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Managing Hypertension in Afro-Caribbean immigrants of non-Hispanic Origin

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This is to certify that the doctoral study by

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2020

Abstract

Managing Hypertension in Afro-Caribbean immigrants of non-Hispanic Origin

Living in the United States

A Systematic Review

by

Ann Marie Laban

MSN, Walden University, 2012

BSN, Nova Southeastern University, 2007

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Hypertension (HTN) is a preventable disease; however, the prevalence of HTN continues to increase, especially in minority populations. Without adequate interventions, this disease can lead to severe complications such as heart disease, stroke, and death. The United States is home to a large population of Afro-Caribbean immigrants of Non-Hispanic origin and the prevalence of this disease is high among this group. Although HTN is the leading health challenge for Afro-Caribbean immigrants of non-Hispanic origin, there were limited studies that identify nonpharmacological strategies, clinical practice guidelines, or educational programs (CPG-EP) to manage HTN in this population. This project seeks to discover effective nonpharmacological strategies that can be used to normalize blood pressure in Afro-Caribbean immigrants of non-Hispanic origin diagnosed with HTN. The transcultural nursing theory and the health belief model guided the project design. The purpose of this project was to complete a systematic review of the literature to identify the most efficacious non-pharmacological strategies to guide the future development of a CPG-EPs for HTN tailored for Afro-Caribbean immigrants of non-Hispanic origin. The systematic review was conducted using the method developed by the Joanna Briggs Institute [JBI]. Studies were triaged using the American Association of Colleges of Nursing (AACN) level of evidence and data were recorded utilizing the PRISMA 4 phase flow diagram. This doctoral project will result in positive social change through improved health care of Afro-Caribbean immigrants of non-Hispanic origin in the United States and serve as a model for care at the national and international levels.

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Dedication

This project will be dedicated to my wonderful husband, Joseph, who stood by me and supported me throughout this journey.

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I would like to thank all those who helped me to make this project possible. Committee Chair: Dr. Lynda Crawford, Committee Member: Dr. Maria Ojeda, University reviewer: Dr. Sara M. Witty and preceptor Dr. Joanna Dunk. I am truly grateful for all the help and support I received, because I could not have accomplished this without your help.

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Section 1: Introduction

Introduction

Hypertension (HTN), otherwise known as the "silent killer" is a global problem that impacts one in three people (World Health Organization [WHO], 2012) with an estimated cost of $370 billion per year (Frieden & Jaffe, 2018). In the United States, 70 million American adults have HTN and 52% are controlled (Centers for Disease Control and Prevention [CDC], 2015). High blood pressure is estimated to cost the United States about $131 billion each year. This was calculated by averaging costs over a 12-year-period, from 2003–2014 (CDC 2020).

In 2015–2016 the prevalence of HTN among American adults was approximately 29% of which 43.3% were non-Hispanic Black people (CDC, 2016). HTN developed earlier in the lives of black patients than white patients (American Heart Association [AHA], 2015) and Black patients are more likely to be hospitalized (CDC, 2013). The etiology for HTN varies among other ethnic groups. However, being Black (African Americans or indigenous African) is regarded as a distinctive causative factor for this group. According to Rayner and Spence (2017), Black patients have a greater tendency toward salt sensitivity and suppressed plasma renin, which can result in salt retention and high blood pressure.

The Caribbean Islands are a geographically diverse region but most of its citizens are Black. In Jamaica and the Barbados, 90% of the citizens are of African descent, while in Trinidad, Tobago, and Guyana more than 50 % of the citizens are of South Asian origin or mixed ethnicity (Ferguson et al., 2011). Through migration, these citizens live

in different regions, including the United States. HTN is one of the major health challenges for African Caribbean Islanders. Ferguson et al. (2011), reported that the prevalence of HTN among African Caribbean Islanders is higher in comparison to African Blacks. Overall, one-half of the population in the Caribbean Islands and in Latin America lives with HTN (Bidulescu et al., 2015).

Chronic diseases are the leading cause of mortality and disability in the Caribbean Islands. The prevalence increases from eight people per 1,000 in 2002 to 56 people per 10,000 in 2007 (Bourne et al., 2010). In the Caribbean Islands, between 41%–47% of adults older than 25 years or older has HTN (Bidulescu et al., 2015). In Jamaica, the national prevalence of HTN in persons 15 and 74 years old was 25%; in Barbados the prevalence of HTN for persons 40 years and older was 55% (Bidulescu et al., 2015). According to Pan American Health Organization (2017), the prevalence of HTN in adults in Dominican Republic was 32.1% during the period of 2009–2014, and the leading cause of death for people 65 years and older was CVA.

Positive social change often results in the improvement of human and social conditions, which ultimately influences society and eventually the world. Ideas and action with world implications often drive these changes. These changes can occur at different levels, including individual, family, community, organizational, and governmental levels (Morris, 2017). To bring about positive social change, new knowledge is important. This new knowledge can be attained through evidence-based research. When it is integrated into projects, it can influence policies and practices, and cause beneficial changes. The result from this doctoral project can result in such positive

social change among Afro-Caribbean immigrants of non-Hispanic origin with HTN living in the United States.

Problem statement

According to Migration Policy Institute (2019), South Florida is home to the highest concentration of Afro-Caribbean immigrants of non-Hispanic origin. Miami-Dade County in Florida was home to 862,000 Afro-Caribbean immigrants of non-Hispanic origin, the highest among all 50 states. Fort Lauderdale is situated on the southeast coast of Florida and is home to a vast amount of English-speaking Afro-Caribbean immigrants of non-Hispanic origin. About 31% of the population is Black and are primarily from the West Indies (World population review, 2018). Although these individuals migrate across the globe, they still maintain cultural beliefs and practices that are relevant to them. Thus, these beliefs and practices influence their dietary habits, physical activities, and health care beliefs. As a result, caring for these patient poses many challenges for nurses who are unfamiliar with this culture, their beliefs, and practices.

One major health challenge that is common among Afro-Caribbean immigrants of non-Hispanic origin patients is HTN. The local nursing practice problem and the focus of this doctoral project was the knowledge deficit among nurses and lack of standardized cultural education and guidelines on HTN tailored for Afro-Caribbean immigrants of non-Hispanic origin patients. As a result, health care professionals, including nurses, lack knowledge and understanding about this culture's dietary habits, health beliefs, which ultimately interferes with treatment. In addition to nurses' knowledge deficit regarding

this population, Afro-Caribbean immigrants of non-Hispanic origin cultural habits and beliefs is a major contributor to medication non-adherence which intensifies the problem locally here in South Florida. According to Smith et al. (2018) across the state of Florida HTN is highly prevalent; however, in southern Florida the concentration of uncontrolled HTN is significantly higher. As a result, the need to address HTN locally is paramount. If left untreated this condition can result in major complication such as cardiovascular diseases and stroke.

This doctoral project is significant to the field of nursing because nurses play a pivotal role in patient education. Patient education is important for increasing patients' knowledge and understanding. Nurses are often the frontline healthcare providers; nurses help calm patients and their loved ones through patient education. Through this systematic review and the subsequence CPG-EP, nurses' knowledge about this population will improve and clinical practices can change, which will ultimately result in better patient outcome.

Purpose

The purpose of this doctoral project was to complete a systematic review of the literature and the results will be used to inform the future development of a CPG-EP on HTN. This CPG-EP will be tailored for adult patients who are Afro-Caribbean immigrants of non-Hispanic origin. This CPG-EP initially will be utilized at an ambulatory primary care practice located in Southern Florida. Through this systematic review, and the subsequent CPG-EP, clinicians' knowledge will improve, clinical practices can change, and better patient outcomes are possible.

HTN is a chronic condition that developed earlier in the lives of Black patients than White patients (American Heart Association [AHA], 2015). According to Ferguson et al., (2011) the prevalence of HTN among Afro-Caribbean immigrants of non-Hispanic origin is higher in comparison to African Blacks. Patients from the Caribbean Islands have very strong cultural values and beliefs regarding their health and health care.

The gap in practice that was addressed in this project was the lack of culturally congruent HTN management, including cultural nursing education programs, on HTN for this population. Culturally congruent nursing care provides more meaning and increased benefit to people from other cultures (Nursing Theory, 2016). Cultural habits and practices are important when initiating behavioral modification as an approach to chronic disease management. This gap in practice can result in the development of HTN comorbidities and disabilities.

The practice focused question used to guide this doctoral project was: What are the most effective clinical management (non-pharmacological) strategies for normalizing blood pressure in Afro-Caribbean immigrants of non-Hispanic origin diagnosed with HTN?

This doctoral project has the potential to address this gap in practice through nurse education on this exclusive population. To address some of the modifiable factors such as diet, health belief and practices that are unique to the Caribbean culture, clinicians need to understand the culture. According to Ko and Turner (2017), having knowledge of one's culture can help to foster mutual respect and cooperation. Understanding these

factors in the context of Afro-Caribbean immigrants of non-Hispanic origin will results in a shared meaning for agreeing to care management strategies.

Nature of the project

The source of evidence for this project was from data obtained from research studies published in peer-reviewed journal. When the data are aggregated, these individual research studies can provide credible evidence for analysis and synthesis to produce clinical practice recommendations (Bramer, Rethlefsen, Kleijnen, & Franco, 2017). For this project, the optimal search strategy included the following electronic databases: CINAHL, Embase, MEDLINE, PubMed, PsycINFO, Web of Science (Core Collection), the JBI Library and the Cochrane Library.

This systematic review was performed using the method developed by the Joanna Briggs Institute (JBI). Systematic reviews are a synthesis of past research using a planned method written as a protocol (JBI 2014). The JBI method provides a robust and systematic process to search, select, assess, and synthesize research studies to generate evidence for a specific clinical question. Studies that were considered included Afro-Caribbean immigrants of non-Hispanic origin with a diagnosis of HTN living in the Caribbean region or living as immigrants in North America. The term Caribbean is defined as the countries and/or territories of Antigua and Barbuda, Aruba, Bahamas, Barbados, Cayman Islands, Cuba, Dominica, Dominican Republic, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent, and the Grenadines. The inclusion criteria included studies published with abstracts written in English and studies published from January 2000 to the present, with a focus on studies published since

December 2010. Exclusion criteria included studies published before 2000 and in other languages. The findings from this project will be disseminated to stakeholders in Southern Florida. The results will include recommendations for evidence-based interventions.

The way data are collected and then organized for analysis is important for the overall integrity of a systematic review. Data collection is the structured process of selecting data sources based on a project question, identifying the key variables, and then extracting the data for analysis. The process requires a clear and concise plan compliant with established ethical principles (Grove, Burns, & Gray, 2013). For this doctoral project, data were collected from research literature. The data were then abstracted from each study into an excel-based spreadsheet for the next step which was review and analysis. Although there was a clear and concise plan to guide the process, there was no informed consent, as human subjects were not involved. However, all doctoral projects at Walden University require approval by the Institutional Review Board [IRB]. Data analysis is an important as well as exciting step in the project process. During this phase, the data required to answer the project question was organized, reviewed, and summarized in charts, tables, and graphs.

The purpose of this doctoral project was to identify the most efficacious non-pharmacological intervention for Afro-Caribbean immigrants of non-Hispanic origin living in the United States diagnosed with HTN. Findings from this systematic review will then be used to inform clinical practice, thus helps to fill the gap in practice.

Significance

Stakeholders can be considered as customers, suppliers, or any group that are likely to benefit from the outcome of a project. Therefore, their involvement is paramount. One way in which stakeholders can be involved in a study is through engagement. Stakeholder engagement is a process of building relationship through communications and shared decision-making about the study topic(s), data collection and analysis, as well as interpretation and dissemination of research findings (King et al., 2018). For this project, the stakeholders were actively engaged throughout the development.

Some of the stakeholders with whom I collaborated during the development of this project included physicians, nurses, office staff, patients, local pharmacies, pharmaceutical representatives, and dietitians. Although their roles varied, addressing this local problem had a positive impact on them. An example of one stakeholder impacted by addressing this local problem was the local pharmacies. The pharmacy was recognized as an important stop in any community. Saramunee et al. (2014) stated that in addition to its traditional role of supplying medications, the pharmacy serves the public as a source of health care advice, clarification, and education about medication. According to CDC (2017), research reveals that medication adherence and health outcomes improve significantly when pharmacists are involved. Findings from this systematic review will be used to inform local pharmacist which will help to better enhance their knowledge and understand about the culture and health practices of Afro-Caribbean immigrants of non-Hispanic origin.

Nurses play a pivotal role in health care. They form the initial and ongoing relationship with patients and their families. The contribution that this doctoral study brought to nursing practice included added education for nurses, patients, and families. Patient actions are often influenced by their cultural believes. Nurses in clinics and doctors' offices will be more knowledgeable about the culture and health care belief of patients from the Caribbean. Cultural incongruence affects health care education, which ultimately affects patient care. Patients' healing progress can be altered when they feel that providers, who are unaware of their culture judge and misunderstand them (Ong-Flaherty, 2016).

The findings from this systematic review will be disseminated by publication of the final project manuscript. Beyond this publication, the success of this project in terms of transferability is coupled with the future development of a CPG-EP. A single primary care practice based in Fort Lauderdale Florida was the targeted location for the doctoral project.

The overall program can be shared with other primary care practices, managing large Caribbean patient populations in South Florida. Extending the project to these practices is planned beyond the current focus for this doctoral work.

The result from this doctoral project can lead to positive social change at the local level as well as influencing national and international practice. At the local level, changes in the clinical practices at the ambulatory setting that tailored to the Caribbean patients with HTN can lead to better outcomes physically and financially. Clinical education

specific to managing this unique population can result in clinicians feeling more confident in their clinical practices.

At the national level, clinical practices can be influenced by the dissemination of the recommendations from this project. The management of Afro-Caribbean immigrants of non-Hispanic origin adult patients diagnosed with HTN is a distinctive population, and many clinicians are unfamiliar with the uniqueness of this culture. As such, changes in practice can impact the overall cost of care for the population. Each change that results in better patient management can incrementally reduce the total costs associated with HTN in the United States, which are $46 billion (CDC, 2016). This cost includes health services, disabilities, and lost productivity (CDC, 2016).

Summary

In this section1, a brief overview of HTN and problems associated with this disease for Afro-Caribbean immigrants of non-Hispanic origin adult patients were discussed. The successful development and implementation of this systematic review was critical to enhancing clinician knowledge and understanding the evidence for clinical practice tailored for this population. The end goal was to provide better patient care to this unique patient population to improve their health outcomes.

In the next section, the concepts, models, and theories used to inform this doctoral project will be discussed. In addition, the local background and context, the relevance of this project to nursing practice and the role of the DNP student will also be addressed.

Section 2: Background and context

Introduction

HTN impacts more than a billion people worldwide, including nine million deaths each year (WHO, 2013). HTN is a key clinical disorder driving the progression of many chronic diseases. Importantly, serious cardiovascular conditions, with underlying HTN, result in 17 million deaths each year (WHO, 2013). HTN is attributed as a primary cause for least 45% of deaths from heart disease and 51% of deaths from stroke (WHO, 2013). Importantly, HTN disproportionately affects vulnerable and poor populations in most countries, but more directly in the low and middle-income countries where health systems are weak (WHO, 2013). Some of the low and middle-income countries are in the Caribbean Islands. The prevalence of HTN is very high in the Caribbean Islands. In Jamaica, it affects 21% of the citizens; in Barbados, Trinidad, and Tobago it affects 25%; and in St. Kitts, the British Virgins Islands, and Grenada it affects 35–38% (Figueroa et al., 2017).

To aid in the control of this chronic problem, education plays a vital role. According to Beigi et al., (2014), educational programs were proven to be effective in increasing knowledge, improving self-management, and controlling detrimental lifestyle habits of the patients with HTN. Adherence to treatment increases when the patients are knowledgeable; therefore, well-designed educational interventions with active participation of the patients are necessary for increasing HTN knowledge, self-monitoring, and control.

The practice focused question used to guide this doctoral project was: What are the most effective clinical management (non-pharmacological) strategies for normalizing blood pressure in Afro-Caribbean immigrants of non-Hispanic origin diagnosed with HTN? The purpose of this doctoral project was to develop a rigorous synthesis of the research evidence to inform a culturally tailored primary care CPG-EP, focused on nonpharmacological interventions and strategies to improve the clinical management of Afro-Caribbean immigrants of non-Hispanic origin adult patients diagnosed with HTN.

In this section, the theoretical basis for the project, its significance to nursing practice, local background and context, my role as the DNP student and the project team will be discussed.

Concepts, models and theories

Transcultural Nursing

The Madeleine Leininger's Theory of Culture Care and Diversity and Universality was used to guide this project, as this was the only nursing theory that focused on culturally competent and congruent care. The theory was developed in the 1950's by Madeleine Leininger. According to (Parker & Smith, 2010), Leininger believed that transcultural nursing care could provide meaningful therapeutic health and healing outcomes. Leininger's work was the foundation for nursing as a humanistic and scientific process to support people with diseases through culturally tailored care, considering cultural values, beliefs, and practices, and to achieve improved health.

The purpose of the transcultural nursing theory was to discover culturally base emic and etic care phenomenon that were congruent or meaningful to different culture,

how they function and how they influence the patients' lives (Leininger, 1991, 1994; Leininger & McFarland, 2006, as cited in Leininger, 2007). In developing the transcultural nursing theory, Leininger believed that providing culturally congruent care would promote health and healing, and improve the quality of life for individuals, groups, families, and communities.

Leininger (2008) emphasized that culturally based care needs to be discovered to link nursing and anthropology together to develop the new discipline of transcultural nursing. Leininger (1978, 1995) stressed that culturally based care was a major missing dimension in nursing care, which is vital to support compliance with healing and wellness. This lack occurs because of nurses' limited knowledge of culture and the meaning and practice of care in diverse cultures. Leininger (1970; 1978; 1988; 1995, 2006, as cited in Leininger, 2008) discovered this problem while working with children from different cultures.

In developing the transcultural nursing theory, Leininger (1970) hoped to establish an adequate knowledge base that nurses could use as a guide for transcultural nursing practices. According to Leininger (2007), nurses have been caring for people from different cultures, but have had no specific theory, concept, or research method to discover the appropriate culturally base care for people of different cultures. Leininger believed that establishing professional nursing care that is culturally based is essential and valuable to nursing and should be the foundation of nursing science knowledge for the 21st century.

Health Belief Model

Another model used to inform this project was the Health Belief Model [HBM]. According to Rosenstock (1974, Jones et al., 2014) the HBM was developed in the early 1950s by social scientists at the United States Public Health Service in order to understand the failure of people to adopt disease prevention strategies or screening tests for the early detection of disease. The HBM model has four core constructs that explain health behaviors: perceived seriousness, perceived susceptibility, perceived benefit, and perceived barriers. In the HBM, Rosenstock (1974, Jones et al., 2014) proposed that people will take action if: (a) they believe that they are susceptible to a condition (perceived susceptibility), (b) they believe that there could be serious consequences to their health (perceived severity), (c) they believe that their susceptibility will be reduced if they take certain actions (perceived benefits), and (d) they perceive some negativity related to the health action (perceived barriers). Using the HBM as a framework can help nurses to understand these patients' perceptions of benefits, threats, cues to action, and self-efficacy play a role in the likelihood of their becoming involved in their own care (Bishop, Baker, Boyle, & Mackinnon, 2014). Having patients participate in their own health care is an appropriate strategy because it empowers them to be more compliant to recognized risk and prevent harm.

The HBM was used to guide this literature review because a specific culture was being addressed, which was the Caribbean culture. Culture, customs, and religion are three significant factors that influence one perception and practices regarding health, sickness, diseases, and treatment. Therefore, when completing this literature review,

inclusion criteria included Caribbean culture and their beliefs regarding health, disease, and sickness.

Definition of terms

Caribbean Culture: The cultures of the Caribbean countries are a blend of colonial mainstays. Each of the Caribbean islands has a unique and distinct cultural identity that was molded by early European colonialists, the African slave trade, Asian influences as well as indigenous Indian tribes. Elements of the Caribbean culture include its food, music and dance, language, history, festivals, and events (Caribbean Traveler, 2009).

Clinical Practice Guidelines: Clinical practice guidelines are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances (NIH, 2017).

Cultural Competence: The ability of providers and organizations to deliver effectively health care services that meet the social, cultural, and linguistic needs of patients (Leininger, 1970, 1971, as cited in Leininger, 2007)

Cultural Congruent Care: It is a process of effective interaction between the provider and client levels. Both provider and client-level elements that be considered to begin to capture the complexities of congruent health care (Schim & Doorenbos, 2010).

Culturally Sensitive Care: This care is unique in that it is based on views of culturally diverse patients rather than the views of health care professionals. It also entails modified provider and staff behaviors and attitudes, implementation of policies and

environment characteristics that culturally diverse patients identify as indicators of respect for their culture (Tucker, Marsiske, Rice, Nielson, & Herman, 2011).

Hypertension [HTN]: HTN is defined as having a systolic blood pressure of ≥140 mm Hg or a diastolic of ≥90 mm hg (CDC, 2016).

Pharmacological Intervention: Referred to using medication to treat diseases (CRC Health, 2015). This does not include herbal supplements. Herbal supplements are regulated by the FDA, but not as drugs or as foods. They fall under a category called dietary supplements (Mayo Clinic 2019).

Primary Care: Primary care is the long-term relationship between a person and their clinician. The clinician provides care for most of their health needs and coordinates additional health care services beyond the clinician's area of expertise (National center for primary care, 2016).

Nonpharmacological Intervention (NPIs): Referred to therapy(ies) that does not involve the use of medication. It includes psychological and social therapies that people and communities can take to help slow the spread of illnesses and diseases (CDC, 2017).

Tailored Interventions: Using communication, drugs, or other types of treatments that is specific for an individual or a group to improve health or change behavior (National Cancer Institute, n.d.)

Systematic review: A rigorous, exhaustive review of evidence-based literature on a specific topic of interest (Higgins & Green, 2011).

Relevance to nursing practice

Lee (2013) conducted a quasi-experimental study to examine the effect of a medication self-management education program on medication awareness, communication with health care providers, medication misuse behavior and blood pressure (BP) in patients with HTN. The participants included 23 patients for the control group and 26 for the experimental group. The experimental group participated in a medication self-management education program that included verbal education personal consultation and five practice sessions in medication self-management. Although the study revealed no significant difference between the two groups' BP, researchers found that the education program was effective in improving medication awareness and communication with health care providers and a in decrease medication misuse behavior. The researchers recommended that educational programs be used as an effective intervention for improving medication self-management for patients with HTN.

Beigi et al. (2014) conducted a quasi-experimental study to determine the effectiveness of an educational program on the level of knowledge, lifestyle changes, and BP control among hypertensive patients. Findings indicated that the educational programs were effective in increasing knowledge, improving self-management, and controlling the detrimental lifestyle habits of the patients with HTN. The researchers concluded that educational interventions have significantly desirable effects on lifestyle modification and BP control. Therefore, they should become an integral part of management of the patients with HTN. Thus, a public educational program for promoting HTN awareness and lifestyle modification is an urgent need.

Lauziere, Chevaire, Poirier, Utzschneider, and Belanger (2013) undertook a pilot study to examine the effects of a structured interdisciplinary education program on BP, knowledge, anthropometric measures, medication compliance, behavioral risk factors, and quality of life. The study participants were assigned to an intervention (n = 21) and a regular care group (n = 19). The intervention group attended four weekly sessions related to HTN. Anthropometric measures and BP were recorded at Baselines one month, three months, and six months for all participants. Both groups completed questionnaires on knowledge, health-related behaviors, and quality of life at these same intervals. The researchers concluded that participations in a structured interdisciplinary education program were associated with a reduction of systolic BP, thus the program contributed to a risk reduction for cardiovascular disease.

Results from a study conducted by Xu et al., (2014) confirmed that education can play an active role in blood pressure control among hypertensive patients (especially the elderly). The researcher concluded that after health education for patients with hypertension, systolic and diastolic blood pressures were substantially lowered; the effect was statistically significant ($P < 0.001$).

Gross, Anderson, Busby, Frith, and Panco (2013) conducted an educational project in a community clinic to assess the outcomes of a culturally sensitive educational program that was focused on African Americans and antihypertensive regimen, lifestyle changes, and medication adherence. Following an assessment of their knowledge belief and health habits, individualized culturally sensitive education was provided to the patients. The theory of planned behavior guided aspects of the education sessions. The

result was that patients who participated in the educational program demonstrated improved adherence to their treatment regimen (e.g., lifestyle changes, diet, exercise, and medication). The researcher concluded that health care professionals must recognize these needs and use culturally sensitive education if the desired treatment outcomes are to be realized, and if the risks of complications from uncontrolled HTN in the African American population are to be reduced.

Beune et al. (2014) conducted a cluster-randomized trial to evaluate the effect of a practice-based, culturally appropriate patient education intervention on BP and treatment adherence among patients of African origin with uncontrolled HTN. This study involved four Dutch primary care centers and 146 patients (intervention $n = 75$, control $n = 71$). Patients in the control group received standard HTN care and education as recommended by the Dutch clinical guidelines for general practitioners. Patients in the interventional group received three culturally adapted HTN education sessions that a trained practice nurse delivered during the second, eighth, and twentieth week post baseline. In addition, the patients also received standard care and education. The researcher reported that after six months, a significant improvement occurred in their diastolic BP and more compliance to lifestyle recommendations. The researcher supported the need for and benefit of a nurse-led, culturally adapted education, and proved that it would be effective when compared with usual care.

Feldman, Feldman, Barrón, Gerber and Peng, (2016) conducted a three-arm cluster randomized trial (usual home care, a basic or augmented interventions) to assess the comparative effectiveness of blood pressure control interventions for 845 Black home

care patients with uncontrolled hypertension. The 'usual home care', all patients received their usual home health services, a physician-ordered plan of care plus patient education, monitoring and hands-on care delivered by a field nurse; basic intervention patients received the JNC8 guide 'lowering your BP', a BP monitor with instructions and a BP log with the recommendation to review their BP readings with their home care nurse or primary care physician; The augmented intervention incorporated all components of the basic intervention and of usual home care. The researchers concluded that neither the augmented nor basic intervention was more effective than usual care in improving BP control, medication intensification or patient self-management. However, usual home care yielded substantial improvements, creating a high comparative effectiveness threshold.

Brennan et al. (2010) undertook a randomized controlled study (March 2006-December 2007) to determine whether a telephonic nurse disease management (DM) program designed for African Americans is more effective than a home monitoring program alone to increase blood pressure (BP) control among African Americans. A total of 5932 patients ages 23 years or older who were identified as African American with hypertension were randomly selected. Six hundred thirty-eight people (638) completed initial assessment. The intervention consisted of telephonic nurse DM (intervention group) including educational materials, lifestyle and diet counseling, and home BP monitor vs. home BP monitor alone (control group).

The findings revealed that systolic BP was lower in the intervention group (adjusted means 123.6 vs. 126.7 mm Hg, $P = 0.03$); there was no difference for diastolic

BP. The intervention group was 50% more likely to have BP in control (odds ratio [OR] = 1.50, 95% confidence interval [CI] 0.997-2.27, P = 0.052) and 46% more likely to monitor BP at least weekly (OR 1.46, 95% CI 1.07-2.00, P = 0.02) than the control group. Brennan et al., (2010) found that a nurse DM program tailored for African Americans was effective at decreasing systolic BP and increasing the frequency of self-monitoring of BP to a greater extent than home monitoring alone.

Results from the brief literature review concluded that an important approach to HTN management was behavioral modification and education. However, to initiate behavioral modification and to provide education, it is vital for clinicians to understand patients' cultural habits and practices because patient's behavior is influence by their cultural background. Knowledge deficit about patients' culture and practices can be detrimental to the patients' care. Providing cultural congruences care can be demanding and challenging for the nurse. To address modifiable factors such as diet and health beliefs that are unique to Afro-Caribbean immigrants of non-Hispanic origin, and to provide education, nurses need to understand their culture. My goal for this project was to improve the clinical management of HTN for Afro-Caribbean immigrants of non-Hispanic origin adult patients diagnosed with HTN. In the future, the findings will be used to inform the future development of a CPG-EP on HTN tailored for Afro-Caribbean immigrants of non-Hispanic origin diagnosed with HTN.

This project was embedded in nursing practice because nurses encounter patients from various cultures. Although various health care professionals can aid in providing education to patients, nurses are the main health care providers that patients and their

families look to for education and guidance (American Nurses Association 2017). One of the primary roles of the nurse is to care for individuals of all ethnic origins, religious backgrounds and support them through health and illness. In addition, nurses also function in the role of an educator; they teach their patients about disease process that may be affecting them at that time, and nurses often provide patients with resources that can assist them to improve their lives and disease outcomes.

The immigrant population and cultural diversity in the United States is rapidly changing. For example, the United States Census Bureau reported that since the summer of 2016, the American immigration population hit a record of 43.7 million immigrants (McCarthy, 2017). According to American Immigration Council (2017), Florida has been home to many immigrants and most of these immigrants are from the Caribbean Islands. The multicultural society in the United States has been increasing; therefore, transcultural nursing is a vital constituent of nursing care. As a result, nurses need to be culturally competent in their daily practice.

Culturally competent nurses are knowledgeable about the cultural characteristic of the patients they manage in clinical practice. They are skilled in identifying their patients' cultural norms, beliefs, and attitudes towards health and health care, which allows them to formulate individualize care plans to accomplish healthcare goals for their patients (Gustafson, 2005, as cited in Maier-Lorentz, 2008).

HTN is a silent killer and is the leading cause of cardiovascular disease and death. One way in which comorbidities of this condition can decrease is through education. The standard of practices that have been used to addressed HTN among Afro-Caribbean

immigrants of non-Hispanic origin include pharmacological management with limited or no education or cultural consideration. However, the prevalence of HTN among this population remains uncontrolled especially among the males. According to Hernandez-Vila (2015), options for pharmacological management recommended for Afro-Caribbean immigrants of non-Hispanic origin include calcium blockers and diuretics (Hernandez-Vila, 2015). However, most Afro-Caribbean immigrants of non-Hispanic origin are reluctant to take these medications due to knowledge deficit on administration and their side effects. Therefore, education on nonpharmacological management incorporating culture beliefs and practices would be beneficial for some of these patients.

One of the main gaps in practice was the lack of cultural congruent care for this population. Nurses are likely to encounter patients with culturally diverse beliefs and practices about health, wellness, and illness. Results of the systematic review and the subsequent CPG-EP will help in the advancement of nursing practice and resolve the current gap in practice.

Local background and context

Heart disease and stroke are the leading cause of death in the United States and HTN is one of the main modifiable risk factors. Although this risk factor is modifiable, efforts to control it remains a challenge (Office of Disease Prevention and Health Promotion, Healthy People 2020, 2018). The prevalence of HTN in black patients in the United States is the highest in the world (AHA, 2016). HTN develops early in their lives and is usually more severe. Researchers have also found that a gene might make African Americans much more salt sensitive, which can cause higher renal retention of sodium.

In people who have this gene, a little as one extra gram (half a teaspoon) of salt could raise BP as much as five mm Hg (AHA, 2016).

The State of Florida is home to a vast amount of people of Caribbean origin. Between 2013–2017 most people of Caribbean origin lived in Florida (41 percent) of which Miami and Fort Lauderdale had the largest Caribbean population (South Florida Caribbean News 2019). Miami-Dade County in Florida was home to 862,000 Caribbean immigrants, the highest among all United States counties, and 265,000 in Broward County (Migration Policy Institute, 2019). According Sanon, Mohammed and McCullagh (2014) results from a qualitative study in Miami Florida on Hattians patients in multispecialty clinic at a teaching hospital reveals that 77 (85.5%) of the 88 patients studied had HTN. Sixty-three of the 77 (81.82%) patients who were hypertensive were receiving treatment for hypertension. however, only 20 (26%) of these had the disease under control.

The practice focused question used to guide this doctoral project was: What are the most effective clinical management (non-pharmacological) strategies for normalizing blood pressure in Afro-Caribbean immigrants of non-Hispanic origin diagnosed with HTN? The clinical setting that inspired this doctoral project was a primary care internal medicine office in Fort Lauderdale Florida. The patient population seen in this office were predominantly first-generation Afro-Caribbean immigrants of non-Hispanic Origin. There was limited printed educational material, no structured HTN education or guideline, and inadequate HTN knowledge by non-physician medical personnel. Patient education was the sole responsibility of the physicians. The usual care provided to these

patients involved interaction between the physician and patient which lasted for approximately 10–15 minutes. Patients were seen on a three to six-month schedule. Although these patients were seen by the doctor who was a third-generation Caribbean descent, the staff were predominantly from other culture with limited knowledge and understanding of the Caribbean culture. Upon completion of this systematic review of the literature, the findings will be used to inform the future development of a CPG–EP on HTN tailored for Afro-Caribbean immigrants of non-Hispanic origin diagnosed with HTN.

To address HTN and its comorbidities, a collaborative effort is necessary. Input from governances included AHA, CDC, American College of Cardiology, Association of Black Cardiologists, American College of Preventive Medicine, American Geriatrics Society, American Pharmacists Association, American Society of Hypertension, American Society for Preventive Cardiology, National Medical Association, Preventive Cardiovascular Nurses Association, The Joint National Commission on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC8) and other health care organizations (Denne, 2018). Input from these organizations also included a mission and strategic vision, new preventions, diagnosis, and treatment guidelines guided by evidence-based research.

Results from a systematic research conducted by Haung, Song, He, and Xing (2016) revealed that improvement in health care system governance, health finance, health information, and health service delivery could make a difference in HTN management. The researchers also reported that good HTN management was associated

with good governance in local community health centers, available guideline directing management, along with interactive health education strategy.

Role of the DNP student

As a DNP student, I completed a systematic literature review to identify the best non-pharmacological management for Afro-Caribbean immigrants of non-Hispanic origin living with HTN. Through this review process, a search strategy was constructed to identify and evaluate the relevant literature specific to the clinical practice question. I refined the studies with inclusion/exclusion criteria, assess the quality of the included studies, analyzed the data from each study, and synthesized the data into findings. The findings will be used to inform a culturally tailored CPG-EP, focused on non-pharmacological interventions and strategies to improve the clinical management of Afro-Caribbean immigrants of non-Hispanic origin adult patients diagnosed with HTN.

Generating nursing knowledge to guide evidence-based clinical practice requires the collaboration of practice experts and research scientists. The DNP degree is designed to prepare doctoral nurses, as practice experts, to work with PhD nurse researchers to moved generate evidence that can be moved directly into clinical practice. In this regard, the AACN (2006) list eight essentials, which detail the competencies for clinical practice experts educated at the doctoral level. For example, Essential VII states: “Clinical prevention and population health for improving the nation’s health” Clinical prevention is defined as health promotion and illness prevention for individuals and families (AACN, 2006 p.15).

A DNP graduate is prepared to implement clinical preventions and population health activities that can help to improve health literacy to achieve the national goal of improving the health status of the population in the United States. In the United States, over 90 million people lack the health literacy skills needed to understand and act properly on health information that their providers give them. Low patient health literacy has been associated with poor health outcomes. These patients often do not use preventive services, which cause delays in diagnoses, higher rates of hospitalization, and increased risk of mortality. They often incur higher medical costs and receive lower quality health services (Miller, 2016). DNP graduates also engage in leadership. As a leader, the DNP graduate can integrate and institutionalize evidence-based clinical prevention and population health services for individuals, communities, and populations. HTN is a modifiable disease. However, to control this condition lifestyle modification is paramount. According to the AACN (2006) unhealthy lifestyle behavior accounts for more than 50% of preventable deaths in the United States, yet prevention interventions are underused in health care settings.

The findings from this project will be used as a foundation for the development of a culturally educational program on HTN tailored for Afro-Caribbean immigrants of non-Hispanic origin. I am a baby boomer of Caribbean descent who has been diagnosed with HTN and who has several family members and friends that are also affected with this disease. This allows me firsthand insight of this condition, its people, their culture, and the potential complications of HTN.

As the project leader, the motivation to complete this project has a personal context including: Familiarity with the Caribbean culture and family history of HTN. Over the years, I watched family members and close friends developed some of the comorbidities, suffered disabilities, and death secondary to HTN and its complications. As a bedside nurse, I had the opportunity to encounter numerous patients from the Caribbean Islands. During these encounters, I observed that medical practitioners have a great knowledge deficit regarding this population. Therefore, their patients adhere poorly to therapy, which results in multiple hospitalizations. Communication with these patients' reveals that some of their caregivers lack understanding because of their culture and language. Education provided to them is often limited; when it occurs, the language barrier causes poor comprehension and they are often hesitant to seek clarification. This lack of clarification results in poor self-care and adherence to therapy. I also had the opportunity during the practicum experience to attend several community events such as health fairs. During this time, I observed patients' hunger and yearning for information and clarification regarding HTN care and management. Some of these patients' questions were centered on medication, side effects, and cultural practices. Male patients were particularly interesting in how and whether medication could cause them to be impotent. Many men voiced this concern as one of the main reasons for not adhering to their medicine and medical plans.

HTN is prevalent among patients from African descent, which includes people from the Caribbean Islands. My ancestral history is of Caribbean descent; and I am personally affected by HTN. In addition, most patients from the Caribbean culture are

often deprived of adequate access to health care because of language barrier and their socioeconomic status. As an Afro-Caribbean immigrant of non-Hispanic origin, my knowledge and experiences could incite potential biases as I work on this project. Therefore, to address my potential biases, I need to first acknowledge these biases and discuss them with others such as stakeholders. These strategies will help me to be more opened-minded, which will help in changing my thought patterns as I work on the development of this project.

Summary

In section 2, I discussed the concepts, models, theories, and the relevance of this project development to nursing practice. The theories and models chosen were used as a framework to support the development, implementation, collection, and analysis of data. One of my goal for this project was to address the current gap in practice which is culturally congruent nursing care for Afro-Caribbean immigrants of non-Hispanic origin patients with HTN.

Clinical practice guidelines and educational programs are useful strategies to improve health and clinical outcomes. However, these strategies need to be culturally relevant. Cultural characteristics, namely beliefs, habits, and practices, are integrated into the lives of these patients. These characteristics influence their health care decisions, personal behaviors, and family interactions. The health outcomes can be directly impacted by culturally competent care. This necessitates an understanding of the culture to bridge the gap between Afro-Caribbean immigrants of non-Hispanic origin patients and their North American counterparts. The overall goal was to foster mutual

understanding and respect, which can result in optimal, clinicians, patient, and system outcomes (Ko & Turner, 2017). The local background and context and the role of the DNP student was also highlighted in this section.

In the next section, the sources of evidence that were used to address the practice focus question will be discussed. In addition, I will reiterate how collection, analysis and synthesis of the evidence was used to address the focus question, and the subsequent development of a CPG–EP which will be instrumental in bridging the gap in practice.

Section 3: Collection and analysis of evidence

Introduction

The problem addressed in this doctoral project was HTN among Afro-Caribbean immigrants of non-Hispanic origin. HTN has been more prevalent in persons of African descent than any other race (AHA, 2013). Although most Caribbean Islanders are identified with various races and ethnicities, Black Africans and their culture are deeply embedded in the history of the Caribbean. This results from enslaved Black Africans that were used as slave laborers (Galanes, 2017). The target population for this project were Afro-Caribbean immigrants of non-Hispanic origin patients with HTN.

The purpose of this doctoral project was to develop a rigorous synthesis of research evidence to inform the future development a culturally CPG–EP. The focus was on non-pharmacological interventions strategies to improve the clinical management of Afro-Caribbean immigrants of non-Hispanic origin adult patients diagnosed with HTN.

I decided to pursue this project based on my observation at a primary care internal office in South Florida. The patient population seen in this office were predominantly first-generation Afro-Caribbean immigrants of non-Hispanic origin. This practice had no structured HTN education or guidelines and inadequate HTN knowledge among non-physician and medical personnel. The education provided to these patients was exclusively by the physician and lasts approximately 10–15 minutes with follow up appointments on a three to six-month schedule. Although these patients were seen by a physician who was a third-generation Caribbean descent, the staff were predominantly from other cultures, with limited knowledge and understanding of the Caribbean culture.

The findings from this systematic review will be used to inform the future development of a CPG–EP on HTN tailored for Afro-Caribbean immigrants of non-Hispanic origin diagnosed with HTN that can be utilized in this office.

In section 3, the focus question, the source of evidence that was used to develop this project, and a description of the synthesis and analysis process will be addressed.

Practice focus question

The practice focused question used to guide this doctoral project was:

What are the most effective clinical management (non-pharmacological) strategies for normalizing blood pressure in Afro-Caribbean immigrants of non-Hispanic origin diagnosed with HTN?

The gap in practice that I observed at a local primary care office in South Florida, was a lack of standardized culturally tailored clinical management strategies, including educational programs for Afro-Caribbean immigrants of non-Hispanic origin adult patients diagnosed with HTN. This primary care office managed many Afro-Caribbean immigrants of non-Hispanic origin adult patients with HTN without a CPG or any other type of standardize protocol. As a result, patient care/education varied among clinicians. Thus, nurses were unable to provide cultural congruence care to these patients. While there is an increase in migration of Afro-Caribbean immigrants of non-Hispanic origin in Southern Florida (World population review, 2018), culturally specific clinical management and/or educational programs for Afro-Caribbean immigrants of non-Hispanic origin adults diagnosed with HTN is limited or not available.

Although not homogenous, most patients from the Caribbean Islands are influenced in specific ways by cultural factors, such as beliefs, customs, and practices. As such, their health behaviors are often directed by cultural factors. For example, cultural customs can influence how patients understand health concepts and how they perceive health and make decisions. Understanding the culture can better guide clinicians to tailor and managed care that are consistent with patient beliefs and values (Agency for Healthcare and Research and Quality (2015).

Source of evidence

The evidenced used to address the practice focus question for this project was obtained from several electronic databases. Some of these electronic databases included CINAHL, MEDLINE, Cochrane Library, and PubMed, Embase, PsycINFO, Web of Science (Core Collection) and the JBI Library. These databases were used to narrow the search specific to the focus problem, and to identify evidence-based practices and appropriate theories.

The keywords I used for the search in each database include *hypertension management (non-pharmacological), Caribbean, education*, '*cultural beliefs', 'hypertension education' African Caribbean, and culturally sensitive education*. The specific search strategy tested in the PubMed database included: (*hypertension) AND Caribbean) AND (African) OR black) AND (guideline) OR nonpharmacologic) OR treatment) OR management.*

Published Outcome and Research

The data used for this project was obtained from research studies published in peer-reviewed journals. The studies chosen addresses Afro-Caribbean immigrants of non-Hispanic origin with a diagnosis of HTN living in the Caribbean or North America region; studies that evaluated clinical management strategies, including non-pharmacological studies that compared the non-pharmacological intervention to normal management and studies that included the following outcomes: reduction in systolic and diastolic blood pressure, decrease complications such as stroke, heart diseases and other disabilities. Inclusion criteria included articles that were current, peer reviewed and foundational (e.g., the CDC).

Studies excluded were studies that were (a) not peered reviewed, (b) outside the 10-year window, and/or (c) came from unreliable sources (e.g., Wikipedia). Other exclusion criteria included studies that were written in languages other than English and with subjects who were under the age of 18. When the data were aggregated, they provide credible evidence for analysis and synthesis to produce clinical practice recommendations.

While there were no human subjects, patient data/information, or confidential papers required to complete this project, Walden University requires that all doctoral projects seek IRB approval prior to beginning the data collection process. This proposal was approved by the DNP project committee and by the Walden IRB. The Walden IRB approval number is 10-24-19-0267992.

Analysis and synthesis

A literature review matrix was used to help with the organization of the research studies and to help keep tract of sources for citation purposes. The literature matrix allows for easy compassion and synthesis of idea from the literature in order to answer the research question (St Mary University 2017; Appendix A).

Data were extracted and analyzed using the standardized critical appraisal instrument and the data extraction form from the Joanna Brigg institute meta-analysis of Statistics Assessment and Review instrument (JIB MAStARI; Appendix B). They were recorded utilizing the PRISMA (2015) four-phase flow diagram. These four phases are: identification, screening, eligibility and included. PRISMA is an evidence base - minimum set of items for reporting in systematic review and meta-analysis (Appendix D).

The American Association of Colleges of Nursing (AACN, 2006) level of evidence was used to triage studies in the moment (Appendix F). The AACN evidence system uses the alphabets system. The highest of evidence is identified by the letter A and the lowest level M. The purpose of determining the level of evidence and then critiquing the study was to ensure that the evidences were credible (eg, reliable and valid) and appropriate for inclusion into practice because not all research articles are equal in quality (Peterson et. al., 2014). The data abstracted from studies classified in levels A, B and C were used in this review.

The excluded studies were those that were (a) not peered reviewed, (b) outside the 10-year window, and/or (c) came from unreliable sources (e.g., Wikipedia). Other

exclusion criteria included studies that were in languages other than English and with subjects who were under the age of Age 18 (Appendix G).

Summary

The key points addressed in this section were, the focus problem and the purpose, outline, and identification of the sources of evidence that guided this project, and the analysis and synthesis process. The goal of this systematic review was to help fill the existing gap in practice which was culturally congruent nursing care for Afro-Caribbean immigrants of non-Hispanic origin patients with HTN.

In section 4, the findings, implications, and recommendations or solutions that will potentially address the gap in practice will be discussed. In addition, the contribution of the doctoral project team, and the strengths and limitations of the project will be also be discussed.

Section 4: Findings and Recommendations

Introduction

HTN is a chronic non-communicable condition that affects millions of people globally. According to WHO (2019), an estimated 1.3 billion people worldwide have HTN; two thirds of whom are living in low and middle-income countries. Some of those low and middle-income countries include the Caribbean. Although most Caribbean islands is home to residents from a wide range of ethnic heritages, there is a strong presence of African heritage in most of these islands with non-Hispanic Blacks as their main residents (Muscato, 2017). One population that is greatly affected by HTN is the black population. According to Rayner and Spence (2017), blacks have a greater tendency toward salt sensitivity and suppressed plasma renin which can result in the salt retention contributing to HTN.

The prevalence of HTN in the Caribbean is high. It affects 21% of adults in Barbados, Trinidad, and Tobago, 25% in Jamaica, and 35–38% in St Kitts, British Virgin Islands and Grenada (Figueroa, Harris, Duncan, & Tulloch-Reid, 2017). Through migration a vast number of Caribbean citizens are now residing in the United States. In 2017, approximately four million immigrants from the Caribbean resided in the United States, of which approximately 40% resided in Florida (Migration Policy Institute 2019).

HTN is highly prevalent in South Florida. This condition affects approximately half (48.7%) of adults between the ages of 45–79. According to CDC (2017), the prevalence of HTN among non-Hispanic black (40.3%) adults was higher than among non-Hispanic white adults (27.8%), non-Hispanic Asian adults (25.0%), and Hispanic

adults (27.8%). The gap in practice that was addressed in this project was the lack of culturally congruent HTN management and education for this population.

The purpose of this doctoral project was to identify the most efficacious non-pharmacological intervention for Afro-Caribbean immigrants of non-Hispanic origin living in the United States diagnosed with HTN. The practice focused question used to guide this doctoral project was: What are the most effective clinical management (non-pharmacological) strategies for normalizing blood pressure in Afro-Caribbean immigrants of non-Hispanic origin diagnosed with HTN?

A systematic computerized literature search was performed utilizing the following keywords: *(Hypertension) AND Caribbean) AND (African OR Black) non-pharmacologic) OR (treatment OR management)* on CINAHL, Embase, MEDLINE, PubMed, PsycINFO, Web of Science (Core Collection), the JBI Library and the Cochrane Library. Studies considered included mixed method studies, both nonrandomized and randomized control trials and systematic review. Dissertation and theses were excluded. The studies were ranked in according to AACN Level of Evidence (Appendix F). The data were collected and recorded utilizing the Joanna Briggs Institute data extraction tool (MAstARI) (Appendix B), and the Joanna Briggs Institute Prevalence Critical Appraisal Tool was used to analyze the data extracted (Appendix C).

Findings and Implications

PRISMA (2009) four-phase flow diagram (Appendix D), comprises of four sections: (a) identification, (b) screening, (c) eligibility, and (d) inclusion. This

diagram was diagram was used to guide this systematic review because it shows the flow of information through the different phases.

Based on search criteria the databases yield over 200 unduplicated studies plus two from other sources. The studies were reviewed based on the following inclusion criteria,

- Studies fewer than 5 years old
- Studies written in English
- Studies that include Afro-Caribbean immigrants of non-Hispanic origin with a diagnosis of HTN living in the Caribbean region or living as immigrants in North America region
- Studies participants over 18 years old.
- Peer reviewed studies

Over 100 studies were excluded for not meeting the inclusion criteria. Reasons for exclusion varied from diagnosis and titles other than HTN, participants under 18 years old and studies written in languages other than English. One hundred (100) abstracts were reviewed for eligibility and 54 of those were excluded. They were excluded because they were focused on pharmacological interventions, failed to identify the study design and or found to have inconclusive conclusions. A full text review was completed on 46 studies for eligibility and 21 were excluded. Some of the reasons for exclusion in this group included diagnoses other than HTN, subjects under 18 years of age, publication in non-peer reviewed journals, missing source of information, no description of methodology, missing descriptions of participants and poor credibility of some sources. Of the

remaining 25 studies, only one study met the inclusion the criteria based on the target population (Afro-Caribbean immigrants of non-Hispanic origin). Initially, the remaining 24 studies were excluded due to different target population. However, I choose to include them because their target populations were from similar groups in which non-pharmacological interventions were utilized to treat/control hypertension. In addition to the 24 studies, two more studies were included although they were conducted outside the 5-year window. I choose to include these studies because of the strength of the evidence they provided to a similar population. The strategies they identified to manage/control HTN can be used to inform the future development of a CPG–EP on HTN for the target population.

Study of Target Population

Although people of Afro-Caribbean of non-Hispanic origin represent the largest black immigrant group in the United States, (Migration Policy Institute 2019), there was limited research on non-pharmacological management for HTN specifically for this population. Schultz et al. (2015) study was the only study that included participants who were Afro-American of Non-Hispanic origin and that studied non-pharmacological strategies to management HTN. However, there were multiple studies that identified similar groups of people such as Black Americans, Pacific Islanders, Chinese, Spanish, and Koreans that utilized non-pharmacological interventions to control/manage HTN. These interventions included physical activities/exercises, diet/lifestyle modifications, lifestyle modification/behavioral changes, personal stories, and musical interventions.

Activities/physical exercises

Schultz et al. (2015) conducted a cluster randomized design study to evaluate the effectiveness of walking group interventions to promote physical activities and cardiovascular health (blood pressure). Walk Your Heart to Health (WYHH) was a 32-week community health promoter-facilitated walking group intervention. Participants that were predominantly Non-Hispanic Blacks were divided into intervention or lag intervention (control) groups. Psychosocial, clinical and anthropometric data were collected at baseline and eight weeks. The authors concluded that participation in the WYHH increases walking steps, which is a moderate form of physical activity. This form of activity was maintained for 32 weeks and found to be associated with improvement of multiple indicator of cardiovascular risks and maintained at 32 weeks. One of these cardiovascular risks was high blood pressure. The study revealed that physical activity was associated with lower odds of high blood pressure (0.9, $p = 0.1$).

A study conducted by Abdullah et al., (2016) on 45 male information technology officers between the age of 35–45-year-old to determine the effectiveness of aerobic exercises at different intensities to managing essential hypertension. Participants were randomly allotted into three groups (A, B, C) and given 4 weeks aerobic interval training of brisk waking for 45 minutes daily, four time per week, using a treadmill. Different intensities were assigned to each group. Group A was low intensity, group B was moderate intensity, and group C was high intensity. Results revealed that all three intensities of the aerobic exercises were effective in managing systolic and diastolic

blood pressure. However, the medium intensity aerobic exercise was found to be highly effective in managing blood pressure.

Herrod et al. (2019) conducted a systematic review of the literature to investigate exercise and other nonpharmacological strategies to reduce BP in the older adult. After reviewing 53 randomized control trials, interventions identified were aerobics exercise training, dynamic resistance exercises and combine aerobics and dynamic resistance exercise training and alternative lifestyle strategies. The researchers concluded that 3 months of traditional exercise-based lifestyle intervention produced a reduction in BP of approximately 5 mmHg systolic and three mmHg diastolic in older individuals like that expected in younger individuals.

Kaholojula et al. (2015) conducted a pilot study using a two-arm randomized control trials with a wait-list control group in Honolulu, Hawaii to test the effect of a 12-week Ola Hou intervention on BP coupled with selfcare education on BP on Native Hawaiians and Pacific Islanders (NHIP). Participants included in this study were diagnosed with HTN and over 21 years of age. NHIP with systolic BP > 140 mmHg were randomized to the intervention (n =27) or a wait list control (n=28). BP, physical functioning and eight aspects of health-related quality of life (HRQL) were assessed. Results from the study revealed a reduction in SBP compare to control (18.3 vs =7.6 mmHg respectively, $p \geq 0.05$) from base line to 3 months post intervention. In addition, improvement HRQL were significantly associated with SBP improvement. The researchers concluded that using Ola Hou as a physical activity component of HTN intervention can serve as a culturally congruent strategy to BP management.

Arija et al. (2018) conducted a randomized control trial to evaluate the effectiveness of a physical activity (PA) intervention program on cardiovascular disease (CVD) risk, health related quality of life (HRQoL) and BP control in hypertensive subjects. Participants in this study were adults over 65 years of age and were diagnosed with HTN for more than 1 year. The PA intervention program consisted of supervised walking session over 120 minutes in 6 sessions for 60 minutes. The control group received standard clinical care by health care professionals. The researchers concluded that the physical activity program improved cardiovascular health and HRQoL and improved BP control. The improvement during the intervention in the general health and the bodily pain of the HRQoL directly correlated with a decrease in SBP *(r* = 0.55, *p* = 0.030*; r* = 0.53, *p* = 0.040, respectively). These positive relationships between the completion of the program, the decrease in CVD risk and the increase in the quality of life over BP control supported the benefit of promoting healthy lifestyles and quality of life as adjuvant actions for the treatment of the BP.

Bersaoui, Baldew, Cornelis, Toelsie and Cornelissen (2019) completed a systematic review to determine the efficacy of exercise and blood pressure in healthy adults of African and Asian origins. The database I utilized for this research included Medline for randomized control trials published in peer reviewed journals. The literature included studies from March 2012 up to May 2019. The researchers identified 22 trials involving individuals of Asian origin and four trials involving individuals of African origin. They concluded that the effect of resistance training in Asians and Africans with elevated BP or hypertension could not be determined due to lack of data; however, they

found favorable effects of aerobic exercise training on BP in the African and the Asian population.

Jurik and Stastny (2019) conducted a systematic review of the literature to determine if strength training alone or combine with nutrition or supplement had any impact on arterial pressure reduction in normotensive and hypertensive populations. The literature included studies from 1996–2018. The review considered cohort studies, analytical cross-sectional studies, randomized control trials, and nonrandomized control trials that included BP and HR measurements, as well as data on nutritional program and strength training in all adult populations. The data revealed that a combination of strength training two to three times weekly at moderate intensity and nutritional program appeared to be equally effective in lowering SBP and DBP compared to strength training and nutritional program alone.

Igarashi, Akazawa and Maeda (2018) conducted a meta-analysis of randomized controlled trials to evaluate the effects of regular aerobic exercise on blood pressure in East Asian. Some of the databases that these researchers used to search for literature included MEDLINE, PubMed, the Cochrane library, and Google Scholar. Based on results generated from the literature, the researchers concluded that reduction in BP as a result of regular aerobic exercise may have a substantial health benefit for East Asians. The estimated reduction in the SBP was −4.7 mmHg, and the estimated reduction in the DBP was −3.2 mmHg, and the researchers hypothesized that the change in the SBP may have been related to the exercise volume. The researchers also determined that the effect of regular aerobic exercise on SBP depends on the exercise volume and that exercising

for a long time and at a high frequency may result in an effective reduction in blood pressure. Therefore, enough exercise volume is suggested to reduce the SBP in East Asians.

Wiles, Goldring and Coleman (2017) conducted a randomized cross-over study design to investigate whether home-based wall squat training could successfully reduce resting blood pressure and to explore the physiological variable that might mediate a change in resting blood pressure. Participants included in this study were normotensive black men over 30 years old. After eligibility were met, all participants were randomly assigned to a control and a 4-week home based isometric exercise training using a cross over design with a four-week washout period in between . Wall squat training was completed three times weekly over 4 weeks with 48 hours in between sessions. Each session was composed of four times/two-minute bouts of wall squat exercises. Results revealed that after four weeks of isometric wall squat exercises training, there was a significant reduction in resting systolic and diastolic blood pressure, mean arterial pressure and cardiac output. The researchers concluded that wall squat provides an effective method for reducing resting blood in the home resulting primarily from reduction in resting heart rate.

Cao et al. (2019) conducted a systematic review and meta-analysis to evaluate the effectiveness of different durations of aerobic exercise on hypertensive patients. Electronic data based utilized by the researchers include PubMed, Embase, Cochrane Library, and Web of Science, from which they retrieved 14 articles involving 860 participants. The ages of the participants ranged between 21 and 83 years of age. These

studies were published between 1985 and 2018. The researchers concluded that compared with the control group, significant effects of aerobic exercise were observed on reducing systolic blood pressure (SBP) (mean difference [MD] = −12.26 mm Hg, 95% confidence interval [CI] = −15.17 to −9.34, $p < 0.05$), diastolic blood pressure (DBP; MD = −6.12 mm Hg, 95% CI = −7.76 to −4.48, $p < 0.0$. Thus, this meta-analysis showed that aerobic exercises had favorable effects on blood pressure in hypertensive patients.

Diaz et al. (2017) conducted a population-based study (Jackson Heart study (JHS)) exclusively on an African American population-based cohort adult aged greater than 21 years, who resided in the Jackson, Mississippi. The purpose of this study was to examine the association of physical activity with incident hypertension among African Americans. Physical activity at the baseline examination was assessed using the JHS Physical Activity Survey 30-item questionnaire that assess physical activity in four domains: active living habits, work, home life, and sport/exercise activities. The study was restricted to 2051 participants with systolic BP (SBP) <140/90 and diastolic blood pressure (DBP) < 90 who were not taking hypertension medications. Result from this study revealed that higher levels of moderate or vigorous physical activities (MVPA) and the sport/exercise index were associated with a lower risk of incident hypertension, whereas no association was observed for work, active living, or household related physical activities. According to the researchers occupational or household activities were frequently done in bouts too short to elicit beneficial cardiorespiratory or metabolic adaptations (eg, ≥10 minutes) and typically consisted of nondynamic movements that do

did not increase cardiac output or whole-body metabolism. However, they should not be ruled out as important lifestyle behaviors

Carlson, et al. (2016) conducted a randomized trial to determine the efficacy of Isometric resistance training (IRT) for blood pressure management and the suitability of a low intensity working control group. The participants included forty hypertensive individuals, aged between 36 and 65 years. The IRT was conducted for eight weeks. The participants were randomized into two groups, working at an intensity of either 5% or 30% of their maximum voluntary contraction. Participants performed 4 x 2-minute isometric handgrip exercises with their nondominant hand, each separated by a 3-minute rest period for three days. Blood pressure measurements were conducted at baseline and at the end of the 8 eight weeks. The authors concluded that isometric resistance training conducted using handgrip exercise at 30% of maximum voluntary contraction significantly reduced SBP and mean arterial pressure. A lack of reduction in blood pressure in the 5% group indicated that a low-intensity group may be suitable as a working control for future studies.

Subramanian et al. (2011) conducted a cross-over randomized controlled trial in Kuruchikuppam India, to test the efficacy of three non-pharmacological interventions (physical exercise, salt restriction, and Yoga exercises) in preventing/controlling hypertension. The participants included 94 prehypertensive and hypertensive young adults between the ages of 21 and 25 years old. They were randomly allotted into three intervention groups. The interventions included physical exercise brisk walking for 50 to 60 minutes three to four days per week, salt intake reduction to at least half of their

previous intake and Yoga for 30 to 45 minutes per day five days per week. The researchers reaffirmed that although all three interventions showed statistically significant reduction of both systolic and diastolic blood pressure, physical exercise was more effective than salt reduction or yoga interventions. However, salt reduction and yoga should be urged to be used by the population and people who are unable to perform physical exercise.

Park, et al. (2014) completed a randomized, controlled trial to evaluate the effect of qigong on prehypertension and mild hypertension. Participants were between the ages of 19 and 65 years old with SBP between 120 and 159-mm Hg and/or DBP between 80 and 99-mm Hg. Participants were from the Republic of Korea. Participants were randomized to a qigong group and an untreated control group. The qigong group attended qigong classes 3 times per week and performed qigong at home at least 2 times per week for eight weeks. The exercises included meditation, breathing, and movement that focused on improving the function of kidney and liver, blood circulation, and lowering BP. Participants in the control group did not receive any intervention for hypertension. Outcome was evaluated after four weeks and eight weeks of qigong and four weeks postintervention. The researchers concluded that after eight weeks significant differences were observed between the qigong and the control groups regarding changes in SBP ($p = .0064$) and DBP ($p = .0003$). Thus, qigong may be an effective intervention in reducing BP in prehypertension and mild hypertension.

Inder et al. (2016) conducted a systematic review and meta-analysis to quantify the effects of isometric resistance training (IRT) on the change in SBP, DBP, and mean

arterial pressure in adults. Databases utilized by the researchers included Pub Med, CINAHL and the Cochrane controlled trials registry. Studies used for this review were published in a peer-reviewed journal between January 1966 to January 2015. The study included eleven randomized trials totaling 302 participants. The following reductions were observed; SBP mean difference (MD) − 5.20 mm Hg (95% confidence interval (CI) − 6.08 to − 4.33, Po0.00001); DBP MD − 3.91 mm Hg (95% CI − 5.68 to − 2.14, Po0.0001); and MAP MD − 3.33 mm Hg (95% CI − 4.01 to − 2.66, Po0.00001). Based their findings the researchers concluded that IRT lowered SBP, DBP and MAP.

Based on results from the above studies, the evidence was clear that exercises/physical activities positively affected BP in similar population. Regular moderate exercise helped to maintain weight and improve energy and was an effective nonpharmacological intervention to manage/control blood pressure. Because these effects were consistent regardless of the race or ethnicity of subjects, use of moderate exercise is potentially an important strategy that can be used to control/manage BP in Afro-Caribbean of non-Hispanic origin.

Nutrition/diet

Juraschek, et,al. (2017) conducted a randomized trial using the Dash-Sodium trial to determine the time course of blood pressure change over a period of time. The participants consisted of 412 participants (57% black) with a mean age of 48 years old, who were prehypertensive and not using hypertensive medication. The participants were divided into two groups: the control group, which was assigned a typical American diet, and the intervention group assigned the DASH diet. Participants from both groups were

fed three sodium levels 50, 100, 150 mmol of sodium per day respectively over a four-week period. BP were measured weekly for twelve weeks. The researchers concluded that in the context of a typical American diet, a low sodium diet reduced BP at one week with no evidence of plateau at four weeks. In contrast, the DASH diet lowered BP within one week, but its effects appeared to plateau. The preponderance of evidence from the original DASH-Sodium trial demonstrated that lowering sodium lowers blood pressure more effectively than the DASH diet.

Schoenthaler et al. (2018) conducted a two-arm randomized control trail (Faith Based Approach in the Treatment of HTN) to compare the effectiveness of a therapeutic lifestyle change (TLC) plus motivational interviewing (MINT) session versus health education (HE) alone on blood pressure reduction among blacks with uncontrolled hypertension. Participants included 373 self-identified blacks over eighteen years old with uncontrolled hypertension. The MINT-TLC intervention group received eleven weeks of group sessions on TLC plus three MINT sessions delivered monthly by lay health advisors. The HE control group received one TLC and 10 sessions on health topics delivered by local experts. The outcome variables were blood pressure reduction at 6 months and blood pressure control at nine months. Based on the result of the study the researchers concluded that a community-based lifestyle intervention delivered in churches led to significantly greater reduction in SBP in hypertensive lacks compared with HE alone.

Ndanuko, Tapsell, Charlton, Neale and Batterham (2016) conducted a systematic review and meta-analysis of randomized control trials between 1999 and 2014 to assess

the effect of dietary patterns on blood pressure in adults. According to the researchers, countries that were involved in the study included the United States, Italy, Brazil, Iceland, Sweden, Denmark, Finland, Australia, France, Spain, Iran, and Germany. The results suggested that healthy dietary patterns, such as the Nordic diet and Mediterranean diet, significantly lowered SBP and DBP by four mm Hg and two mm Hg, respectively. These diets were rich in fruit, vegetables, whole grains, legumes, seeds, nuts, fish, and dairy, while low in meat, sweets, and alcohol. They also concluded that, in addition to a healthy diet, efforts to reduce BP were through salt reduction and incorporating exercise would have an additional effect in lowering BP.Chiu et at. (2016) conducted a three-period randomized crossover study on individuals who consumed in random order a control diet, a standard DASH diet, and a higher-fat lower-carbohydrate modification of the DASH diet for three weeks each, separated by two weeks washout periods. The study aim was to test the effects of substituting full fat for low-fat dairy foods in the DASH diet, with a corresponding increase in fat and a reduction in sugar intake. Participants included men and women greater than 21 years of age with an average DBP between 80 and 95-mmHg and SBP160 mmHg for two screening visits. For one week, the participants consumed a diet consisting of a mixture of two or three foods from each experimental diet and then consumed in random order a control diet, a standard DASH diet, and a higher-fat, lower-carbohydrate modification of the DASH diet for three week each. Each experimental diet was separated by a two-week washout period. At the end of each experimental diet, participants visited the clinic on two consecutive days for clinical and laboratory measurements. In addition, a fasting blood sample was taken after each

washout period to document a return to baseline for standard lipid and BP measurements. The researchers concluded that the high fat -DASH diet lowered BP to the same extent as the DASH diet, but also reduced plasma triglyceride and very-low density lipoprotein (VLDL) concentrations without significantly increasing LDL cholesterol.

Lee et al. 2018 conducted a randomized control trials to evaluate the effectiveness of a home base dietary/lifestyle modification intervention on blood pressure management. The participants consist of 85 Korean patients over the age of 20 years diagnosed with pre or mild hypertension. They were divided into three groups. C group - an advised comparison group, D group - dietary education (DASH) approach group, and D + exercise (DASH and home base exercise) group. The intervention lasted eight weeks. The researchers concluded that lifestyle modification emphasizing both diet and exercise was effective in lowering blood pressure and should be favored over diet-alone modification.

Siervo, et al. (2015) conducted a systematic review and meta-analysis to determine the effects of the DASH diet on cardiovascular risk factors. The researchers searched databases such as Medline, Embase and Scopus databases from inception to December 2013. A total of twenty articles reporting data for 1917 participants were included in their meta-analysis. The duration of interventions ranged identified from 2 to 24 weeks. The researchers concluded that The DASH diet was found to result in significant decreases in systolic BP *(*25·2 mmHg, 95 % CI 27·0, 23·4; P,0·001) and BP (22·6 mmHg, 95 % CI 23·5, 21·7; P,0·001) and in the concentrations of total cholesterol (20·20 mmol/l, 95 % CI 20·31, 20·10; P,0·001) and LDL (20·10 mmol/l, 95 % CI 20·20, 20·01; P¼0·03). The findings demonstrated that DASH diet interventions could make a

significant contribution to the prevention of Cardiovascular diseases (CVD) beyond the well-known BP-lowering effects.

In addition to other non-pharmacological strategies, it was evident that nutrition positively affects blood pressure in populations similar to Afro-Caribbean of non-Hispanic origin. Dietary approaches to stop hypertension (DASH) is considered a heart healthy diet. It encourages low sodium and consist of fruits, vegetables, whole grains, and lean meat. Using this diet has shown to be effective in lowering high blood pressure naturally. Hence, this strategy may also be effective in controlling/managing BP in Afro-Caribbean of non-Hispanic origin.

Music and lifestyle modification

Conceição, et al. (2016) conducted a **systematic review** and meta-analysis of four studies to investigate the effects of dance therapy in hypertensive patients. Some of the databases the researchers utilized included Pubmed, Scopus, LILACS, IBECS, MEDLINE and SciELO via Virtual Health Library (Bireme). The researchers concluded that dance therapy resulted in a significant reduction in systolic blood pressure [weighted mean differences (WMD) -12.01mmHg; 95% CI: -16.08, -7.94mmHg; P<0.0001] when compared with control subjects. Significant reduction in DBP were also found (WMD -3.38mmHg; 95% CI: -4.81, -1.94mmHg; P<0.0001), compared with control groups. Moreover, two studies also demonstrated that dance therapy improved exercise capacity. The researchers summarized their result stating that dance therapy is an intervention positively associated with cognitive, emotional and social integration of the individuals. Dance therapy is also a low-cost intervention without reported side effects that can be

widely used with potential effect on blood pressure control and improvement on exercise capacity.

Kunikullaya, et at. (2016) conducted a randomized control trials to evaluate changes in blood pressure (BP) after three months of music intervention combined with lifestyle modifications, in comparison with conventional lifestyle modifications. The participants consist of adults between 30 and 60 years diagnosed with prehypertension and stage I hypertension as per the seventh report of the Joint National Committee (JNC VII) classification. The study period ranged from May 2012 to August 2013. Counselling for lifestyle modifications and various nonpharmacological measures were given to all the subjects as per JNC VII guidelines. Handouts were given to enhance compliance and to help them recall the instructions. Music was provided to the subjects based on their personal preference (compact discs, mobiles, i-pods). The participants had to listen to this music for about 15 min daily (during the same time every day, preferably without interruptions) at least five days a week for three months with weekly follow ups. Results of the study revealed that in group 1, there was a significant decrease in overall and awake DBP (~2.5 mm Hg) after intervention. After lifestyle modification (predominantly change in diet and stress;) in group 2, there was a statistically significant decrease in overall, awake SBP and DBP. The researchers concluded that music when used as an adjunct benefitted subject with initial BP in prehypertension range.

Im-Oun, et al. (2018) conducted a randomized control trials to investigate the effect of Thai instrumental folk music listening on blood pressure in Thai patients with stage 2 hypertension. One hundred-twenty participants were randomized to music

listening group and control group (1:1). The music listening group was assigned to listen to Thai instrumental folk music once a day for one month. Blood pressure were measures at home (day 0th and 30th) and office blood pressure (day 0th and 120th), respectively. Results reveals that Home systolic blood pressure (SBP) and diastolic blood pressure (DBP) in the music listening group were significantly reduced compared with *baseline* (−9.5 ± 7.1 mmHg (95%CI −11.43, −7.64) and −6.1 ± 5.7 mmHg (95%CI −7.51, −4.53), respectively). Both home SBP and DBP at day 30th of the music listening group were significantly lower than in the control group (−6.0 mmHg (95%CI −8.58, −3.40) and −3.15 mmHg (95%CI −5.20, −1.09), respectively.

The researchers concluded that Thai instrumental folk music listening was effective for SBP and DBP reduction in stage-2 HT patients and recommended that this nonpharmacological strategy be used as an alternating approach simultaneously with pharmacological treatment.

Astuti, Rekawati, and Wati (2019) conducted a study using a quasi-experimental design with pre and posttest with control group approach to determine the effect of progressive muscle relaxation and music therapy (RESIK) on BP among older Indonesian adults with HTN. The research suggested that music could inhibit and balance brain waves, capable to activate limbic system related with emotion. The study was conducted as many as 11 sessions in 6 days in the morning and evening with three practice sessions. This study showed that RESIK therapy significantly decreased BP, dropping it from category 1 hypertension to pre-hypertension (BP decreased as many as 29.2 mmHg (systolic) and 16.2 mmHg (diastolic). The researchers suggested that RESIK therapy

must be done regularly to maintain BP within normal limits. The evidence from the above studies was clear that music had a positive effect on BP in similar population. However, the tempo of the music is important. Listening to slow quiet classical music can have a relaxing effect on the mind and body and may help to lower BP in the target population.

Lifestyle modification/behavioral changes

Friedberg, et al. (2015) conducted a 3-arm, randomized controlled trial to evaluate the effectiveness of two behavioral interventions verses usual care in patient with uncontrolled BP. These interventions include telephone-delivered behavioral stage-matched intervention (SMI), a nontailored health education intervention (HEI) and usual care (UC). Participants included 533 adults that were recruited from July 2006 to March 2009 from the Veterans Affairs Medical Center clinics in Brooklyn and Manhattan. All participants received standard information about HTN and its treatment at enrollment. The UC group received no counseling. SMI and HEI received monthly telephone counseling for 6 months. Patients in SMI received tailored monthly phone counseling (30 minutes) on exercise, diet, and medications using a computer-based intervention manual. Patients in HEI had monthly telephone counseling (15 minutes) of standard nontailored information about HTN, diet, medication, and exercise guidelines for HTN. The researchers concluded that SMI led to lower systolic BP and better blood pressure (BP) control than UC. Was there any difference from the HEI group? Thus, SMI constitutes a new, potent approach to assist patients with uncontrolled HTN to reach BP goals. Based on the findings the researchers also concluded that continued communication with

patients can be effective in BP management. It portrays a sense of caring and support from health care personnel which not only provide education but encourages patients to change and adopt healthy behavior. This strategy may be affective in the Afro-Caribbean of non-Hispanic origin population in an effort control and manage HTN.

Survey design study

Liu, Byrd, and Rodriguez (2018) conducted a secondary data analysis to evaluate the four non- pharmacological strategies (weight loss, reduce sodium, reduce alcohol use and moderate or vigorous physical activity) adopted by patients based on physicians' recommendation. The population in this survey were 55% females, 73.8% non- Hispanic Whites, 14.3% non-Hispanic blacks, and 7.9% Hispanics over 18 years of age diagnosed with hypertension. They were selected from the US National Health and Nutrition Examination Survey (NHANES) from 1999-2004 only, because of lack of information for non-pharmacologic strategies in other NHANES periods. Between 1999 and 2004, 4,008 patients with a diagnosed of HTN reported that a doctor had recommend at least one nonpharmacological strategy as an adjunct to anti-hypertensive therapy. These participants were assessed via the questionnaire components in the NHANES survey. Liu, Byrd, and Rodriguez concluded that among HTN patients who reported having been told by physicians to undertake non- pharmacological strategies, a great majority of patients reported adopting multiple strategies (≥ two) for HTN control. Sodium intake reduction was the most reported adopted strategy and "more exercise" was the least adopted strategy by self-reports.

Although Liu, Byrd, and Rodriguez‘s methodology for this study was a secondary analysis of a national databank, the result from this study strongly indicated the impact physicians can have on patients in similar populations. Based on results from this study, physicians’ advice appears to play an important role in patients’ decisions to include non-pharmacological strategies to help manage/control hypertension. The researchers recommended the development of educational programs to enhance physicians’ ability to dispense effective advice to patients on non-pharmacological strategies to help control/manage HTN for populations of Hispanic origin.

Storytelling

Nguyen et al. (2018) conducted a cluster randomized controlled feasibility trial to evaluate the feasibility of the achievability of two community-based interventions, storytelling and educational, to improve HTN control. The trial was conducted on patients with poorly controlled HTN from four communities, which were equally randomized to the two intervention groups. The storytelling intervention included stories in the patients’ own words about coping with HTN. This was delivered by two DVDs three months apart. The didactic intervention included only didactic content, which were general recommendations for managing several important risk factors for hypertension and other non-communicable diseases and the importance of healthy lifestyle behaviors in controlling elevated BP levels. The didactic intervention included only one DVD. Results from the study revealed that between baseline enrollment and the twelve-month follow-up, mean systolic blood pressure declined by 10 mmHg (95% CI: 6.5–14.9) in the storytelling group and by six mmHg (95% CI: 1.6–10.0) in the didactic content group.

Summary of findings

The findings from this literature review confirmed that physical exercise, sodium restriction, music and lifestyle modification are four non-pharmacological interventions that are being utilized by other population to manage/control HTN (figure 1). However, there are limited specific non-pharmacological strategies identified to manage HTN specifically for Afro-Caribbean of non-Hispanic origin. The importance of controlling HTN for this population is vital. Without specific clinical management guidelines for non-pharmacological management for these patients, their only recourse will be pharmacological therapy. Because research has shown that the black population adherence to antihypertension medication remains low, these patients will be at greater risk for developing major cardiovascular completions such as heart disease, stroke and kidney disease (Ruppar, Dunbar-Jacob, Mehr, Lewis, & Conn, 2017). This will also have great financial impact on health care costs. According to CDC (2015) by 2030, the annual direct medical costs associated with cardiovascular diseases are projected to rise to more than $818 billion, while lost productivity costs could exceed $275 billion.

Although the findings from this systematic review identified only one study on the target population which indicate the effectiveness of non-pharmacological intervention in the management of HTN, non-pharmacological interventions were identified and indicated to be effective in the management of HTN in similar populations. Therefore, there is a need for these interventions be studied in the target population.

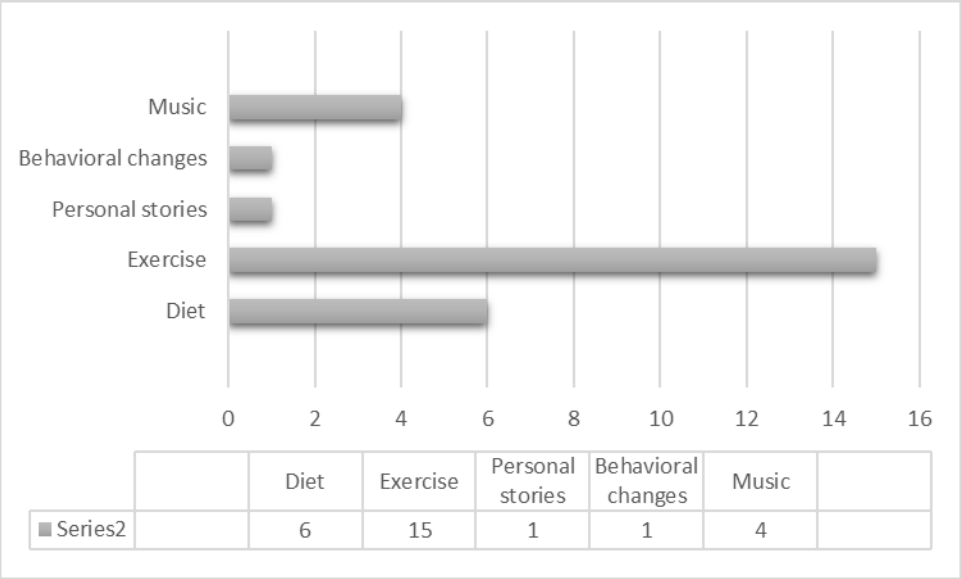


Figure 1: Most effective nonpharmacological strategies for managing HTN

Recommendation

The gap in practice addressed in this project was the lack of culturally congruent non-pharmacological management for hypertension, including cultural nursing education programs on HTN for Afro-Caribbean immigrants of non-Hispanic origin.

Based on the findings, my recommendations to address this gap in practice include:

- Utilization and incorporation of non-pharmacological interventions found to be effective in similar groups to management of HTN. These include:
    - Diet (DASH/sodium restriction)
        - Incorporation of food in their diet such as: whole grains, fruits, vegetables and low-fat dairy products fish, poultry and legumes, and small number of nuts and seeds a few times a week with small amount of red meat, sweets, and fats.

- Lifestyle management/changes which include but not limited to:
  - Lose extra pounds.
  - Exercise regularly.
  - Eat a healthy diet.
  - Reduce sodium intake
  - Limit the amount of alcohol intake.
  - Quit smoking.
  - Reduce caffeine intake
  - Reduce stress
- Physical activities
  - Two hours and 30 minutes per week of moderate-intensity physical activity, such as brisk walking.
- Music therapy
  - Listening to slower music (for 30 minutes) for example classical music.
- Behavioral changes
  - Include diet and activities as mentioned above.
- Personal stories
  - Joining support group and shearing and listing to personal stories.

I highly recommended that some these strategies be incorporated in clinical practice for this target population and be evaluated for effectiveness. These non-pharmacological interventions could also be used to inform the future development of a

CPG-EP. If effective interventions are incorporated and standardized as part of the clinical management for Non-Hispanic black immigrants' patients with HTN, HTN management and control for these patients will improve, health outcomes for the population will improve, and costs for health care for HTN-related comorbidities in these communities will decrease.

Strengths and limitations

This was an exhausted review conducted on studies published between 2010 and 2020. There were several strengths and limitations identified in this systematic review.

- First, there were studies that identified non-pharmacological interventions that have the potential for HTN management in the target population. Although some studies were outside the five-year period, their findings were congruent.
- Secondly, the studies included in the literature review were well-designed studies with adequate sample sizes.

Third, the number of articles that met inclusion criteria was limited. Only one study focused on the target population specifically. Other studies were included that addressed non-pharmacological strategies for managing HTN in similar populations to uncover potentially useful data.

Summary

In conclusion, result from this systematic review have significantly shown that non-pharmacological interventions can be effective in managing/controlling HTN. Although there were many strategies identified, the most effective strategies were

exercise/activities followed by diet and music therapy. Even though the literature did not show an abundance of evidence primarily on the target population, the evidence was significance in similar population. Therefore, the need for further studies on the effectiveness of non-pharmacological interventions on Afro-Caribbean of non-Hispanic origin need to be conducted.

Section 5: Dissemination plan

The protocol for this systematic review is submitted and registered with PROSPERO

(CRD42019080999).

My goal for this systematic review is to utilize the findings to enhance the management/control of HTN in Afro-Caribbean of non-Hispanic origin patients. I will initiate the dissemination of this project at the local level. At the local level I have several opportunities to present my findings at various conferences. One such conference is the ACCN local chapter conference, which is held annually in South Florida. Being a member of this organization, I have the opportunity to present my findings at their annual conference. Another potential opportunity for me to disseminate the findings from this project is through local workshops. These workshops could be held in local primary care physicians' offices here in South Florida whose patient population is predominantly Afro-Caribbean. Stakeholders at these conferences and workshops would include local physicians from local primary care physicians' offices, patients, nurses, and other health care professionals. In addition, the findings from this systemic review will be utilized in a local setting to inform the future development of a CPG-EP on HTN tailored for Afro-Caribbean immigrants of non-Hispanic origin at an ambulatory primary care practice located in Southern Florida. To accomplish this, I will continue to work with my mentor and the physicians and the staff at this local setting. My plan is for this CPG- EP to be shared with other local practices and be utilized as a guide for physicians and/or other health care practitioners in providing care and education on HTN for the target

population. In order to reach a wider scholarly audience, I will explore other options such as publication in nursing journals to disseminate my project.

Analysis of self

The experience I gained from undertaking this capstone project enhanced my knowledge and most importantly causes me to have a more profound appreciation for evidence-based research and its application into clinical practices. Completing this scholarly review of the literature has significantly expanded my knowledge base by the sheer volume of scholarly work reviewed and the examination of various theories. Consequently, my knowledge is current, as I worked at the very boundaries of current academic thought and clinical practices in the area of study. I have acquired a better understanding and appreciation for the paradigm of evidence-based research and its methodologies as the "gold standard" for informing the practice of nursing. Additionally, and perhaps most importantly, I have also discovered that there are gaps in the current body of literature in my chosen area of study and realized that more research needs to be done to see what works and what does not specifically for my target population. Based on the findings from the literature review I conducted it is evident that that there is a need for further research into the cultural aspects of Afro-Caribbean of non-Hispanic origin regarding non-pharmacological strategies and its use to manage/control HTN

According to (Zaccagnini and White (2011), DNP graduates are taught to make clinical decisions based on empirical evidence. As a DNP graduate, I now understand that there are different levels and types of evidence to consider when making decisions about patient care. For example, in caring for a patient of African descent with hypertension, I

could look to long term epidemiological studies or clinical cohort studies for their key conclusions, and along with my experience and judgement, decide on how best to care for these patients. As a result of the exposure gained in this DNP program and this project, I am more equipped and knowledgeable to make clinical decisions using evidence-based research whether as a practitioner in nursing faculty, clinical leader, or clinical researcher. Additionally, I am better prepared to assume leadership roles in any health care, academic or research settings. I am more confident and better able to communicate ideas at the various levels of the organization and work effectively in teams, because I now have the knowledge base and the research skills to find relevant information to make decisions for successful outcomes. As a DNP graduate I am also qualified and equipped to teach and prepare students to deliver patient-centered care as a member of the interdisciplinary team that emphasizes evidence-based practice, quality improvement and informatics (Zaccagnini & White, 2011) thus nurturing these essential skills and capabilities in the next generation of nursing practitioners.

I have learned that great diligence and focus are required to conduct evidence-based research, and to form its key conclusions requires objectivity and a sharp, constantly critical mind. Undertaking this project significantly improved my time management skills. As a result, I was able to schedule different activities to run concurrently and consecutively to ensure that the project progressed at an acceptable pace to meet the desired deadline, while balancing family life and work. This research project required hours of reading, writing, analysis of studies and gathering of data, which took great effort to process large volumes of information into summaries and arrive at key

conclusions. These essential project management skills which were enhanced by this project experience, will be most beneficial to my professional growth and development in undertaking future projects as a leader or as a team member. Additionally, as a result from my tenure at Walden and the development of this project, my communication skills and self-confidence have improved significantly. I now have improved clarity of thoughts in developing ideas, and improvement in communicating with my peers orally through discussion or presentation. In addition, I now have a better appreciation for and usage of communication technologies to deliver content to my intended audience and to conduct research as needed. I can now devise effective ways of communicating depending on the audience I intend to reach. This is very important to my long-term goal of being a tenured nursing faculty and to lead academic research undertakings. The lesson learned from this exposure will help in the enhancement of my professional career as well as my personal life.

Summary

HTN is known as the silent killer. Due to silent nature of this condition, effective management is vital. Afro- Caribbean of non-Hispanic origin culture is highly susceptible to HTN. If left untreated these patients can develop major cardiovascular problems which ultimately places huge financial burden on both families and society. The cost of early intervention is minimal compare to the financial impact of neglect. It is therefore necessary that guidelines be developed, and these patients are provided with options and education on how to manage and control this disease.

References

Agency for Healthcare Research and Quality. (2015). *Consider culture, customs, and beliefs: Tool #10*. Retrieved from https://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/literacy-toolkit/healthlittoolkit2-tool10.html

Abdullah M., R., Eswaramoorthi V., Rabiu M., M., Amad B., H., Maliki, M., Norlaila A., K., & Haque, M. (2016). The effectiveness of aerobic exercises at difference intensities of managing blood pressure in essential hypertensive information technology officers. *Journal of Young Pharmacists, 8*(4), 483–486. Retrieved from http://dx.doi.org10.5530/jyp.2016.4.27

Alsaigh, S. A., Alanazi, M. D., Alkahtani, M. A., Alsinani, T. S., Abdullah, A. A., Alabdrabalrasol, E. A., & Alzahrani, T. A. (2018). Lifestyle modifications for hypertension management. *Egyptian Journal of Hospital Medicine, 70*(12), 2152–2156. https://doi.org/10.12816/0045044

American Association of Colleges of Nursing. (2006). *The essentials of doctoral education for advanced nursing practice*. Washington, DC: Author. Retrieved from https://www.pncb.org/sites/default/files/2017-02/Essentials_of_DNP_Education.pdf

American Heart Association. (2013). *High blood pressure: Statistical fact sheet: 2013 update*. Retrieved from https://www.heart.org/idc/groups/heart-public/@wcm/@sop/@smd/documents/downloadable/ucm_319587.pdf

American Heart Association. (2015). *What about African Americans and high blood pressure*? Retrieved from https://drcharlesmodlin.wordpress.com/2014/07/28/what-about-African Americans-and-high-blood-pressure/

American Heart Association. (2016). *Blood pressure and African American*. Retrieved from http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/Understand Symptoms Risks/High-Blood-Pressure-and-African Americans_UCM_301832_Article.jsp#.WqaAV-jwbIU

American Heart Association. (2018). *More than 100 million Americans have high blood pressure, AHA says*. Retrieved from https://www.heart.org/en/news/2018/05/01/more-than-100-million-americans-have-high-blood-pressure-aha-says

American Immigration Council. (2017). *Immigrants in Florida*. Retrieved from https://www.americanimmigrationcouncil.org/research/immigrants-florida

American Nurses Association. (2017). *IOM future of nursing report*. Retrieved from https://www.nursingworld.org/practice-policy/iom-future-of-nursing-report/-

Apóstolo, J., Queirós, P., Rodrigues, M., Castro, I., & Cardoso, D. (2015). The effectiveness of nonpharmacological interventions in older adults with depressive disorders: a systematic review. *JBI Database of Systematic Reviews and Implementation Reports, 13*(6), 220–278. https://doi-org.ezp.waldenulibrary.org/10.11124/jbisrir-2015-1718

Arija, V., Villalobos, F., Pedret, R., Vinuesa, A., Jovani, D., Pascual, G., & Basora, J. (2018). Physical activity, cardiovascular health, quality of life and blood pressure control in hypertensive subjects: randomized clinical trial. *Health and Quality of Life Outcomes*, *16*(1),184. https://doi-org.ezp.waldenulibrary.org/10.1186/s12955-018-1008-

Ashaye, M. O., & Giles, W. H. (2003). Hypertension in blacks: a literature review. *Ethnicity & Disease*, *13*(4) 456–462.

Astuti, N. F., Rekawati, E., & Wati, D. N. K. (2019). Decreased blood pressure among community dwelling older adults following progressive muscle relaxation and music therapy (RESIK)...6th Biennial International Nursing Conference, October 2-4, 2017, Depok, Indonesia. *BMC Nursing*, *18*(1), N.PAG. [do not use library-specific info in references]

Balfour, P. C., Rodriguez, C. J., & Ferdinand, K. C. (2015). The Role of Hypertension in Race-Ethnic Disparities in Cardiovascular Disease. Current Cardiovascular Risk Reports,9(4). http://dx.doi.org/10.1007/s12170-015-0446-5

Beigi, M. A. B., Zibaeenezhad, M. J.,Aghasadeghi, K., Jokar, A., Shekarforoush, S., & Khazraei, H. (2014). The effect of educational program on hypertension management. *International Cardiovascular Research Journal*, *8*(3), 94–98.

Bersaoui, M., Baldew, S.-S. M., Cornelis, N., Toelsie, J., & Cornelissen, V. A. (2019). The effect of exercise training on blood pressure in African and Asian populations: A systematic review and meta-analysis of randomized controlled trials. *European Journal of Preventive Cardiology*, 2047487319871233. https://doi-org.ezp.waldenulibrary.org/10.1177/2047487319871233

Beune, E. J. A. J., van Charante, E. P. M., Beem, L., Mohrs, J., Agyemang, C. O., Ogedegbe, G., & Haafkens, J. A. (2014). Culturally adapted hypertension education (*CAHE*) to improve blood pressure control and treatment adherence in patients of African Origin with uncontrolled hypertension: Cluster-randomized trial. *Public Library of Science One*, *9*(3). https://doi.org/10.1371/journal.pone.0090103

Bidulescu, A., Francis, D. K., Ferguson, T. S., Bennett, N. R., Hennis, A. J. M., Wilks, R., & Harris, E. N. (2015). Disparities in hypertension among Black Caribbean populations: A scoping review by the U.S. Caribbean Alliance for Health Disparities Research Group (*USCAHDR*). *International Journal for Equity in Health*, *14*, 125. http://doi.org/10.1186/s12939-015-0229-0

Bishop, A. C., Baker, G. R., Boyle, T. A., & Mackinnon, N. J. (2015, December). Using the health belief model to explain patient involvement in patient safety. *Health Expectation*, *18*(6), 3019-3033. https://doi.org/10.1111/hex.12286

Bourne, P. A., McDaniel, S., Williams, M. S., Francis, C., Kerr-Campbell, M. D., & Beckford, O. W. (2010, May). The changing faces of diabetes hypertension and arthritis in a Caribbean population. *North American Journal of Medical Sciences*, *2*(5), 221-229. https://doi.org/10.4297/najms.2010.221

Bramer, W. M., Rethlefsen, M. L., Kleijnen, K., & Franco, O. H. (2017). Optimal database combinations for literature searches in systematic reviews: A prospective exploratory study. *Systematic Reviews 6*(245), 1-12. https://doi.org/10.1186/s13643-017-0644-y

Brennan, T., Spettell, C., Villagra, V., Ofili, E., McMahill-Walraven, C., Lowy, E. J., & Daniels, P. (2010). Disease management to promote blood pressure control among African Americans. Population Health Management, 13(2), 65–72. .http://dx.doi.org10.1089/pop.2009.0019.

Brewster, L., Montfrans, G., Oehlers, G., Seedat, Y., Brewster, L. M., van Montfrans, G. A & Seedat, Y. K. (2016). Systematic review: antihypertensive drug therapy in patients of African and South Asian ethnicity. *Internal & Emergency Medicine*, *11*(3), 355–374. https://doi-org.ezp.waldenulibrary.org/10.1007/s11739-016-1422-

Burrello, J., Erhardt, E., M., & Saint-Hilary. (2018). Pharmacological Treatment of Arterial Hypertension in Children and Adolescents: A Network Meta-Analysis. *Hypertension*, *72*(2), 306–313. Retrieved from http://dx.doi.org.ezp.waldenulibrary.org/10.1161/HYPERTENSIONAHA.118.1086

Cade, W. T., Reeds, D. N., Mondy, K. E., Overton, E. T., Grassino, J., Tucker, S. & Yarasheski, K. E. (2010). Yoga lifestyle intervention reduces blood pressure in HIV-infected adults with cardiovascular disease risk factors. *HIV Medicine*, *11*(6), 379–388. https://doi-org.ezp.waldenulibrary.org/10.1111/j.1468-1293.2009.00801.

Caribbean Traveler, (2009). *Caribbean culture*. Retrieved from http://www.caribbeantraveler.com/caribbean-culture.html

Carnaval Pereira da Rocha, P. E., Schuindt da Silva, V., Bastos Camacho, L. A., & Godoi Vasconcelos, A. G. (2017). Effects of long-term resistance training on blood pressure: a systematic review. *Brazilian Journal of Kineanthropometry & Human Performance*, *19*(6), 730–742. https://doi-org.ezp.waldenulibrary.org/10.5007/1980-0037.2017v19n6p730

Carlson, D. J., Inder, J., Palanisamy, S. K. A., McFarlane, J. R., Dieberg, G., & Smart, N. A. (2016). The efficacy of isometric resistance training utilizing handgrip exercise for blood pressure management: A randomized trial. *Medicine*, *95*(52), 1–7. https://doi-org.ezp.waldenulibrary.org/10.1097/MD.0000000000005791

Cao, L., Li, X., Yan, P., Wang, X., Li, M., Li, R., & Yang, K. (2019). The effectiveness of aerobic exercise for hypertensive population: A systematic review and meta-analysis. *Journal of Clinical Hypertension (Greenwich, Conn.)*, *21*(7), 868–876. https://doi-org.ezp.waldenulibrary.org/10.1111/jch.13583

Cernes, R., & Zimlichman, R. (2017). Role of Paced Breathing for Treatment of Hypertension. *Current Hypertension Reports*, *19*(6). doi:10.1007/s11906-017-0742-1

Colgrove, B., S, Connell, K., L., Lackland, D. T., & DiPette, D. J. (2017). Controlling hypertension and reducing its associated morbidity and mortality in the Caribbean: Implications of race and ethnicity. *The Journal of Clinical Hypertension*, *19*(10), 1010–1014. Retrieved from https://doi-org.ezp.waldenulibrary.org/10.1111/jch.13056

Commodore-Mensah, Y., Matthie N, W. J., S, B. D., Himmelfarb, C. D., Cooper, L. A., & Chandler, R. D. (2018). African Americans, African Immigrants, and Afro-Caribbean Differ in Social Determinants of Hypertension and Diabetes: Evidence from the National Health Interview Survey. Journal of Racial and Ethnic Health Disparities. http://dx.doi.org10.1007/s40615-017-0446-x

Conceição, L. S. R., Neto, M. G., do Amaral, M. A. S., Martins-Filho, P. R. S., & Oliveira Carvalho, V. (2016). Effect of dance therapy on blood pressure and exercise capacity of individuals with hypertension: A systematic review and meta-analysis. *International Journal of Cardiology*, *220*, 553–557. https://doi-org.ezp.waldenulibrary.org/10.1016/j.ijcard.2016.06.182

Chiu, S., Bergeron, N., Williams, P. T., Bray, G. A., Sutherland, B., & Krauss, R. M. (2016). Comparison of the DASH (Dietary Approaches to Stop Hypertension) diet and a higher-fat DASH diet on blood pressure and lipids and lipoproteins: a randomized controlled trial. *American Journal of Clinical Nutrition, 103*(2), 341–347. https://doi-org.ezp.waldenulibrary.org/10.3945/ajcn.115.123281

Center for Disease Control and Prevention. (2015). *African American heart disease and stroke fact sheet*. Retrieved from http://www.cdc.gov/dhdsp/data_statistics/fact_ sheets/fs_aa.htm.

Center for Disease Control and Prevention. (2015). *Heart Disease and Stroke Cost America Nearly $1 Billion A Day in Medical Costs, Lost Productivity*. Retrieved from https://www.cdcfoundation.org/

Center for Disease Control and Prevention. (2017). *Hypertension Prevalence and Control Among Adults.* Retrieved from http://www.cdc.gov/nchs/data/databriefs/db289.pdf.

Center for Disease Control and Prevention. (2017). *Hypertension in Florida: Data from the One Florida Clinical Data Research Network*. Retrieved from https://www.cdc.gov/pcd/issues/2018/17_0332.htm

Center for Disease Control and Prevention. (2020*). Facts about Hypertension* . Retrieved from https://www.cdc.gov/bloodpressure/facts.htm

Center for Disease Control and Prevention. (2017). *Increasing the use of collaborative practice agreements between prescriber and pharmacists.* Retrieved from https://www.cdc.gov/dhdsp/pubs/docs/CPA-Translation-Guide.pdf

Denne, E. (2018). *PA helps to revise hypertension guidelines*. Retrieved from https://www.aapa.org/news-central/2018/02/pa-helps-revise-hypertension-guidelines.

Diaz, K. M., Booth, J. N., Seals, S. R., Abdalla, M., Dubbert, P. M., Sims, M., Shimbo, D. (2017). Physical Activity and Incident Hypertension in African Americans: The Jackson Heart Study. *Hypertension (Dallas, Tex.: 1979)*, *69*(3), 421–427. https://doi-org.ezp.waldenulibrary.org/10.1161/HYPERTENSIONAHA.116.08398

Feldman, P. H., Feldman, P. H., Barrón, Y., Gerber, L. M., & Peng, T. R. (2016). Home-based interventions for black patients with uncontrolled hypertension: A cluster randomized controlled trial. *Journal of Comparative Effectiveness Research*, *5*(2), 155–168: https://doi-org.10.2217/cer.15.60

Ferguson, T., S., Francis, D., K., Tulloch-Reid, M., K., younger, N., O., McFarlane, S., R., & Wilks, R., J. (2011). An Update of the burden of cardiovascular diseases risk factors in Jamaica: Findings from the Jamaica Health and lifestyle survey 2007-2008. *West Journal of Medicine*, *60*(4), 422–428.

Figueroa, J. P., Harris, M. A., Duncan, J. P., & Tulloch-Read, J. K. (2017). Hypertension control: The Caribbean needs intervention studies to learn how to do better. *West Indian Medical Journal*, *66*(1). https://doi.org/10.7727/wimj.2017.073

Frieden, T. R., & Jaffe, M. G. (2018). Saving 100 million lives by improving global treatment of hypertension and reducing cardiovascular disease risk factors. *The Journal of Clinical Hypertension*, *20*(2), 208-211. https://doi.org/10.1111/jch.13195

Friedberg, J. P., Rodriguez, M. A., Watsula, M. E., Lin, I., Wylie-Rosett, J., Allegrante, J. P., Natarajan, S. (2015). Effectiveness of a tailored behavioral intervention to improve hypertension control: primary outcomes of a randomized controlled trial. *Hypertension (0194911X)*, *65*(2), 440–446. https://doi-org.ezp.waldenulibrary.org/10.1161/HYPERTENSIONAHA.114.03483

Genovesi, S., Orlando, A., Rebora, P., Giussani, M., Antolini, L., Nava, E., & Valsecchi, M. G. (2018). Effects of Lifestyle Modifications on Elevated Blood Pressure and Excess Weight in a Population of Italian Children and Adolescents. *American Journal of Hypertension*, *31*(10), 1147–1155. https://doi-org.ezp.waldenulibrary.org/10.1093/ajh/hpy096

Gillis, D. J., Wouda, M., & Hjeltnes, N. (2008). Non-pharmacological management of orthostatic hypotension after spinal cord injury: a critical review of the literature. *Spinal Cord*, *46*(10), 652–659. https://doi-org.ezp.waldenulibrary.org/10.1038/sc.2008.48

Galanes, L. (2017). *African Culture and the Caribbean*. Retrieved from https://enciclopediapr.org/en/encyclopedia/african-culture-and-the-caribbean/

Gross, B., Anderson, E. F., Busby, S., Frith, K. H., & Panco, C. E. (2013, June/Summer). Using culturally sensitive education to improve adherence with anti-hypertensive regimen. *Journal of Cultural Diversity*, *20*(2), 75–79. Gustafson, D.L. (2005). Transcultural nursing theory from a critical cultural perspective. *Advances in Nursing Science, 28*, 2-16.

Grove, S., Burns, N., & Gray, J. R. (2013). *Practice of Nursing Research*. Elsivier.

Hagins, M., States, R., Selfe, T., & Innes, K. (2013). Effectiveness of Yoga for Hypertension: Systematic Review and Meta-Analysis. *Evidence-Based Complementary & Alternative Medicine (ECAM)*, *2013*, 1–13. https://doi-org.ezp.waldenulibrary.org/2013/649836

Haung, K., Song, Y. T., He, Y. H., & Feng, X. L. (2016). Heath system strengthening and hypertension management in China. *Global Health Research and Policy, 1*(3). https://doi.org/10.1186/s41256-016-0013-8

Herrod, P. J. J., Doleman, B., Blackwell, J. E. M., O'Boyle, F., Williams, J. P., Lund, J. N., & Phillips, B. E. (2018). Exercise and other nonpharmacological strategies to reduce blood pressure in older adults: A systematic review and meta-analysis. *Journal of The American Society of Hypertension: JASH*, *12*(4), 248–267. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jash.2018.01.008

Hernandez-Vila, E. (2015). A Review of the JNC 8 Blood Pressure Guideline. *Texas Heart Institute Journal, 43*(2), 226–228. https://doi-org.:10.14503/THIJ-15-5067

Hipp, D., M., Ely, E.,W. Pharmacological and nonpharmacological management of delirium in critically ill patients. *Neurotherapeutics: The Journal 0f The American Society for Experimental Neurotherapeutics*. 2012;9(1):158-175. https://doi-org.10.1007/s13311-011-0102-9.

Igarashi, Y., Akazawa, N., & Maeda, S. (2018). Regular aerobic exercise and blood pressure in East Asians: A meta-analysis of randomized controlled trials. *Clinical and Experimental Hypertension (New York, N.Y.: 1993)*, *40*(4), 378–389. https://doi-org.ezp.waldenulibrary.org/10.1080/10641963.2017.1384483

Im-Oun, S., Kotruchin, P., Thinsug, P., Mitsungnern, T., Techa-Atik, P., & Pongchaiyakul, C. (2018). Effect of Thai instrumental folk music on blood pressure: A randomized controlled trial in stage-2 hypertensive patients. *Complementary Therapies in Medicine*, *39*, 43–48. https://doi.org/10.1016/j.ctim.2018.05.014Inder, J. D., Carlson,

D. J., Dieberg, G., McFarlane, J. R., Hess, N. C., & Smart, N. A. (2016). Isometric exercise training for blood pressure management: a systematic review and meta-analysis to optimize benefit. *Hypertension Research: Official Journal of The Japanese Society of Hypertension*, *39*(2), 88–94. https://doi-org.ezp.waldenulibrary.org/10.1038/hr.2015.111

Joanna Briggs Institute. (2014). *The Joanna Briggs Institute reviewers' manual.* Adelaide, Australia: Author. Retrieved from http://joannabriggs.org/assets/docs/sumari/ReviewersManual-2014.pdf

Jinn, X., Pan, B., Wu, H., & Xu, D. (2019). The effects of traditional Chinese exercise on hypertension: A systematic review and meta-analysis of randomized controlled trials. *Medicine*, *98*(3), e14049. https://doi-org.ezp.waldenulibrary.org/10.1097/MD.0000000000014049

Jones, C. L., Jensen, J. D., Scherr, C. L., Brown, N. R., Christy, K., & Weaver, J. (2014, July 10). The Health Belief Model as an explanatory framework in communication research: Exploring parallel, serial, and moderated mediation. *Health Communication*, *30*(6), 566-576. https://doi.org/10.1080/10410236.2013.873363

Jurik, R., & Stastny, P. (2019). Role of Nutrition and Exercise Programs in Reducing Blood Pressure: A Systematic Review. *Journal of Clinical Medicine*, *8*(9). https://doi-org.ezp.waldenulibrary.org/10.3390/jcm8091393

Juraschek, S. P., Woodward, M., Sacks, F. M., Carey, V. J., Miller III, E. R., Appel, L. J., & Miller, E. R., 3rd. (2017). Time Course of Change in Blood Pressure from Sodium Reduction and the DASH Diet. *Hypertension (0194911X)*, *70*(5), 923–929. https://doi-org.ezp.waldenulibrary.org/10.1161/HYPERTENSIONAHA.117.10017

Kaholokula J., K., A., Look, M., Mabellos, T., Zhang, G., de Silva, M., Yoshimura, S., & Solatorio, C. (2017). Cultural Dance Program Improves Hypertension Management for Native Hawaiians and Pacific Islanders: A Pilot Randomized Trial. *Journal of Racial and Ethnic Health Disparities*, *4*(1), 35–46. https://doi-org.:10.1007/s40615-015-0198-4

Kailani, S. H., & Wright, J. T., Jr. (1991). Hypertension in African Americans: evaluation and treatment issues. *Journal of the Association for Academic Minority Physicians: The Official Publication of the Association for Academic Minority Physicians*, *2*(4), 162–167. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=mnh&AN=1687447&site=ehost-live&scope=site

King, K. Khodyako D., Kate, M., Taras, H., Meeker, D., Campos, H., & Ohno-Machado, L., (2018). A Novel Stakeholder Engagement Approach for Patient-centered Outcomes Research. *Medical Care, 56*, S41–S47.https://doi-org.:10.1097/MLR.0000000000000790

Ko, A., & Turner, J. (2017). Culturally sensitive care for Asian immigrants: Home healthcare perspective. *Home Healthcare Now*, *35*(9), 507-513. https://doi.org/10.1097/NHH.0000000000000608

Kola, L. D., Sumaili, E. K., & Krzesinski, J. M. (2009). How to treat hypertension in blacks: review of the evidence. *Acta Clinical Belgica*, *64*(6), 466–476. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=mnh&AN=20101869&site=ehost-live&scope=site

Kunikullaya, K. U., Goturu, J., Muradi, V., Hukkeri, P. A., Kunnavil, R., Doreswamy, V., & Murthy, N. S. (2016). Combination of music with lifestyle modification versus lifestyle modification alone on blood pressure reduction - A randomized controlled trial. *Complementary Therapies in Clinical Practice*, *23*, 102–109. https://doi-org.ezp.waldenulibrary.org/10.1016/j.ctcp.2015.05.004

Lauziere, TA., Chevarie, N., Poirier, M., Utzschneider, A., & Belanger, M. (2013, Spring). Effect of an interdisciplinary education program on Hypertension: A pilot study. *Canadian Journal of Cardiovascular Nursing*, *23*(2), 12-19.-

Lee, C. J., Kim, J. Y., Shim, E., Hong, S. H., Lee, M., Jeon, J. Y., & Park, S. (2018). The Effects of Diet Alone or in Combination with Exercise in Patients with Prehypertension and Hypertension: A Randomized Controlled Trial. *Korean Circulation Journal*, *48*(7), 637–651. https://doi-org.ezp.waldenulibrary.org/10.4070/kcj.2017.0349

Leininger, M. (2007). Theoretical questions and concerns: Response from the theory of culture care diversity and universality perspective. *Nursing Science Quarterly*, *20*(1), 9-13. https://doi.org/10.1177/0894318406296784

Leininger, M. (2008). *Evolution of transcultural nursing with breakthroughs to discipline status* Retrieved from http://www.madeleine-leininger.com/cc/evolution.pdf

Lee, J. K. (2013). Evaluation of a medication self-management education program for elders with hypertension living in the community. *Journal of Korean Academy of Nursing*, *43*(2), 267–275. https://doi.org/10.4040/jkan.2013.43.2.267-

Liu, X., Byrd, J., B., & Rodriguez, C. J. (2018). Use of physician-recommended non-pharmacological strategies for hypertension control among hypertensive patients. *Journal of clinical hypertension*, *20*(3), 518–527. https://doi-org.:10.1111/jch.13203

Logan, A., Marsden, J., Freeman, J., & Kent, B. (2017). Effectiveness of non-pharmacological interventions in treating orthostatic hypotension in the elderly and people with a neurological condition: a systematic review protocol. *JBI Database of Systematic Reviews & Implementation Reports*, *15*(4), 948–960. https://doi-org.ezp.waldenulibrary.org/10.11124/JBISRIR-2016-003027

Mahmood, S., Shah, K. U., Khan, T. M., Nawaz, S., Rashid, H., Baqar, S. W. A., & Kamran, S. (2018). Non-pharmacological management of hypertension: In the light of current research. *Irish Journal of Medical Science*. https://doi-org:10.1007/s11845-018-1889-8

Maier-Lorentz, M. M. (2008). Transcultural nursing: Its importance in nursing practice. *Journal of Cultural Diversity*, *15*(1), 37-43.

Mayo Clinic (2019). *Nutrition and healthy eating*. Retrieved from https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/herbal-supplements/art-20046714

McCarthy, N. (2017). U.S. immigrant population hit record 43.7 million in 2016. Retrieved from https://www.statista.com/chart/11534/us-immigrant-population-hit-record-437-million-in-2016/--

Miller, T. (2016). Health literacy and adherence to medical treatment in chronic and acute illness: A meta-analysis. *Patient Education and Counseling, 99*(7), 1079-1086. https://doi.org/10.1016/j.pec.2016.01.020

Migration Policy Institute. (2019). *Caribbean Immigrants in the USA*. Retrieved from https://www.migrationpolicy.org/article/caribbean-immigrants-united-states?gclid=Cj0KCQjwwODlBRDuARIsAMy_28WTjIRoYZAwSctlI-X8bGB7Lq58qmNPBPT6t2VMM4hsNXfaPuk5zb8aApZ0EALw_wcB

Morris, J. (2017). *Education and positive social change*. Retrieved from http://africaeli.org/education-and-positive-social-change/

Muscato, C. (2017). *Caribbean Ethnic Groups*. Retrieved from http://study.com/academy/lesson/caribbean-ethnic-groups.html

National center for primary care, (2016). *Primary are matters*. Retrieved 2019, from http://primarycarematters.org/what-is-primary-care/

National Cancer Institute. (n.d.). *Definition of tailored intervention*. In NCI Dictionary of Cancer Terms. Retrieved from https://www.cancer.gov/publications/dictionaries/cancer-terms?cdrid=561723

National Institute of Health (2017). *Clinical Practice Guidelines*. Retrieved from https://nccih.nih.gov/health/providers/clinicalpractice.htm

Ndanuko, R. N., Tapsell, L. C., Charlton, K. E., Neale, E. P., & Batterham, M. J. (2016). Dietary Patterns and Blood Pressure in Adults: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Advances in Nutrition, 7*(1), 76–89. https://doi-org.ezp.waldenulibrary.org/10.3945/an.115.009753

Nguyen, H. L., Ha, D. A., Goldberg, R. J., Kiefe, C. I., Chiriboga, G., Ly, H. N., & Allison, J. J. (2018). Culturally adaptive storytelling intervention versus didactic intervention to improve hypertension control in Vietnam- 12 month follow up results: A cluster randomized controlled feasibility trial. *Plos One*, *13*(12), e0209912. https://doi-org.ezp.waldenulibrary.org/10.1371/journal.pone.0209912

Nissensohn, M., Román-Viñas, B., Sánchez-Villegas, A., Piscopo, S., & Serra-Majem, L. (2016). The Effect of the Mediterranean Diet on Hypertension: A Systematic Review and Meta-Analysis. *Journal of Nutrition Education and Behavior*, *48*(1), 42–53. e1. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jneb.2015.08.023

Nursing Theory. (2016). *Leininger's culture care theory*. Retrieved from the Nursing Theory Web site: http://www.nursing-theory.org/theories-and-models/leininger-culture-care-theory.php

Office of Disease Prevention and Health Promotion, Healthy People 2020. (2018). *Heart disease and stroke*. Retrieved from https://www.healthypeople.gov/2020/topics-objectives/topic/heart-disease-and-stroke

Ong-Flaherty, C. (2016). Cultural incongruence in nursing Education. *American Journal of Nursing*, *116*(11), 11. https://doi-org.10.1097/01.NAJ.0000505561.80881.fa

Park, J.E., Hong, S., Lee, M., Park, T., Kang, K., Jung, H., Choi, S.-M. (2014). Randomized, controlled trial of qigong for treatment of prehypertension and mild essential hypertension. *Alternative Therapies in Health & Medicine*, *20*(4), 21–30. Retrieved from https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=rzh&AN=107799184&site=ehost-live&scope=site

Parker, M. E., & Smith, M. C. (2010). *Nursing Theories and Nursing Practice*. Philadelphia: Davis Plus.

Pan American Health Organization. (2017). *Health in the Americas Plus*. Retrieved from https://www.paho.org/salud-en-las-americas-2017/?page_id=113Parker, M. E., & Smith, M. C. (2010). *Nursing theories and nursing practice*. Philadelphia, PA: Davis Plus.

Peterson, M. H., Barnason, S., Donnely, B., Hill, K., Miley, H., Riggs, L., & Whiteman, K. (2014). Choosing the best evidence to guide clinical practice: Application of AACN levels of evidence. *Critical Care Nurse*, *34*(2), 58–68. https://doi-org.:10.4037/ccn2014411

Rayner, B. L., & Spence, D. J. (2017, February). Hypertension in Blacks: Insight from Africa. *Journal of Hypertension*, *35*(2), 234–239. Retrieved from http://doi.org/10.1097/HJH.0000000000001171

Ribeiro, A. G., Ribeiro, S. M. R., Dias, C. M. G. C., Ribeiro, A. Q., Castro, F. A. F., Suárez-Varela, M. M., & Cotta, R. M. M. (2011). Non-pharmacological treatment of hypertension in primary health care: a comparative clinical trial of two education strategies in health and nutrition. *BMC Public Health*, *11*, 637. https://doi-org.ezp.waldenulibrary.org/10.1186/1471-2458-11-637

Rosenstock, I. (1974). The Health Belief Model and preventive health behavior. *Health Education Monographs*, *2*(4), 354–386. https://doi.org/10.1177/109019817400200405

Ruppar, T. M., Dunbar-Jacob, J. M., Mehr, D. R., Lewis, L., & Conn, V. S. (2017). Medication adherence interventions among hypertensive black adults. *Hypertension*, *35*(6), 1145–1154. https://doi- org 10.1097/HJH.0000000000001260

Ryan, D. J., Cunningham, C. J., & Fan, C. W. (2012). Non-pharmacological management of orthostatic hypotension in the older patient. *Reviews in Clinical Gerontology*, *22*(2), 119–129. https://doi-org.ezp.waldenulibrary.org/10.1017/S0959259811000220

Saramunee, K., Krska, J., Mackridge, A., Richards, J., Suttajit, S., & Phillips-Howard, P. (2014). How to enhance public health services use in community pharmacy? General public and health providers' perspectives. *Research in Social and Administrative Pharmacy*, *10*(2), 272-284. https://doi.org/10.1016/j.sapharm.2012.05.006

Sanon, M., Mohammed, S. A., & McCullagh, M. C. (2014). Definition and Management of Hypertension Among Haitian Immigrants: A Qualitative Study. *J Health Care Poor Underserved*, *25*(3), 1067–1078. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4137480

Schim, S. M., & Doorenbos, A. Z. (2010). A three-dimensional model of cultural congruence: Framework for intervention. *Journal of Social Work in End-Of-Life and Palliative Care*, *6*(3–4), 256-270. https://doi.org/10.1080/15524256.2010.529023

Schoenthaler, A. M., Lancaster, K. J., Chaplin, W., Butler, M., Forsyth, J., & Ogedegbe, G. (2018). Cluster Randomized Clinical Trial of FAITH (Faith-Based Approaches in the Treatment of Hypertension) in Blacks. *Circulation. Cardiovascular Quality and Outcomes*, *11*(10), e004691. https://doi-org.ezp.waldenulibrary.org/10.1161/CIRCOUTCOMES.118.004691

Schulz, A. J., Israel, B. A., Mentz, G. B., Bernal, C., Caver, D., DeMajo, R., Woods, S. (2015). Effectiveness of a walking group intervention to promote physical activity and cardiovascular health in predominantly non-Hispanic black and Hispanic urban neighborhoods: findings from the walk your heart to health intervention. *Health Education & Behavior: The Official Publication of The Society for Public Health Education*, *42*(3), 380–392. https://doi-org.ezp.waldenulibrary.org/10.1177/109019811456001

Siervo, M., Lara, J., Chowdhury, S., Ashor, A., Oggioni, C., & Mathers, J. C. (2015). Effects of the Dietary Approach to Stop Hypertension (DASH) diet on cardiovascular risk factors: a systematic review and meta-analysis. *British Journal of Nutrition*, *113*(1), 1–15. https://doi-org.ezp.waldenulibrary.org/10.1017/S0007114514003341

Spence, J. D., & Rayner, B. L. (2018). Hypertension in Blacks. *Hypertension*, *72*(2), 263–269. Retrieved from https://doi.org/10.1161/HYPERTENSIONAHA.118.11064

St. Mary University. (2017). *Literature Reviews:* Retrieved from http://tcwrite.smumn.edu/wp-content/uploads/2017/10/LitRevMatrix_TC.pdf

Subramanian, H., Soudarssanane, M., B., Jayalakshmy, R., Thiruselvakumar, D., & Navasakthi, D., Sahai, A., Saptharishi,L.,G. (2011). Non-pharmacological Interventions in Hypertension. *Indian Journal of Community Medicine*, *36*(3), 191–196. Retrieved from http://dx.doi.org.ezp.waldenulibrary.org/10.4103/0970-0218.86519

Tsolaki, M., Kounti, F., Agogiatou, C., Poptsi, E., Bakoglidou, E., Zafeiropoulou, M., Vasiloglou, M. (2011). Effectiveness of nonpharmacological approaches in patients with mild cognitive impairment. *Neuro-Degenerative Diseases*, *8*(3), 138–145. https://doi-org.ezp.waldenulibrary.org/10.1159/000320575

Tucker, C., M., Marsiske, M., Rice, K. G., Nielson J. J., & Herman, K. (2011, May). Patient-centered culturally sensitive health care: Model testing and refinement. *Health Psychology*, *30*(3), 342–350. https://doi.org/10.1037/a0022967

Urrico, P. (2018). Nonpharmacological Interventions in the Management of Hypertension in the Adult Population with Type 2 Diabetes Mellitus. *Canadian Journal of Diabetes*, *42*(2), 196–198. https://doi-org.ezp.waldenulibrary.org/10.1016/j.jcjd.2018.02.004

Wiles, J. D., Goldring, N., & Coleman, D. (2017). Home-based isometric exercise training induced reductions resting blood pressure. *European Journal of Applied Physiology*, *117*(1), 83–93. https://doi-org.ezp.waldenulibrary.org/10.1007/s00421-016-3501-0

World Health Organization. (2019). *Hypertension*. Retrieved from https://www.who.int/news-room/fact-sheets/detail/hypertension

World Health Organization. (2012). *New data highlight increases in hypertension, diabetes incidence*. Retrieved from http://www.who.int/mediacentre/news/releases/2012/world_health_statistics_20120516/en/

World Health Organization. (2013). *A global brief on hypertension: Silent killer, global public health crisis: World Health Day 2013*. Retrieved from http://apps.who.int/iris/bitstream/10665/79059/1/WHO_DCO_WHD_2013.2_eng.pdf?ua=1

World Population Review. (2018). *Fort Lauderdale Florida Population 2018*. Retrieved from http://worldpopulationreview.com/us-cities/fort-lauderdale-population/

Xu, L., J., Meng, Q, He, S., W., Yin, X., L., Tang, Z., L., Bo, H., Y., & Lan, X, Y. (2014). The effects of health education on patients with hypertension in China: A meta-analysis. *Health Education Journal*, *73*(2), 137-149. https://doi.org/10.1177/0017896912471033

Zafarmand, M. H., Spanjer, M., Nicolaou, M., Wijnhoven, H. A. H., van Schaik, B. D. C., Uitterlinden, A. G., & Vrijkotte, T. G. M. (2020). Influence of Dietary Approaches to Stop Hypertension-Type Diet, Known Genetic Variants and Their Interplay on Blood Pressure in Early Childhood: ABCD Study. *Hypertension (0194911X), 75*(1), 59–70. https://doi-org.ezp.waldenulibrary.org/10.1161/HYPERTENSIONAHA.118.12292

Zaccagnini, M., & White K., W. (2011). *The Doctor of Nursing Practice Essentials. A new model for Advanced Practice Nursing* (Custom ed.). Sudbury, Massachusetts: Jones and Bartlett.

Appendix A: Literature review matrix

Study Author/Year	**Study Objective**	**Research Theory/ Methodology**	**Intervention / Outcome Measures**	**Analysis/ Results**	**Grading**
1. Author, A. B., Author, C. D., Author, E. F., & Author, G. H. (YEAR)	Study was completed….	Systematic review of experimental study designs….	Males 18 years or older diagnosed with…...	Multiple studies have shown…..	A

Appendix B: MAstARI, data extraction tool

Data to Extract

1. General information

- Authors, title, source and year of publication
- Publication type (e.g. journal article/book chapter)
- Reviewer ID (if more than one)

JBI Data Extraction Form for Experimental/Observational Studies

Reviewer _____ Date _____
Author _____ Year _____
Journal _____ Record number _____

Study method RCT Quasi-RCT Longitudinal
Retrospective Observational Other _____

Participants
Setting _____
Population _____

Sample size
Intervention 1 _____ Intervention 2 _____ Intervention 3 _____

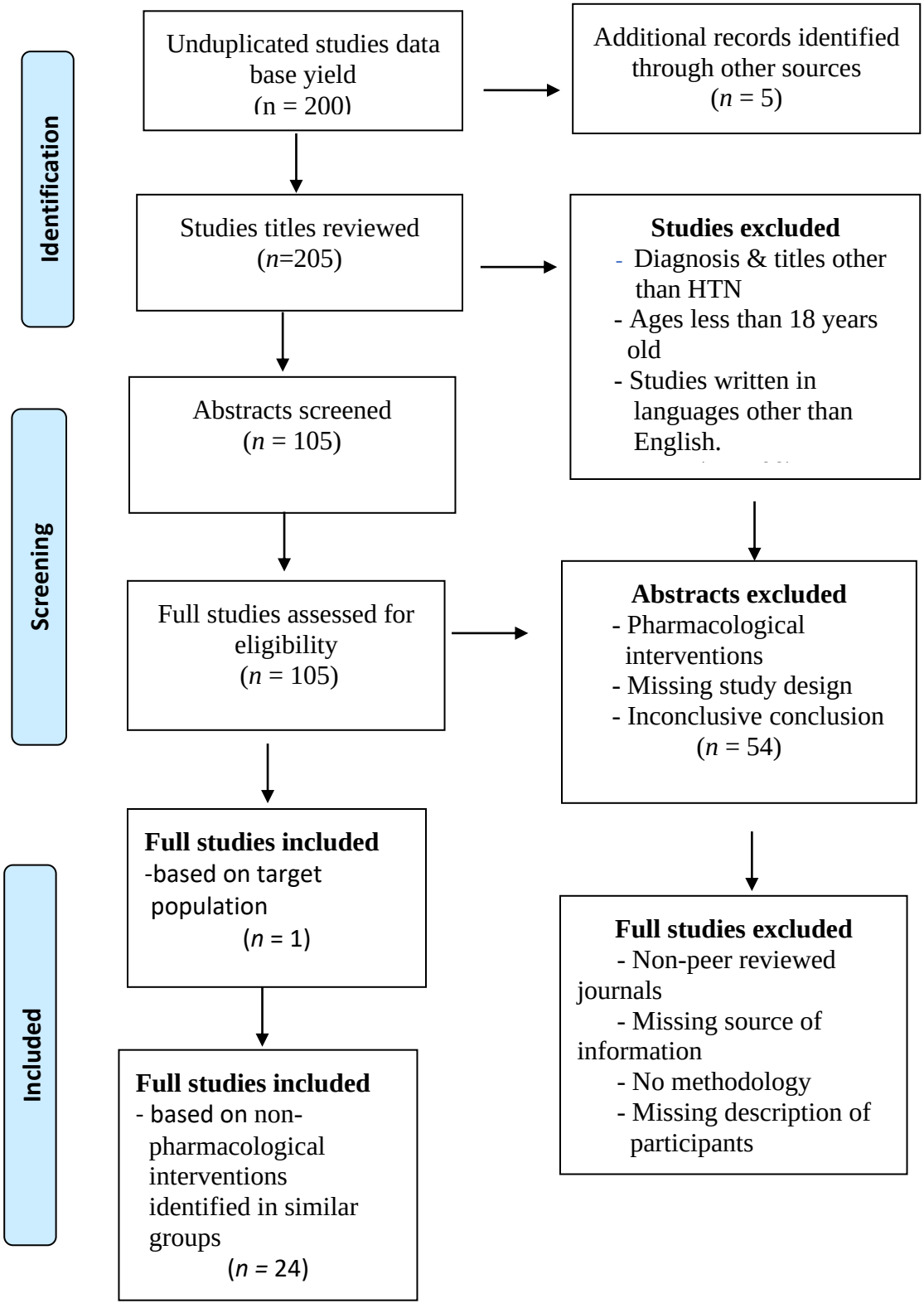
Interventions
Intervention 1 _____
_____

Appendix C: JBI critical appraisal check list

JBI Critical Appraisal Checklist for Studies Reporting Prevalence Data

	Yes	No	Unclear	Not Applicable
1. Was the sample representative of the target population?	☐	☐	☐	☐
2. Were study participants recruited in an appropriate way?	☐	☐	☐	☐
3. Was the sample size adequate?	☐	☐	☐	☐
4. Were the study subjects and the setting described in detail?	☐	☐	☐	☐
5. Was the data analysis conducted with sufficient coverage of the identified sample?	☐	☐	☐	☐
6. Were objective, standard criteria used for the measurement of the condition?	☐	☐	☐	☐
7. Was the condition measured reliably?	☐	☐	☐	☐
8. Was there appropriate statistical analysis?	☐	☐	☐	☐
9. Are all important confounding factors and subgroups differences identified and accounted for?	☐	☐	☐	☐
10. Were subpopulations identified using objective criteria?	☐	☐	☐	☐

Appendix D: PRISMA



Appendix E: American Association of College of Nursing level of evidence

AACN Evidence – Leveling System	Description	Number of Studies
Level A	Meta-analysis of multiple controlled studies or meta-synthesis of qualitative studies with results that consistently support a specific action, intervention or treatment	10
Level B	Well-designed controlled studies, both randomized and nonrandomized, with results that consistently support a specific action, intervention or treatment	14
Level C	Qualitative studies, descriptive or correlational studies, integrative reviews, systematic reviews, or randomized controlled trials with inconsistent results	3
Level D	Peer-Reviewed professional organizational standards, with clinical studies to support recommendations	0
Level E	Theory-based evidence from expert opinion or multiple case reports	0
Level M	Manufacturers' recommendations only	0

Appendix G: Included studies

Activities/Physical Exercise

Author/ Year	Method/ design	Age Group	Population	Intervention	Outcome	Level of evidence
Schulz, et al., (2015)	Cluster Randomized control design	Adults 18 years and older	Non-Hispanic Black of Caribbean descents	Evaluation of Walk Your Heart to Health (WYHH) intervention which aims to promote physical activities thus reduce cardiovascular risk among non-Hispanic black	WYHH was associated with physical activities, increases walking steps, improvement in multiple indicators for reduced cardiovascular risk which include reduction in systolic blood pressure and maintained at 32 weeks.	A
Diaz et, al., (2017)	Population base study design	>21 years old	African Americans	An examination of the association of physical activities, moderate-vigorous, and domain-specific physical activity (work, active living,	Regular moderate-vigorous physical activity or sport exercise-related physical activity may reduce the risk of developing hypertension in African	C

				household and sport/exercises and the incidence of hypertension among participants enrolled in the Jackson Heart Study (JHS)	American.	
Abdullah et al., (2016)	Randomized trial	35-45 years old	Mixed population of male	Participants were divided in 3 groups of aerobic interval training of brisk walking 45 min/dayx3 wks. Group A – low intensity, group B moderate intensity, Group C high intensity.	All three intensities of aerobic exercise are effective in managing ed HTN	B
Kaholokula et al., (2017)	A Pilot Randomized Trial Physical activities	>21 years old	Hawaiians	Using hula as the physical activity component of a hypertension coupled with self-care education	The intervention resulted in a reduction in SBP compared to control (−18.3 vs. −7.6 mmHg, respectively, $p \leq 0.05$)	B

					from baseline to 3-month post-intervention.	
Jurik, & Stastny (2019).	Systematic Review	>27 years old	Mixed population	To determine whether strength training (ST) alone or combined with nutrition or supplementation has an impact on the arterial pressure reduction in normotensive and hypertensive populations.	The combined effect of nutritional program (NP) and strength training (ST) 2–3 times a week at moderate intensity seems to be equally effective in terms of lowering BP (systolic and diastolic)	A
Carlson et al., (2016)	Randomized Trial	36-65 years old	White	To determine the efficacy of Isometric resistance training for blood pressure management	Eight weeks of isometric resistance training resulted in 7mmHg reduction of resting SPB.	B
Arija et al.,	Randomized control	65 and	Mixed population	The aim of this study	This PA intervention	B

(2018)	trials.	older	of women	was to evaluate the effectiveness of a physical activity (PA) intervention programmed on cardiovascular disease (CVD) risk, health and health related quality of life (HRQoL) and BP control in hypertensive subjects	program improved cardiovascular health and HRQoL and favored BP control in primary care users with hypertension.	
Bersaoui, Baldew, Cornelis, Toelsie & Cornelissen (2019)	Systematic review and Meta-analysis of Randomized Controlled Trials	Age ≥ 18 years	African and Asian	The aim of this study was to systematically summarize the available literature on the efficacy of exercise on BP in healthy adults of African or Asian origin.	The findings show favorable effects of aerobic exercise training on BP in both ethnic groups. Aerobic exercise training lowered BP by –7.2/ 4.7 mmHg in the Asian population.	A
Igarashi,	A Meta-	Adults	East Asians	To evaluate the effects	A reduced BP as a result	A

Akazawa & Maeda (2018)	analysis of Randomized Controlled Trials			of regular aerobic exercise on blood pressure in East Asians	of regular aerobic exercise may have a substantial health benefit for East Asians. The estimated reduction in the SBP would be −4.7 mmHg, and the estimated reduction in the DBP would be −3.2 mmHg, and the change in the SBP may be related to the exercise volume.	
Cao et al., (2019)	Systematic Review and Meta-analysis.	Adult	Mixed population	To evaluate the effectiveness of different durations of aerobic exercise on hypertensive patients.	The results of this meta-analysis showed that AE has favorable effects on blood pressure, heart rate, and ambulatory blood pressure of hypertensive patients	A

Herrod et al, (2018)	Systematic Review and Meta-analysis	>65 years old	Mixed population	To investigate exercise and other nonpharmacological strategies to reduce blood pressure in older adult.	The result of the study reveals that three months of traditional exercise-based lifestyle intervention may produce a reduction in BP of approximately five mmHg systolic and three mmHg diastolic in older individuals.	A
Wiles, Goldring & Coleman (2017)	Randomized cross over study design	over 30 years old.	Black male	To investigate whether home-based wall squat training could successfully reduce resting Blood	The author concluded that wall squat provides an effective method for reducing resting blood in the home resulting primarily from reduction in resting heart rate	B

Subramanian et at., (2011)	Randomized cross over study design	21-25 years old	Indians	To test the efficacy of three non-pharmacological interventions (physical exercise, salt restriction, and Yoga exercises) in preventing/controlling hypertension	All three interventions showed statistically significant reduction of both systolic and diastolic blood pressure, however physical exercise was more effective than salt reduction or yoga interventions.	B
Park, et, al (2014)	Randomized control trials.	19-65 years old	Koreans	To evaluate the effect of qigong on prehypertension and mild hypertension	After eight weeks significant changes in SBP (P = .0064) and DBP (P = .0003). Thus, qigong may be an effective intervention in reducing BP Based their findings the authors concluded that IRT lowers SBP, DBP and MAP	B

Inder et al., (2016)	Systematic review and meta-analysis	> 18 years old	Mixed population	To quantify the effects of isometric resistance training (IRT) on the change in systolic blood pressure (SBP), diastolic blood pressure (DBP) and mean arterial pressure (MAP) in adults	Based their findings the authors concluded that IRT lowers SBP, DBP and MAP	A

Lifestyle Modification/diet

Author and year	Method design	Age	Population	Interventions	Outcome	Level of evidence
Schoenthaler et al., (2018)	A Randomized Controlled Trial.	> 18 years old	Black	To evaluation and compare the effectiveness of a Therapeutic lifestyle change intervention plus motivational interviewing sessions versus health education alone on blood pressure reduction among black with uncontrolled hypertension	Motivational interviewing plus therapeutic lifestyle change intervention resulted in significant reductions in SBP during 6 months in the treatment group compare with the usual health education group (control group)	B
Ndanuko, Tapsell, Charlton, Neale & Batterham (2016)	Systematic Review and Meta-Analysis of Randomized Controlled Trials	>19 years old	Mixed population	The aim of the study was to assess the effect of dietary patterns on BP in adults	The results suggest that healthy dietary patterns such Nordic diet**,** and Mediterranean diet significantly lowered systolic BP	A

					and diastolic BP by 4.26 mm Hg and 2.38 mm Hg, respectively. These diets a re rich in fruit, vegetables, whole grains, legumes, seeds, nuts, fish, and dairy and low in meat, sweets, and alcohol. Lifestyle factors such as exercise and weight loss in combination with dietary changes may also reduce BP.	
Chiu et at., (2016)	A Randomized Controlled Trial.	Adults	Chinese	To test the effect of full fat dairy food and vs low fat food in the DASH diet, and low sugar intake on blood pressure and plasma lipids.	The high fat - DASH (HF DASH) diet lowered blood pressure to the same extent as the DASH diet. but also reduced plasma triglyceride and very-low density	B

					lipoprotein (VLDL) concentrations without significantly increasing LDL cholesterol Both morning and evening systolic and diastolic BPs measured by the participants at home were similarly reduced with the DASH and HF-DASH diets compared with the control diet	
Siervo, et al., 2015	A systematic review and meta-analysis.	Adults	Mixed population	To determine the effects of the DASH diet on cardiovascular risk factors.	The DASH diet was found to result in significant decreases in systolic BP (25·2 mmHg, 95 % CI 27·0, 23·4; P,0·001) and diastolic BP (22·6 mmHg, 95 % CI 23·5, 21·7; P,0·001) and in the	A

					concentrations of total cholesterol (20·20 mmol/l, 95 % CI 20·31, 20·10; P,0·001) and LDL (20·10 mmol/l, 95 % CI 20·20, 20·01; P¼0·03)	
Juraschek et al., 2017	A randomized controlled trial	>22 years old	Men and women (57% black)	Dash-Sodium trial to determine the time course of blood pressure changes due to sodium reduction (consuming different sodium level (50, 100, and 150 mmol/d) along with the DASH diet for 4 weeks when compared with the regular or typical American diet.	The preponderance of evidence from the original DASH-Sodium trial demonstrated that lowering sodium lowers blood pressure	C

Lee, et al., (2019)	A randomized controlled trial	>20 years old	Korean	To evaluate the effectiveness of a home base dietary/lifestyle modification intervention on blood pressure management.	Lifestyle modification emphasizing both diet and exercise was effective in lowering blood pressure and should be favored over diet-alone modification.	B

Music Intervention/lifestyle Modification

Author(s) Year	Method/ Design	Age	Population	Intervention	outcome	Level of evidence
Astuti, Rekawati, & Wati (2019)	Quasi Experimental Design	Older adults	Indonesian	To determine the effect of progressive muscle relaxation and music therapy (RESIK) on blood pressure among older adults with hypertension	RESIK therapy significantly decreased blood pressure, dropping it from category 1 hypertension to pre-hypertension.	C
Im-Oun, et al., (2018)	A randomized controlled trial	Middle age adults	Chinese	To investigate the effect of Thai instrumental folk music listening on	This study demonstrated that Thai instrumental folk music listening was	B

				blood pressure hypertensive .	effective for SBP and DBP reduction in stage-2 HT patients.	
Kunikullaya et at., (2016)	A randomized controlled trial	30 and 60Years old	Indian	Evaluation of the changes in blood pressure (BP) after 3 months of music intervention in combination with lifestyle modifications, in comparison with conventional lifestyle modifications	Music when used as an adjunct benefitted subject with initial BP in prehypertension range	B
Conceição, et al 2016	Systematic Review and Meta-analysis	Adults	Mixed population	To investigate the effects of dance therapy in hypertensive patients	Dance therapy resulted in a significant reduction in systolic blood pressure (Weighted mean differences WMD -12.01mmHg; 95% CI: -16.08, -7.94mmHg;	A

					P<0.0001) when compared with control subjects. Significant reduction in diastolic blood pressure were also found (WMD -3.38mmHg; 95% CI: -4.81, -1.94mmHg; P<0.0001), compared with control group	

Personal stories

Author(s) Year	Method/ Design	Age	Population	Intervention	Outcome	Level of evidence
Nguyen et al., (2018)	A cluster randomized controlled feasibility trial.	Mean age: 66 years old	Vietnamese	Interventions 1. Storytelling: the patients' own words about coping with hypertension 2. Didactic content: about the importance	Between baseline enrollment and the 12-month follow-up, mean systolic blood pressure declined by 10.8 mmHg (95% CI: 6.5–14.9) in the storytelling	B

				of healthy lifestyle behaviors in controlling elevated blood pressure levels.	group and by 5.8 mmHg (95% CI: 1.6–10.0) in the didactic content group. The storytelling group also experienced more improvement in l health behaviors, including increased levels of physical activity and reduced consumption of salt and alcohol.	

Lifestyle modification/behavioral changes

Author(s) Year	Method/ Design	Age group	Population	Intervention	Outcome	Level of evidence
Friedberg, et al., (2015)	Three arm randomized controlled Trial	Adults	US Veterans	To evaluate the effectiveness of two behavioral interventions 1. A tailored stage-matched intervention (SMI) 2. a	SMI led to lower systolic BP and better blood pressure (BP) control	B

				nontailored health education intervention to improve BP		

Appendix H: Excluded studies

Author/ Year	Title	Reason for exclusion
Ribeiro et al., 2011	Non-pharmacological treatment of hypertension in primary health care: A comparative clinical trial of two education strategies in health and nutrition	The study looks at adherence of individuals to non-pharmacological treatment of hypertension.
Burrello, Erhardt, & Saint-Hilary, 2018	Pharmacological Treatment of Arterial Hypertension in Children and Adolescents: A Network Meta-Analysis	Did not meet inclusion criteria - Use of children and pharmacological interventions in study.
Alsaigh et at (2018)	Lifestyle modification for hypertension management	Non-refereed
Mahmood et al., (2018)	Non-pharmacological management of hypertension: in the light of current research	No interventions/patient population/full text
Cernes & Zimlichman, (2017)	Role of Paced Breathing for Treatment of Hypertension.	No interventions/patient population/full text

Colgrove, Connell, Lockland, Ordunez, & Dipette, (2017)	Controlling hypertension and reducing its associated morbidity and mortality in the Caribbean: implications of race and ethnicity	Not a study: A government project: Standardized hypertension treatment project (SHTP)
Commodore-Mensah et al., 2018	African Americans, African Immigrants, and Afro-Caribbean differ in Social Determinants of Hypertension and Diabetes: Evidence from the National Health Interview Survey.	Did not meet inclusion criteria. A survey on varied social factors of HTN and diabetes on African American and African immigrants.
Genovesi et al., (2018)	Effects of Lifestyle Modifications on Elevated Blood Pressure and Excess Weight in a Population of Italian Children and Adolescents.	Did not meet inclusion criteria; - Children used in study
Carnaval, Schuindt, Bastos & Godoi (2017	Effects of long-term resistance training on blood pressure: a systematic review.	Did not meet inclusion criteria; In other language than English
Zafarmand et al 2020	Influence of Dietary Approaches to Stop Hypertension-Type Diet, Known Genetic Variants and Their Interplay on Blood Pressure in Early Childhood: ABCD Study.	Did not meet inclusion criteria; Children used in study
Jin, Pan, Wu & Xu (2019)	The effects of traditional Chinese exercise on hypertension: A systematic review and meta-analysis of randomized controlled trials.	Poor quality studies
Nissensohn et al., 2016	The Effect of the Mediterranean Diet on Hypertension (MD): A Systematic Review and Meta-Analysis.	Insufficient convincing evidence due to poor validity -

		limited group of studies and their heterogeneity
Hagins, States, Selfe & Innes (2013	Effectiveness of Yoga for Hypertension: Systematic Review and Meta-Analysis	Did not meet inclusion criteria – Poor quality studies
Urrico, P (2018).	Nonpharmacological Interventions in the Management of Hypertension in the Adult Population with Type 2 Diabetes Mellitus.	Did not meet inclusion criteria – Different patient population
Tsolaki, et.al., (2011)	Effectiveness of nonpharmacological approaches in patients with mild cognitive impairment	Did not meet inclusion criteria – Diagnosis other than HTN
Hipp & Ely (2012)	Pharmacological and nonpharmacological management of delirium in critically ill patients.	Did not meet inclusion criteria – Diagnosis other than HTN
Cade et al., (2010)	Yoga lifestyle intervention reduces blood pressure in HIV-infected adults with cardiovascular disease risk factors.	Did not meet inclusion criteria – Different patient population
Logan, Marsden, Freeman & Kent, (2017)	Effectiveness of non-pharmacological interventions in treating orthostatic hypotension in the elderly and people with a neurological condition: a systematic review protocol.	Did not meet inclusion criteria; Different patient population and title
Liu, Dia, Liu, Liago & Xiao (2018)	Spironolactone is superior to hydrochlorothiazide for blood pressure control and arterial stiffness improvement: a prospective study.	Did not meet inclusion criteria; Pharmacological interventions used in study

Gills, Wouda & Hjeltnes (2008)	Non-pharmacological management of orthostatic hypotension after spinal cord injury: a critical review of the literature.	Did not meet inclusion criteria; Different patient population and title.
Ryan, Cunningham & Fan (2012)	Non-pharmacological management of orthostatic hypotension in older patient	Did not meet inclusion criteria: Different patient population and title.
Ashaye & Giles (2003)	Hypertension in Blacks: a literature review.	Did not meet inclusion criteria; Not a study. Discussion of the magnitude of the problem
Kola, Sumaili & Krzesinski (2009)	How to treat hypertension in blacks: review of the evidence.	Did not meet inclusion criteria: Pharmacological treatment used.
Kailani & Wright (1991)	Hypertension in African Americans: evaluation and treatment issues.	Did not meet inclusion criteria: Pharmacological treatment used
Brewster et., al (2016)	Systematic review: antihypertensive drug therapy in patients of African and South Asian ethnicity.	Did not meet inclusion criteria: Pharmacological treatment used
Apóstolo et al., 2015	The effectiveness of nonpharmacological interv entions in older adults with depressive disorders: a systematic review.	Did not meet inclusion criteria: different patient population and title.