exams.

The questionnaire included two questions: 1.) Have you ever been told by a doctor or

other healthcare professional that you had hypertension, also called high blood pressure?

and 2.) Are you now taking prescribed medication for high blood pressure? In the clinic

exam, the blood pressure was taken by a trained doctor who used a mercury

sphygmomanometer and correct size cuff. The blood pressure cuff size was determined

by an arm measurement of each participant's mid-right arm circumference to be the most

accurate. The participant was required to remain seated for 5 minutes. There were three

blood pressures obtained within thirty seconds of each other, then the mean of the three

was taken and used as the systolic blood pressure and diastolic blood pressure. The

quality control measures were constantly in place to ensure proper training was given.

The participants were then put into different groups which included: history of

cardiovascular disease and no history of cardiovascular disease with 10 year predicted

cardiovascular disease risk <5%, 5-10%, 10-20%, and greater than 20%.

The study was successful in proving the hypotheses. Hypertension prevalence increased to 45.6% when using the 2017 AHA/ACC guidelines (See Appendix A) in comparison to 31.9% using the JNC7 (See Appendix D) guidelines in all categories such as age, gender, race, and cardiovascular disease risk. Hypertension had a higher occurrence when the 2017 AHA/ACC guidelines (See Appendix A) were used. There were 36.2% of participants who were recommended to initiate hypertensive medication using the 2017 AHA/ACC guidelines (See Appendix A) for treatment and management of hypertension compared to the 34.3% who were using the JNC7 (See Appendix D) guidelines for treatment and management.

This study was relevant to the current research project because it demonstrated that the 2017 AHA/ACC guidelines (See Appendix A) do increase the hypertension diagnosis rate and it allowed the researchers to evaluate how well the 2017 AHA/ACC guidelines (See Appendix A) were being followed by primary care providers in the clinic setting.

Han et al. (2019) performed a study from the 2017 ACC/AHA guidelines (See Appendix A) that essentially lowered the hypertension diagnosis parameters. The study estimates how starting early treatment for hypertension can significantly decrease the risk for acute myocardial infarction, stroke, death, and the potential healthcare costs for the patients according to the 2017 guidelines. The 2017 guidelines for blood pressure parameters given by the American College of Cardiology provides specific regulations on when to initiate treatment and what kind of treatment to begin. These guidelines expanded the patient population for medication intervention. Hypertension is a growing disease in the United States that also involves and affects other comorbidities such as

hyperlipidemia, type 2 diabetes mellitus, chronic kidney disease, and cardiovascular disease.

The study by Han et al. (2019) hypothesis was that the early initiation of hypertension treatment can significantly decrease the patient's risk for acute myocardial infarction, stroke, death, and an increase in healthcare costs based on the 2017 ACC/AHA guidelines (See Appendix A). To prove the hypothesis, the participants in the study would have a diagnosis of elevated blood pressure or would need to qualify for treatment with antihypertensive medications using the 2017 ACC/AHA guidelines (See Appendix A).

The study was conducted with adult participants using analysis from paid claims data of a large health insurance provider in the US (Han et al., 2019). This was used to establish patients that were considered high risk according to the guidelines provided by the 2017 ACC/AHA (See Appendix A). The study included patients who either had treatment after a major event related to cardiovascular disease or patients that did not initiate any treatment with antihypertensive medications. The patients were required to maintain health insurance at least six months prior to the study starting and twelve months after their index date. Patients were excluded from the study if they were female and pregnant, if they had filled or refilled any antihypertensive medications prior to their diagnosis index date, or had a stroke, acute myocardial infarction, or any other major cardiovascular disease event prior to their diagnosed index date. The data was reviewed based on the patients' baselines characteristics across treatments using the Pearson's Chi square test or t test. This allowed them to visualize the patients' differences. It compared

the use of antihypertensive drug use and the risk for cardiovascular disease events using the Cox proportional hazards regression (Han et al., 2019). This identified the link between the initiation of treatment and the time of the acute event. When analyzing the impact of early intervention using antihypertensive medication on the cost for the three different services used (medical, pharmacy, and total healthcare), the researchers used the generalized linear model procedures. Three other areas were analyzed to provide more extensive information regarding the early initiation of treatment. These areas included: effects for patients with diabetes, chronic kidney disease, and obesity, patients treated using only the initial antihypertensive medication and the outcomes, and antihypertensive medication used in early intervention that was started within a 120-day window after the diagnosis date.

The Han et al. (2019) study was successful in proving the hypothesis partially correct. Early initiation of treatment with antihypertensive medications were noted to significantly reduce the risk of a major cardiovascular event and death (Han et al., 2019). Patients of the age of 75 and over were not likely to start antihypertensive therapy. Males were less likely to start any intervention. The patients with an elevated blood pressure were less likely to start treatment compared to patients with an actual hypertension diagnosis. Patients with other comorbidities such as chronic kidney disease, type 2 diabetes, and hyperlipidemia were less likely to fill a prescription for antihypertensive medication. The patients living in the South, West, and Midwest were more likely to initiate treatment than those patients living in the Northeast. The results using the Cox model stated that starting early treatment with antihypertensive medication prior to

having a major cardiac event would significantly reduce the risk of stroke, death, and acute myocardial infarction. When starting treatment prior to a major cardiac event, the risk declines for acute myocardial infarction by 59%, stroke by 60%, and death by 10%. Patients with a diagnosis of hyperlipidemia had a lower possibility of having an acute myocardial infarction, stroke, and death which is thought to be due to their increased understanding of their diagnosis of cardiovascular disease that could have led to positive lifestyle changes. Hypertensive medication is also identified with lower healthcare costs. The results regarding early treatment before 120 days of being diagnosed were not significantly changed.

This study was applied to the current research project because it determined that early intervention using the 2017 ACC/AHA guidelines (See Appendix A) prevented major cardiac events, stroke, and death. This applies to the current research because of the importance of knowledge in early diagnosing and managing patients with hypertension. With the 2017 guidelines being stricter and broadening blood pressure parameters, it makes the diagnosis of hypertension more likely. This study gave the researchers something to compare and assess if primary care providers were able to follow the guidelines when diagnosing and managing their patients with hypertension.

Warren-Findlow et al. (2020) performed a study to see if patients were adhering to self-care behavior in managing their hypertension after the guidelines were changed to diagnose and treat hypertension. The researchers utilized the revised 2017 guidelines from the American College of Cardiology and American Heart Association. They compared the new guidelines to the old guidelines of JNC7 (See Appendix D) from 2003

and JNC8 from 2014. The researchers identified that hypertension is a major problem in the US that is difficult to control with medication alone. The purpose of this study was to assess the predictive ability of the Hypertension Self-Care Activity Level Effects (H Scale) with respect to the management of hypertension. This study examined the relative effects of the various hypertension self-care behaviors. The researchers believed that self-care was a primary role to help prevent hypertension. The researchers also wanted to investigate the relationship between adherence to hypertension self-care activities and the control of blood pressure. No theoretical framework was identified for this study.

Warren-Findlow et al. (2020) had three questions to be answered. The questions were as follows: 1.) Which self-care behavior should I focus on to get the greatest effect on my blood pressure? 2.) How much self-care is enough to achieve control of my blood pressure? and 3.) How much more benefit will I get from being adherent to additional self-care behaviors? No hypothesis was identified.

JNC 7 lifestyle guidelines used the H-Scale questionnaire to assess levels of adherence to antihypertensive medication compliance, physical activity engagement, weight management, diet compliance, and avoidance of alcohol and tobacco. This same questionnaire, H-Scale, was utilized for this study. A cross-sectional study pooled baseline data from three intervention studies that were conducted in North Carolina. These studies assessed blood pressure and self-care activities. Two studies incorporated participants enrolled in intervention programs that included exercise training. The first was a community-based study of 22 participants with hypertension randomized to a group of participants that was using a home-based exercise program. The participants

were aged from 21 to 60. Resting blood pressure was between 130/81 to 160/100 and the participants were prescribed anti-hypertensive medications. The second study consisted of 8 participants who had been diagnosed with hypertension and or cardiopulmonary disease. Participants were randomized to either a control group or an exercise program. The third study was conducted in a low-cost primary clinic. The participants were taking at least one antihypertensive medication. Patients received brief intervention education to improve healthy diets, medication adherence, and weight management. In all three studies, the H-Scale date was used, and data was collected paper-based. All participants had a diagnosis of HTN according to previous HTN guidelines recommended from the JNC7 (See Appendix D) and JNC8 of >140/90 (See Appendix B). A timeline was not given for this study; however, the questionnaire used asked about the past seven days.

There was a total of 79 participants in this study. Participants were, on average, in their mid-50s. 54% were female, 34% were white, 33% were African American, and 30% were Hispanic. This study presented an overall adherence for the recommended hypertension self-care behaviors according to the JNC7 (See Appendix D) and JNC8 guidelines (See Appendix B). The 73 to 80% increased odds of blood pressure control for adherence to each additional behavior contributed to the evidence supporting the importance of counseling patients on HTN self-care. Based on this research, providers should encourage patients to move more, along with medication compliance and diet revision. Recommendations for future researchers were to have a larger sample size. Knowing the patients' BMI was also recommended.

This study was applied to the research project by making note of the wide range of the 2017 AHA/ACC (See Appendix A) parameters and their ability to diagnose hypertension earlier. Lifestyle modifications are also required earlier using AHA/ACC guidelines than the JNC 7/8. The 2017 AHA/ACC Hypertension Guidelines (See Appendix A) implement more patient involvement and compliance due to patients initiating medication sooner.

Yano et al. (2018) investigated if young adults diagnosed with hypertension who met the blood pressure (BP) guidelines of the 2017 ACC/AHA (See Appendix A) before the age of forty had a higher risk of a cardiovascular event compared to those that maintained a normal blood pressure. The ACC/AHA (See Appendix A) lowered the blood pressure guidelines and defined an elevated blood pressure as the clinic measured systolic blood pressure of 120 mm Hg to 129 mm Hg and diastolic blood pressure less than 80 mm Hg. Stage I hypertension was defined as clinic measured systolic blood pressure (SBP) of 130 mm Hg to 139 mm Hg or diastolic blood pressure (DBP) of 80 mm Hg to 89 mm Hg. With these new changes, the blood pressure threshold for hypertension was lowered from SBP/DBP of 140/90 mm Hg or higher and replaced it with an SBP/DBP of 130/80 mm Hg or higher. With this change, there was an increase in the prevalence of hypertension 2-fold to 3-fold for young adults. Non-pharmacological and pharmacological interventions were recommended for adults with SBP/DBP of 140/90 (stage I hypertension) or higher and who had an estimated 10-year atherosclerotic cardiovascular disease risk of 10 percent or higher. Most young adults with stage I hypertension have a low 10-year atherosclerotic cardiovascular disease risk factor. The

risk calculator was designed for adults 40 to 79 years old and is not recommended for younger adults.

Yano et al. (2018) were concerned that if stage 1 hypertension is not associated with major cardiac events in young adults, then the possible overdiagnosis of hypertension could result in overtreatment in this age group. Yano et al. (2018) purpose assessed whether adults who developed hypertension before the age of 40 have a higher risk of major cardiovascular events later in life compared to those who maintained a normal blood pressure of SBP less than 120 mm Hg and DBP greater than 80 mm Hg by the age forty.

Yano et al. (2018) had one question. Do adults who develop hypertension, defined by the 2017 ACC/ AHA (See Appendix A) blood pressure guidelines, before the age of 40 years have a higher risk for a cardiovascular event compared to those who maintained a normal blood pressure? The Coronary Artery Risk Development in Young Adults (CARDIA) study was used for the research. This study by Yano et al. (2018) consisted of 5,115 African American and Caucasian participants aged 18 to 30 from four United States field centers that were registered in the CARIDA study in the years of 1985 and 1986. The field centers were in Birmingham, AL, Chicago, IL, Minneapolis, MI, and Oakland, CA. The study excluded participants who had experienced CVD events before age forty, participants that did not follow up before age of forty, and participants who were missing blood pressure data needed for analysis. After the initial exam, the follow up exams were required at two, five, seven, ten, fifteen, twenty, twenty-five, and thirty years. During year zero to year fifteen, trained research staff measured the blood pressure

three times in the participant's right arm at one-minute intervals after the participant had been sitting in a quiet form for five minutes. The second and third measurement were used for analysis. An automated oscillometric BP monitor was used during 20 examinations. Data such as race, height, weight, smoking status, physical activity, medication used, history of diabetes, history of cardiovascular disease, and fasting lab values were also obtained. The research staff collected information on hospitalizations, outpatient medical procedures during examinations, and annual phone follow-ups. All statistical analyses were performed with STATA, version 12.1.

Of the 5,115 participants, one participant withdrew consent, nineteen experienced CVD events before the age of forty, thirteen participants were lost to follow-up, two hundred and twenty participants had blood pressure measurements from only a single exam, and eleven participants had missing covariates. The final sample size was 4,851. The participants were categorized in groups as having a normal blood pressure (n=2574), an elevated blood pressure (n=445), stage 1 hypertension (n=1195), and stage 2 hypertension (n=638). The average age when follow-up exams began was 35 years old. Of the participants, 2,657 were women and 2.441 African American participants. During the median follow-up, around18 to 19 years of age, 228 cardiovascular events took place and 319 all-cause deaths occurred. All cardiovascular events and deaths occurred before the age of sixty. The cumulative incidence of cardiovascular events was listed from highest to lowest that included: stage 2 hypertension group with the highest risk, followed by stage 1, elevated blood pressure group, and then the normal blood pressure group with the lowest risk. The study concluded that among young adults, those with elevated blood

pressure, stage I hypertension, and stage 2 hypertension before age of 40 as defined by the 2017 ACC/AHA guidelines (See Appendix A) had a significantly higher risk for subsequent major cardiovascular events compared to those with normal blood pressure before the age of forty.

The Yano et al. (2018) research project provides evidence that these new guidelines set forth by ACC/AHA can help identify young adults at higher risk for CVD events. This is relevant to the research project by making note of the stricter guidelines set by the AHA/ACC (See Appendix A) and how it increases the prevalence of hypertension. With these guidelines, it allows primary care providers to diagnose and treat hypertension earlier which can prevent major risk factors from occurring such as stroke, heart attack, or death. Having this knowledge is likely to motivate providers to see the importance and benefits of adhering to the new guidelines.

Summary

Hypertension continues to rise in the United States. If untreated, there are numerous health concerns that can occur that include heart attack or stroke, peripheral artery disease, cardiomyopathies, kidney failure, or death. The current research project's purpose was to determine if nurse practitioners in MS are knowledgeable of the 2017 hypertension guidelines from the American Heart Association (See Appendix A). In the Tocci et al. (2020) research study it was determined that using the 2017 ACC/AHA guidelines (See Appendix A) increased the prevalence of hypertension. Hans et al (2019) completed a research study that determined the importance of early treatment with antihypertensive medications that could decrease a major cardiovascular event or death in

patients. This suggested that early intervention when using the 2017 ACC/AHA guidelines (See Appendix A) for treating and managing hypertensive patients could prevent major cardiac events, stroke, and death. These research studies are relevant to the current research because of the importance of understanding these hypertension guidelines to properly diagnose and manage patients with hypertension. The purpose of the current research study was to determine the knowledge of the primary care providers of the 2017 ACC/AHA guidelines (See Appendix A) to diagnose and manage hypertensive patients. These research studies confirm the need of determining the knowledge of the primary care providers of the 2017 ACC/AHA guidelines (See Appendix A).

Chapter III

Design and Methodology

Introduction

Hypertension is considered a nationwide issue in the U.S. Treatment of

hypertension can reduce the risk of cardiovascular disease. (CDC, 2017). While

controlled hypertension is still a risk factor for cardiovascular diseases, patients and PCPs

can lower the together, regardless of whether or not the patient is aware of his or her

hypertension diagnosis. The American Heart Association guidelines for hypertension

were developed with nine health professional organizations and were published by a

panel of 21 scientists and health experts who reviewed more than 900 published studies

(AHA,2017). By amending the parameters of hypertension and beginning treatment

earlier the American Heart Association is trying to reduce cardiovascular disease and

complications.

The purpose of this research project was to determine if primary care providers in

Mississippi are knowledgeable of the 2017 American Heart Association Hypertension

Guidelines. The American Heart Association has stated that normal parameters for blood

pressure are a systolic and diastolic pressure of less than 120/80 mm Hg; elevated blood

pressure parameters are systolic pressures between 120-129 and a diastolic pressure less

than 80; stage one hypertension is defined by systolic pressures between 130-139 or

diastolic pressures between 80-89; stage two hypertension is defined by systolic pressures

of at least 140 or diastolic pressures at least 90 mm Hg; and a hypertensive crisis is

defined by a systolic pressure over 180 and/or diastolic pressures over 120 (AHA, 2017).

The 2017 American Heart Association Hypertension Guidelines have eliminated the

category of prehypertension, categorizing patients as having either elevated (120-129 and less than 80) or stage I hypertension (130-139 or 80-89). The earlier guidelines classified 140/90 mm Hg as Stage 1 hypertension, but this level has been amended as stage 2 hypertension under the new guidelines (AHA, 2017). Due to the revised hypertension guidelines, the researchers wished to determine if Mississippi nurse practitioners were knowledgeable of the most current guidelines when diagnosing and managing their patients with hypertension. The population, setting, methods of data collection, and the data collection tool (questionnaire) are presented in this chapter. The questionnaire is seen in Appendix C.

Techniques for Data Collection

The researchers utilized a descriptive, quantitative questionnaire design to evaluate the knowledge of Mississippi nurse practitioners regarding the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Through social media, the researchers targeted specific Facebook groups for nurse practitioners that practice in the state of Mississippi. Data gathered was web-based through SurveyMonkey. The questionnaire was uploaded into SurveyMonkey, and the link for the questionnaire was posted in the Facebook groups with an explanation of the research project. The design of the study was appropriate given participant accessibility, time limited for data collection, and the possibility of gaining relevant information through the chosen questionnaire method. The questionnaire was available for one month to give the possibility for more participants. The questionnaire is seen in Appendix C.

Setting

The setting of this research study was web-based through social media. A brief description of the project for recruitment of participants, included in Appendix E, and a link to the questionnaire (See Appendix C) was uploaded to specific social media groups on Facebook that were specifically for nurse practitioners in Mississippi. The inclusion criteria were that the nurse practitioner practiced in the state of Mississippi, treated adult patients, and had the potential to diagnose and/or manage hypertension.

Population and Sample

This research study was a quantitative study that surveyed nurse practitioners in the state of Mississippi who accessed the SurveyMonkey questionnaire via Facebook groups for nurse practitioners in the state of Mississippi. The identity of the participants was unknown to the researchers. Once the questionnaire was completed, the data was only made available to the researchers from SurveyMonkey's database. No identifying information was available. For the questionnaire to be considered for data analysis, the participants had to have access to social media, be nurse practitioners who practiced in the state of Mississippi, and be adequately equipped to diagnose or treat adult patients with hypertension.

Procedures for Data Collection

This study was first approved by the Institutional Review Board of Mississippi University for Women (IRB). The approval letter is included in Appendix F. The researchers designed a questionnaire that evaluated the knowledge of the nurse practitioners regarding diagnosing and managing their hypertensive patients according to the 2017 American Heart Association's hypertension guidelines. The questionnaire

included the parameters that were set by the 2017 American Heart Association. Following its creation, the questionnaire's link was distributed in various Facebook groups that were specific for Mississippi nurse practitioners. It was made available until April 31,2021.

The questionnaire (See Appendix C), created by the researchers included 14 multiple-choice questions. The first two questions determined if the participants' answers would be pertinent to the research project. The next question captured the experience of the nurse practitioners. Questions 4-8 measured the nurse practitioners' knowledge of diagnosing hypertension according to the 2017 American Heart Association Hypertension Guidelines. Questions 9-13 measured the nurse practitioners' knowledge of management of hypertension using the 2017 American Heart Association Hypertension Guidelines. To be deemed knowledgeable in management and or diagnosing hypertension, the nurse practitioners had to score 80 percent in that portion of the questionnaire. The final question addressed how knowledgeable the nurse practitioners thought they were on the 2017 American Heart Association Hypertension Guidelines. The completed questionnaire results were then reviewed by the researchers for data analysis.

Methods of Data Analysis

The data gathered from the completed questionnaire were then subjected to analysis. Data were analyzed to determine if the nurse practitioner was knowledgeable of blood pressure diagnosis and management according to the 2017 American Heart Association Hypertension Guidelines. Data from the completed questionnaires were then subjected to analysis using descriptive statistics that included percentages. To be deemed

knowledgeable in management and or diagnosing hypertension the nurse practitioner had to score 80% in that portion of the questionnaire. The ANOVA analysis method was used to determine if there was any correlation between years of experience and if the nurse practitioner was knowledgeable.

Summary

The purpose of this research project is to determine if primary care providers in Mississippi are knowledgeable of the 2017 American Heart Association Hypertension Guidelines with respect to diagnosing adult hypertensive patients and management of adult hypertensive patients. This was determined by publishing a questionnaire through SurveyMonkey. A link was published on social media that targeted specific Facebook groups for nurse practitioners that practice in Mississippi.

Chapter IV

Presentation of Findings

During 2015–2016, the prevalence of hypertension in the United States was 29.0% in the United States and increased with age: age group 18–39 was estimated to be at 7.5%; age 40–59 was estimated to be at 33.2%; and age 60 and over was estimated to be 63.1% (CDC, 2017). Untreated or uncontrolled hypertension can lead to a higher risk for other health threats such as heart attack, heart disease, stroke, kidney failure, peripheral artery disease, and many other disease processes. When hypertension is controlled, the risk of cardiovascular disease can be lowered. Regular blood pressure screening and education of an individual's blood pressure target range should be an important aspect of being a healthcare provider today. The purpose of this research project was to determine if primary care providers in Mississippi are knowledgeable of the 2017 American Heart Association Hypertension guidelines (See Appendix A).

The research questions were as follows:

1. Are primary care providers knowledgeable of the 2017 American Heart Association Hypertension Guidelines for diagnosing adult patients with hypertension? (See Appendix A)

2. Are primary care providers knowledgeable of the 2017 American Heart Association Hypertension Guidelines for the management of adult patients diagnosed with hypertension? (See Appendix A)

Participant Characteristics

60 total questionnaires were completed by participants. Only nurse practitioners were targeted to participate in the questionnaire. The questionnaire was placed on social media in Facebook groups specifically for nurse practitioners. Responses were removed if the nurse practitioner was not currently managing and diagnosing adult patients with hypertension in Mississippi. The remaining total sample size was 52.

The questionnaire (See Appendix C), created by the researchers included 14 multiple-choice questions. The first two questions captured if the participant's survey would be viable for the research project. Question number one of the questionnaire asked if the nurse practitioner currently practiced in Mississippi. Two participants answered no; 58 answered yes (N=58), shown in Figure 1. Question two asked if the nurse practitioner was currently diagnosing and managing adult patients eighteen years and older with hypertension. Seven nurse practitioners answered no and fifty-three answered yes (N=53), shown in Figure 2. One practitioner answered no to both, which resulted in a total of 52 viable questionnaires. Question three of the questionnaire asked the nurse practitioner to report their years of experience. The researchers would later look at this data to see if there was a correlation between the provider's knowledge and years of experience. Approximately 53% of the nurse practitioners had five years or less of experience, 23% of the nurse practitioners had five to ten years of experience, 15% of the nurse practitioners had ten to twenty years of experience as a nurse practitioner, and 8% of the nurse participants had twenty years or more of experience as a nurse practitioner. The years of experience are shown in Figure 3.

Question number one of the questionnaire asked if the nurse practitioner currently

practiced in Mississippi. Two participants answered no; 58 answered yes (N=58).

Figure 1

*Nurse Practitioners currently practicing in Mississippi*
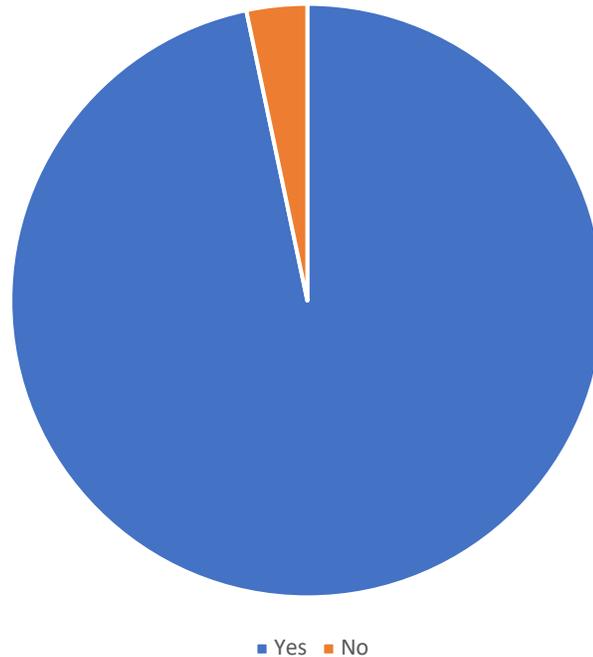
■ Yes ■ No

Question two asked if the nurse practitioner was currently diagnosing and managing adult patients eighteen years and older with hypertension. Seven nurse practitioners answered no, and 53 answered yes (N=53). One participant answered no to both demographic questions; therefore, this participant's answers were not included in the results.

Figure 2

Nurse practitioners diagnosing and managing adult hypertensive patients
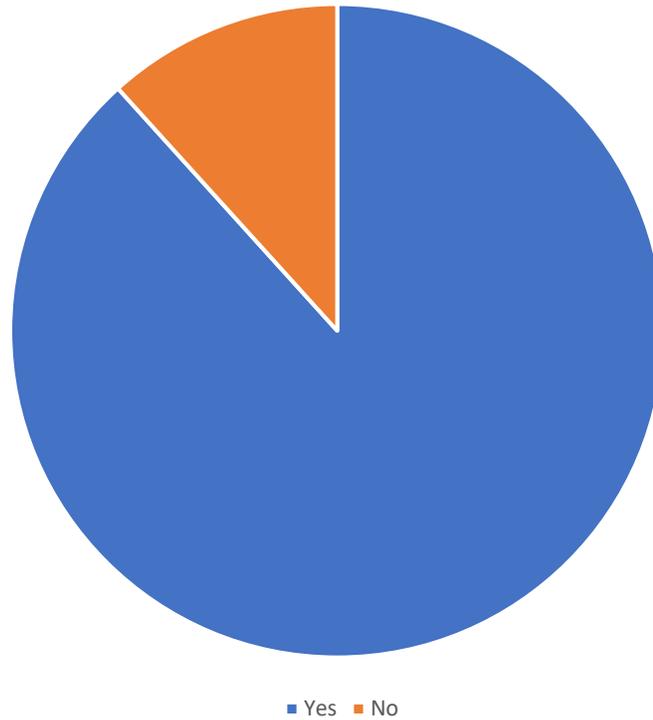
■ Yes ■ No

Approximately 53% of the nurse practitioners had five years or less of experience, 23% of the nurse practitioners had five to ten years of experience, 15% of the nurse practitioners had ten to twenty years of experience, and 8% of the nurse participants had twenty years or more of experience as a nurse practitioner. The years of experience are shown in Figure 3.

Figure 3

Nurse Practitioners Years of experience

■ 1-5 years   ■ 5-10 years   ■ 10-20 years   ■ 20+ years
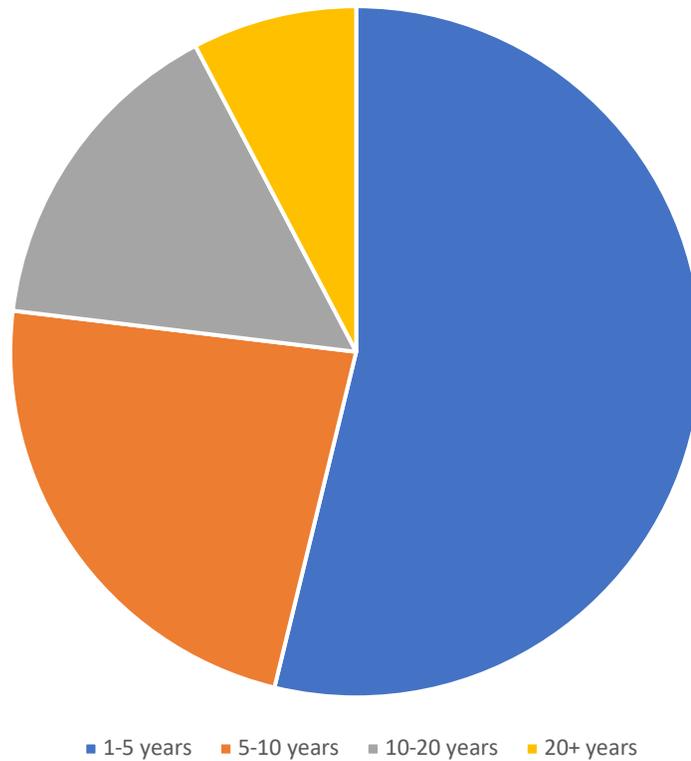
Findings

The findings evaluated the knowledge of the nurse practitioners in regard to diagnosing and managing hypertension based on the 2017 American Heart Association Hypertension Guidelines (See Appendix A). This was determined by using a questionnaire posted on SurveyMonkey (See Appendix C).

To determine if nurse practitioners were knowledgeable of the 2017 American Heart Association Hypertension Guidelines, (See Appendix A) a questionnaire (See Appendix C) was utilized with certain criteria that had to be met to be considered

knowledgeable of the 2017 AHA/ACC guidelines (See Appendix A). Questions 4-8 and

questions 9-13 assessed the nurse practitioners' knowledge of diagnosing and managing

hypertension according to the 2017 American Heart Association Hypertension Guidelines

(See Appendix A). To be considered knowledgeable in diagnosing hypertension the

nurse practitioner had to score 80% or higher on questions 4-8. To be considered

knowledgeable in management of hypertension, the nurse practitioner had to score an

80% or higher on questions 9-13.

Table 1

Diagnostic Knowledge: Number of questions answered correctly

# Correct	F	%	Cumulative %
1	5	9.6	9.6
2	3	5.8	15.4
3	14	26.9	42.3
4	21	40.4	82.7
5	9	17.3	100.0
(N=52)			

A table of scores for questions 4-8 are shown in Table 1. This represents the

questions answered correctly by the nurse practitioners. The lowest possible score value

is zero, which would mean no correct answers were chosen. The highest possible score value is five. This would reflect correct answers for the diagnostic portion of the questionnaire. Four of five questions answered correctly was required to be considered knowledgeable. Approximately 57.7% of the nurse practitioners were considered knowledgeable in diagnosing patients with hypertension using the 2017 American Heart Association Hypertension Guidelines (See Appendix A). More than half of the nurse practitioners who participated scored greater than 80% on this portion of the questionnaire and were considered knowledgeable of diagnosing hypertension according to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). 21 nurse practitioners answered four questions correctly, and nine answered five questions correctly. Out of 52 nurse practitioners, 30 were considered knowledgeable of diagnosing hypertension according to the 2017 American Heart Association Hypertension Guidelines (See Appendix A).

Table 2

Management Knowledge: Number of questions answered correctly.

# Correct	F	%	Cumulative %
1	1	1.9	1.9
2	9	17.3	19.2
3	14	26.9	46.2
4	27	51.9	98.1
5	1	1.9	100
(N=52)			

A table of the scores for questions 9-13 are shown in Table 2. This represents the questions answered correctly by the nurse practitioners. The lowest possible score value is zero, which would mean no correct answers were chosen. The highest possible score value is five. This would reflect the correct answers for the management portion of the questionnaire. Four of five questions answered correctly were required to be considered knowledgeable. More than half of the nurse practitioners who participated scored greater than 80% on the questionnaire and were considered knowledgeable of managing hypertension according to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). 27 nurse practitioners answered four questions correctly, and one answered five correctly. Out of 52, 28 nurse practitioners were considered knowledgeable

in managing hypertension according to the 2017 American Heart Association Hypertension Guidelines (See Appendix A).

Additional Findings

Figure 4

Management and Diagnostic Knowledge: Numbers of questions answered compared with experience.
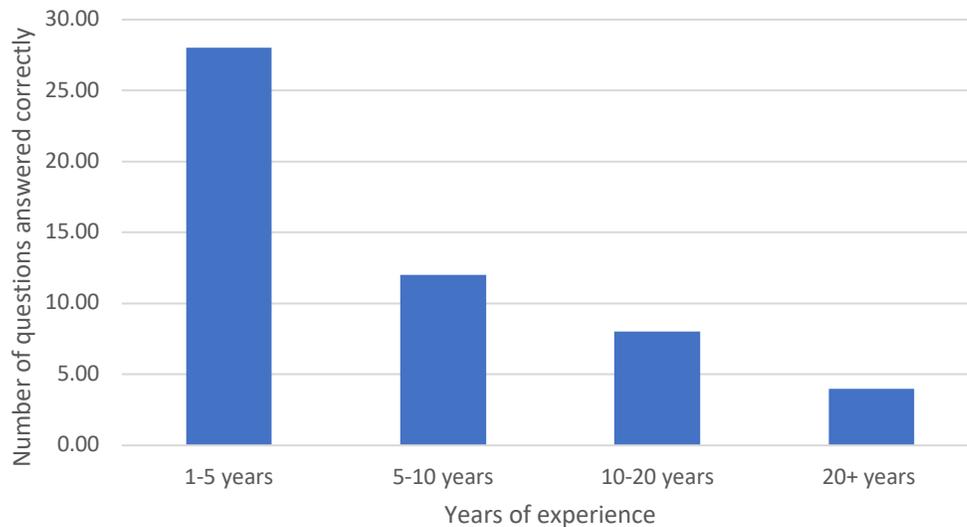
Figure 4 shows the correlation between years of experience compared to the nurse practitioners who were knowledgeable in a combination of diagnosing and managing hypertension using the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Somers'd was utilized to determine if there was any correlation between years of experience and knowledge of both the diagnosing and management portions of the questionnaire. As the years of experience increased, the overall score of the questionnaire decreased. Therefore, there was a weak negative correlation because it determined that novice nurse practitioners essentially scored higher on the questionnaire

than veteran nurse practitioners. 28 nurse practitioners with one to five years of experience averaged 7.1429 correct answers. 12 nurse practitioners with five to ten years of experience averaged 7.0833 correct answers. 8 practitioners with ten to twenty years of experience averaged 6.00 correct answers. 4 nurse practitioners with twenty years or greater of experience averaged 5.7500 correct answers. The nurse practitioners with one to five years of experience had the highest mean average of 7.1429 of correct answers.

Summary

The sample for the current research study included nurse practitioners who currently treat adult hypertensive patients in the state of Mississippi. The purpose of this research project was to determine if primary care providers in Mississippi are knowledgeable of the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Questionnaires were removed from the results if the nurse practitioner was not currently diagnosing and managing adult hypertensive patients and if the nurse practitioner was not practicing in the state of Mississippi. This left a total sample of fifty-two questionnaires. Most of these questionnaires were completed by nurse practitioners with less than five years of experience. Questions 4-8 measured the nurse practitioners' knowledge of diagnosing hypertension according to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Approximately 57% of the nurse practitioners were considered knowledgeable in diagnosing hypertension. Questions 9-13 measured the nurse practitioner's knowledge of managing hypertension according to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Approximately 54% were considered knowledgeable of managing

hypertension. Based on the results, nurse practitioners are knowledgeable of the 2017

American Heart Association Hypertension Guidelines (See Appendix A).

CHAPTER V
Conclusions, Implications, and Recommendations

Untreated or uncontrolled hypertension can lead to a higher risk for other health threats such as heart attack, stroke, kidney failure, peripheral artery disease, and many other diseases. The purpose of this research project was to determine if primary care providers in Mississippi are knowledgeable of the 2017 American Heart Association Hypertension Guidelines (See Appendix A) in order to diagnose and manage patients with hypertension. Controversial viewpoints regarding hypertension exist between healthcare providers who support the 2017 AHA/ACC (See Appendix A) guidelines and the JNC 8 guidelines (See Appendix B). Some providers claim that the revised 2017 American Heart Association hypertension guidelines, included in Appendix A, only skew the numbers of patients diagnosed with hypertension, considering the threshold is lower than the JNC 8 guidelines. These healthcare providers who are not supportive of the 2017 American Heart Association hypertension guidelines are more supportive of the Joint National Committee 8 hypertension guidelines that were published in 2013 (Page, 2014). The Joint National Committee (JNC 8) guidelines, published in 2013, advise higher blood pressure levels and less use of several types of antihypertensive medications.

The current researchers sought to assess the knowledge of nurse practitioners in Mississippi of the 2017 American Heart Association Hypertension guidelines (See Appendix A). Sister Callista Roy's Adaptation Model was the theoretical framework used to guide this study. Once the framework was determined, the researchers utilized a descriptive, quantitative questionnaire to evaluate the knowledge of Mississippi nurse practitioners regarding the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Through social media, the researchers targeted specific Facebook

groups for nurse practitioners that practice in the state of Mississippi. Data gathered was web-based through SurveyMonkey. This chapter summarizes, interprets, and reviews the study conducted. Limitations, conclusions and implications are also reviewed. Recommendations based on these factors are included for future clinical research studies.

Summary of the Investigation

The sample studied in this project consisted of nurse practitioners that currently treat adult hypertensive patients in the state of Mississippi. Questionnaires were removed from the sample if the nurse practitioner was not currently diagnosing and managing adult hypertensive patients and if the nurse practitioner was not practicing in the state of Mississippi. A total sample of 52 questionnaires were left for research purposes. Questions 4-8 of the questionnaire measured the nurse practitioner's knowledge of diagnosing hypertension according to the 2017 American Heart Association hypertension guidelines (AHA/ACC) (See Appendix A). Questions 9-13 measured the nurse practitioner's knowledge of managing hypertension according to the 2017 American Heart Association hypertension guidelines (See Appendix A). Out of 52 total participants, 30 practitioners were considered knowledgeable of diagnosing hypertension according to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Twenty-eight of fifty-two nurse practitioners were considered knowledgeable in managing hypertension using the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Based on the results, overall nurse practitioners are knowledgeable of the 2017 American Heart Association Hypertension Guidelines.

Interpretations of Findings with Conclusions

Primary care providers face the challenge of remaining properly educated on the current guidelines for the diagnosis and management of hypertension while also educating patients on the importance of these aspects of their illness. Patients will need further education on the 2017 American Heart Association Hypertension Guidelines (See Appendix A) and the changes that were recommended in comparison to the JNC 8 guidelines (See Appendix B).

Most of the questionnaires (See Appendix C) were completed by nurse practitioners with less than five years of experience. Approximately 57% of nurse practitioners who completed the questionnaire were considered knowledgeable of diagnosing hypertension, while approximately 54% of the nurse practitioners who completed the questionnaire were considered knowledgeable of managing hypertension patients. Based on the results from the questionnaire, nurse practitioners in Mississippi are knowledgeable of the 2017 American Heart Association Hypertension Guidelines (See Appendix A) in regards to diagnosing and management patients with hypertension

The current researchers compared the results of the current research with previous studies. These studies regarding hypertension guidelines were reviewed by the current researchers. Mohaissen et al. (2020) assumed that the prevalence of hypertension markedly increased among their population in Saudi using the 2017 American Heart Association Guidelines (See Appendix A). This assumption was statically correct. Using the 2017/ACC/AHA (See Appendix A) classification, 27.1 percent of participants would be classified as having hypertension, which is significantly higher than the prevalence of

4.1 percent if the JNC7 (Appendix D) classification was used. Mohaissen, et al. (2020) found that 85% of the hypertensive patients in this study had stage 1 hypertension and 15% had stage 2 hypertension. Hypertension cases based on the new classification will increase the disease prevalence and management burden on the healthcare system requiring more interventions and education by healthcare providers. Therefore, it is important for primary care providers to be knowledgeable of these new guidelines to be able to adequately diagnose and manage their hypertensive patients. This study does not evaluate the knowledge of the providers in regard to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). It only evaluates the prevalence of hypertension using the 2017 American Heart Association Hypertension Guidelines (See Appendix A). It does support that utilizing the 2017 American Heart Association Hypertension Guidelines (See Appendix A) did increase hypertension prevalence.

Adibelli et al. (2018) completed a study to evaluate patients diagnosed with hypertension that were provided with education management by using Roy's Adaptation Model. Their study was to evaluate the effectiveness of education in patients diagnosed with hypertension using Roy's adaptation model for hypertensive management. This research determined the effectiveness of appropriate teaching provided to patients with hypertension. This study noted that adaptation was beneficial for detection, prevention, and treatment of hypertension. This is relevant to the current research in regard to how the nurse practitioners have adapted to the new hypertension guidelines provided by the American Heart Association (See Appendix A). In the current research, it was determined that there was weak correlation between experience and success rates of the surveys; newer nurse practitioners were determined to be more knowledge of the 2017 AHA/ACC

Hypertension Guidelines (See Appendix A) than the nurse practitioners with more experience. Therefore, as the years of experience increased, the questionnaire scores declined. One possible reason is that the nurse practitioner with more years of experience may be more comfortable with older models and methods of diagnosing and managing hypertension as they have been using JNC 8 guidelines for a longer period of time (See Appendix B).

Tocci et al. (2020) performed a study to investigate whether patients were being treated for hypertension based on the most recent European guidelines. The new guidelines provided from the European Society of Cardiology/European Society of Hypertension (ESC/ESH) were comparable to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Their purpose was to determine if blood pressures were diagnosed and treated following their new guidelines. The researchers identified the importance for hypertension to be managed earlier due to the correlation between untreated hypertension and cardiovascular disease. This study did not evaluate the knowledge of the providers. It only evaluated the use of the ESC/ESH guidelines that are comparable to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). This was noted to redefine hypertension and those that were considered "controlled" were then classified as "uncontrolled." Therefore, it would support that the use of the 2017 American Heart Association Hypertension Guidelines (See Appendix A) increases the prevalence of hypertension.

Yano et al. (2017) investigated if young adults diagnosed with hypertension who met the blood pressure (BP) guidelines of the 2017 ACC/AHA (See Appendix A) before the age of forty had a higher risk of a cardiovascular event compared to those that

maintained a normal blood pressure. The ACC/AHA (See Appendix A) lowered the blood pressure guidelines and defined an elevated blood pressure as the clinic measured systolic blood pressure of 120 mm Hg to 129 mm Hg and diastolic blood pressure less than 80 mm Hg. Stage I hypertension was defined as clinic measured systolic blood pressure (SBP) of 130 mm Hg to 139 mm Hg or diastolic blood pressure (DBP) of 80 mm Hg to 89 mm Hg. With these new changes, blood pressure threshold for hypertension was lowered from SBP/DBP of 140/90 mm Hg or higher and replaced it with an SBP/DBP of 130/80 mm Hg or higher. With this change, there was an increase in the prevalence of hypertension 2-fold to 3-fold for young adults. Yano et al. (2018) were concerned that if stage 1 hypertension is not associated with major cardiac events in young adults that the possible overdiagnosis of hypertension could result in overtreatment in this age group. The study by Yano et al. (2018) had 5115 African American and Caucasian participants aged 18 to 30 from four United States field centers that were registered in the CARIDA study in the years of 1985 and 1986. Of the 5115 participants, one participant withdrew consent, nineteen experienced CVD events before the age of forty, thirteen participants were lost to follow-up, two hundred and twenty participants had blood pressure measurements from only a single exam, and eleven participants had missing covariates. The final sample size was 4851. The study concluded that among young adults, those with elevated blood pressure, stage I hypertension, and stage 2 hypertension before age of 40 as defined by the 2017 ACC/AHA guidelines (See Appendix A) had a significantly higher risk for subsequent a major cardiovascular event compared to those with normal blood pressure before the age of forty. With these guidelines, it allows primary care providers to diagnose and treat hypertension earlier

which can prevent major risk factors from occurring such as stroke, heart attack, or death. With this knowledge, it can motivate providers to see the importance and benefits of adhering to the new guidelines. Their study did not evaluate the knowledge of the providers. Their study did investigate if young adults diagnosed with hypertension met the blood pressure guidelines of the 2017 ACC/AHA (See Appendix A) noting that before the age of forty had a higher risk of a cardiovascular event compared to those that maintained a normal blood pressure (See Appendix A). Therefore, this study does support teaching the new guidelines to the nurse practitioners for them to use in the future.

After reviewing literature and comparing results to the current research study, the current researchers determined there is need for further research in regard to the knowledge of nurse practitioners in regard to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). Nurse practitioner's knowledge of the 2017 American Heart Association Hypertension Guidelines (See Appendix A) could prevent health related risks that could potentially cause further complications or death. Because the current sample size was limited, it was difficult to determine the knowledge deficits of nurse practitioners. As knowledge deficits are unknown, further research and education is needed to continue to assess the knowledge of nurse practitioners. Once research results were obtained and the knowledge level was determined, the researchers could provide information and education to the nurse practitioners to improve their knowledge of the 2017 American Heart Association's Hypertension Guidelines (See Appendix A).

Limitations of the Research

Several limitations were identified throughout the duration of this project. The limitations were a small sample size, geographically limited data collection, and a short time frame for data collection. Surveys were removed from the sample if the nurse practitioner answered that they were not currently diagnosing and managing adult hypertensive patients and if the nurse practitioner stated that they were not practicing in the state of Mississippi. This limited the sample size, therefore limiting the data gathered to a smaller number of participants. Another limitation was the number of individuals who were reached by social media. Many nurse practitioners in Mississippi are not on social media. Some nurse practitioners may not be included or involved in the Facebook groups where the survey link was posted. This limitation limited the number of participants taking the survey.

Overall, there were several factors that limited the researchers' results. The results were affected by the small sample size, the geographically limited data collection, and the short time frame for data collection. All of these factors hindered the results from possibly being more specific to represent the population adequately.

Implications and Recommendations

While controlled hypertension is a risk factor for cardiovascular diseases, the risk can be lowered and should be a priority for anyone with a known diagnosis of hypertension. The 2017 American Heart Association Hypertension Guidelines (See Appendix A) were developed to control hypertension in a way that will lead to less cardiac events and other comorbidities.

There are many implications for research that can be drawn in the future from the findings of this study. Although the results determined that nurse practitioners in Mississippi were knowledgeable of the 2017 American Heart Association Hypertension Guidelines (See Appendix A) with diagnosing and managing hypertensive patients, the review of literature was limited. A larger sample size could determine a truer determination of knowledge of the guidelines. The American Heart Association is always doing further research to develop updated guidelines. This study could be used for comparison in the future if the American Heart Association develops a new set of hypertension guidelines (See Appendix A).

The purpose of this project was to determine the knowledge of nurse practitioners in regard to the 2017 American Heart Association Hypertension Guidelines (See Appendix A). This project determined nurse practitioners were knowledgeable of the 2017 American Heart Association Hypertension Guidelines (See Appendix A).

Recommendations

Based on the results of this project, the following recommendations are made:

1. Increase the sample size to more accurately represent the population.

2. Make the survey available for a longer period of time to increase the number of completed surveys and participants.

3. Further research regarding the knowledge of the 2017 American Heart Association Hypertension Guidelines with a larger sample size along with alternate ways of distributing the survey or other data-gathering method

4. Through education, increase the knowledge of the 2017 American Heart Association Hypertension Guidelines.

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Appendix A

2017 American Heart Association Hypertension Guidelines

Normal Blood Pressure	Elevated Blood Pressure	Stage I Hypertension		Stage II Hypertension
BP <120/80 mm Hg	BP 120-129/ < 80 mm Hg	BP 130-139/ 80-89 mm Hg		BP ≥ 140/90 mm Hg
Promote optimal lifestyle habits	Non pharmacologic therapy Class 1	Clinical or estimated Atherosclerotic Cardiovascular disease risk factors ≥ 10%		Non-pharmacological therapy And BP lowering medication Class I
Reassess in 1 year	Reassess in 3-6 months	No	Yes	
		Non-pharmacological therapy	Non-pharmacological therapy & BP lowering medication.	
		Reassess in 3-6 months	Reassess in 1 month	Reassess in 1 month
			Goal Met	
			No	Yes
			Assess and optimize adherence to therapy	Reassess in 3-6 months
			Consider intensification of therapy	

Appendix B

**Comparing JNC 8 hypertension guidelines
vs.
AHA/ACC hypertension guidelines.**

Eighth Joint National Committee Hypertension Guidelines	American Heart Association/ American College of Cardiology Hypertension Guidelines
Optimal BP < 120/ < 80	Normal BP < 120 / < 80
Normal BP 120-129 and/or 80-84	Elevated BP 120-129 / < 80
High Normal 130-139 and/or 85-89	Stage I Hypertension 130-139 / 80-89
Grade 1 Hypertension 140-159 and/or 90-99 Grade 2 Hypertension 160-179 and/or 100-109 Grade 3 hypertension >180 and/or >110	Stage II Hypertension $\geq 140 / \geq 90$
	Hypertensive crisis $\geq 180 / \geq 120$

Appendix C

Questionnaire for MS nurse practitioners:

1. Are you a nurse practitioner currently practicing in Mississippi?
    a. Yes
    b. No
2. Are you currently diagnosing and managing adult patients 18 years and older with hypertension?
    a. Yes
    b. No
3. How many years of experience as a nurse practitioner have you had?
    a. 1-5 years
    b. 5-10 years
    c. 10-20 years
    d. 20+ years
4. Of these blood pressure readings, using the 2017 American Heart Association guidelines, which would you consider requiring treatment with medications after nonpharmacological interventions were unsuccessful?
    a. 138/89 → new AHA guidelines
    b. 145/90
    c. 119/79
    d. 181/95
5. Which of these blood pressure readings would be considered controlled with medications using the 2017 American Heart Association Guidelines?
    a. 130/90
    b. 118/78
    c. 140/85
    d. 145/85
6. A patient has Stage 1 HTN, a BP of 130/89, the patient has an estimated 10-year CVD risk ≥ 10% due to their risk factors, which of these interventions would you initiate for this patient using the 2017 American Heart Association guidelines?
    a. Reassess in 1 year
    b. Reassess in 3 months
    c. Nonpharmacologic therapy
    d. Nonpharmacologic therapy & BP lowering medication
7. If a patient has an elevated blood pressure of 129/89, using the 2017 American Heart Association guidelines when would you reassess this patient when using nonpharmacological treatment?
    a. 3-6 months
    b. 9-12 months
    c. 1 years
    d. Does not require follow up.
8. Which of these blood pressures would be considered Stage 1 hypertension using 2017 American Heart Association guidelines?
    a. >140 or >90

      b. <120/80

      c. 130-139 or 80-89

      d. None of the above.

9. Using the 2017 American Heart Association guidelines, if a patient has a BP reading of >140/ >90 which one of these would you implement?

      a. Nonpharmacological therapy

      b. 2 BP lowering agents

      c. 1 BP lower agent

      d. Both A & B

      e. Both A & C

10. Which of these blood pressure would be considered Stage 2 hypertension using 2017 American Heart Association guidelines?

      a. >/= 140 or >/= 90

      b. 130-139 or 80-89

      c. <120/80

      d. None of the above

11. A patient has a BP reading of 129/89, using the 2017 American Heart Association's guidelines, how would you stage this BP reading?

      a. Stage II Hypertension

      b. Elevated BP

      c. Normal BP

      d. Stage I hypertension

12. A patient presents to your clinic with complaints of recent increase in BP with headaches and has the following BP diary over the last 3 days: 136/80; 134/88; 138/86. The patient is not on BP lowering medications. Which intervention would you use first using the 2017 American Heart Association guidelines?

      a. Initiate 2 BP lowering agents

      b. Initiate 1 BP lowering agent

      c. Nonpharmacological therapy

      d. Reassess in 3-6 months

13. According to the 2017 American Heart Association guidelines, which of these statements are correct?

      a. A patient has an elevated BP. It would be appropriate to follow up in 1 year.

      b. A patient has reported an elevated BP for 1 week. At the visit his BP is 146/78, he should not be started on a blood pressure lowering agent.

      c. When initially starting BP medications, it is appropriate to follow up in 1 month for reevaluation.

      d. A patient is managed well with their BP lowering agents. It would be appropriate to follow up in 1 year.

14. On a scale of 1-4, how knowledgeable are you of the 2017 American Heart Association hypertension recommendations?

      a. 1- None/LOW

      b. 2- Basic

      c. 3- Proficient

      d. 4 – Expert

Appendix D

Seventh Joint National Committee Guidelines
(JNC7)

Classification of Blood Pressure

Category	Systolic	Diastolic
Normal	<120	<80
Prehypertension	120-139	80-89
Hypertension, Stage I	140-159	90-99
Hypertension, Stage II	≥160	≥100

Appendix E

Description of project for recruitment for nurse practitioners' participation in questionnaire.

We are a research group of graduate students currently enrolled at the Mississippi University for Women. As part of our curriculum in the Master of Science in the Family Nurse Practitioner program we are required to complete a research project. Our project is to evaluate the knowledge of the 2017 American Heart Association hypertension guidelines in nurse practitioners in Mississippi. We invite you to click on the link to our survey and complete the multiple-choice questionnaire. The information collected through SurveyMonkey will remain anonymous. Participation in this survey is completely voluntary. Thank you in advance for your time and assistance with this research study.
Sincerely,
Kelsey Creel, Kristan Kelly, and Linda Turner

Appendix F

The W Mississippi University for Women
A Tradition of Excellence for Women and Men

Provost and Vice President for Academic Affairs
1100 College St. MUW-1603
Columbus, MS 39701-5800
(662) 329-7142
(662) 329-7141 Fax

www.muw.edu

March 26, 2021

tjhamill@muw.edu

Dear Dr. Hamill:

I am pleased to inform you that the members of the Institutional Review Board (IRB) havereviewed the following proposed research and have approved it as submitted:

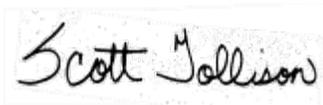**Name of Study:** Knowledge of the 2017 American Heart Association hypertension guidelines"
Research Faculty/ Advisor: Terri Hamill
Investigators: MSN Research Group

I wish you much success

in your research.

Sincerely,

Scott Tollison, Ph.D.
Provost and Vice President for

Academic AffairsST/tc

pc: Irene Pintado, Institutional Review Board Chairman