The Experiences of Personal or Community Garden Use in the Self-Management of Hypertension among African American Males

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DEDICATION

I dedicate this dissertation to my husband, Dorian L. McCoy, and our children, Jaylen, and Julian McCoy. Dorian, thank you for allowing me to cry on your shoulder when I needed to, but also for encouraging me to keep going even on tough days. Jaylen and Julian, thank you for supporting me by asking constantly, “are you done with that paper yet?” We have been through so much in the last few years. I love you all.

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ABSTRACT

In the United States (U.S.), hypertension is one of the leading causes of cardiovascular disease. Eating unhealthy foods, such as pre-packaged, high-fat, high-sodium foods, can increase blood pressure regardless of taking anti-hypertensive medication. Self-management entails a variety of behavioral changes on the part of the individual. The inclusion of fruits and vegetables into the diet improves hypertension self-management. Access to healthy foods, such as fruits and vegetables, alleviates barriers to adopting a healthy diet in hypertension management. Despite evidence that adopting healthier diets improve hypertension, some people find making dietary adjustments challenging. This dissertation aimed to explore 1) the impact of gardening on hypertension self-management of African American males who garden, 2) the impact of gardening on their buying practices and diet choices, and 3) the preparation of food selected from the garden. This dissertation consists of three manuscripts exploring hypertension self-management: 1) a concept analysis of self-management among individuals with hypertension, 2) a state of the science on evidence-based hypertension self-management methods for African American males, and 3) the results of a multiple method (Qual-quan) analysis of the experiences of hypertensive African American males who garden. Three key themes emerged, using an interpretive description approach, that revealed African American males described gardening provides stress relief, increased exercise, and satisfaction. Self-managing hypertension involves implementing specific tasks through committing to change, being motivated, and having confidence and knowledge with the support of others. Improving hypertension outcomes among African American males involves community-based interventions. Due to the increasing prevalence of hypertension among African American males, this dissertation provides insight into how individuals manage their hypertension when they have access to healthy food through

gardening. The findings of this dissertation provide an opportunity for further research into managing hypertension by diet among African American males.

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INTRODUCTION

Approximately 116 million adults in the United States (U.S.) have hypertension (Center for Disease Control & Prevention [CDC], 2021a). Of those 116 million adults with hypertension, African American[1] males lead with the highest prevalence of 58.9% compared to other males in the U.S. (Asian/Pacific Islanders males 52.8%; White males 52.2% Hispanics males 51.8; CDC, 2020a). For African American males, having a higher prevalence puts them at risk of serious complications, which increase morbidity. Managing hypertension is vital to the prevention of heart disease, stroke, and kidney failure (National Heart, Lung, and Blood Institute [NHLBI], 2022a; CDC, 2021b).

The NHLBI (2022b) recommends a person maintain a healthy diet low in salt, routine physical activity, healthy weight, limit alcohol consumption, no tobacco use, good sleep habits, and low stress with or without medication to control or prevent hypertension. Readings taken during a clinical visit to diagnose the stages of hypertension include:

1. Normal – Systolic Blood Pressure (SBP) ≤120 and Diastolic Blood Pressure (DBP) ≤ 80
2. Elevated – SBP 120 – 129 and DBP ≤80
3. Stage 1 – SBP ≥ 130 – 139 mm Hg or DBP ≥ 80 – 89 mm Hg
4. Stage 2 – SBP 140 mm Hg or higher and 90 mm Hg or higher

   Hypertensive crisis – SBP >180 mm Hg and/or > 120 mm Hg (American Heart Association [AHA], 2017)

Requirements for managing hypertension include blood pressure readings of systolic blood pressure ≤130 mm Hg and diastolic blood pressure ≤80 mm Hg (AHA, 2017; CDC, 2021b).

[1] African American and Black are used interchangeable in the literature. In this review, I use the term the authors use in the study.

Although the first line of treatment for hypertension is lifestyle changes, many rely on medication alone without including self-management practices. The CDC (2020b) defined self-management as a person's responsibility for managing chronic disease. Individualized self-management occurs through various techniques based on individual needs to improve hypertension. Dietary self-management of hypertension includes consuming a heart-healthy diet of fresh fruits and vegetables, such as the Dietary Approaches to Stop Hypertension diet (DASH; NHLBI, 2022b). Evidence reveals that the consumption of diets such as low sodium and a DASH diet decreases blood pressure (Appel et al., 1997; Sacks et al., 2001).

Further research demonstrated that gardening benefits health through weight loss, increased physical activity, increased fruit and vegetables, and access to healthy foods (Booth et al., 2018; Zick et al., 2013; Litt et al., 2011). The benefits of gardening have been influential in other disease states, such as cancer, diabetes, and obesity (Spees et al., 2016; Weltin & Lavin, 2012; Zick et al., 2013). Evidence shows that increasing fruits and vegetables by following the DASH diet lowers hypertension and decreases sodium intake. However, African Americans infrequently implement dietary changes to improve blood pressure outcomes due to barriers such as finances, cultural preferences, and lack of knowledge about dietary recommendations (Jones et al., 2021). Focusing on how individuals with access to fresh fruits and vegetables implement preparation techniques of foods for healthier adaptation of culturally traditional recipes may allow individuals to self-manage diets and decrease the prevalence of hypertension among African American males. However, the impact of gardening on self-management of hypertension through food selection and preparation techniques in African American males with a diagnosis of hypertension has not been explored.

Background & Significance

In contrast to other chronic diseases, hypertension is typically absent of symptoms, leaving many unaware of the existence of the medical condition. The absence of symptoms may lead to serious complications of aneurysm, chronic kidney disease, eye damage, heart attack, heart failure, peripheral artery disease, stroke, or vascular dementia (CDC, 2021b). Managing hypertension is an important goal to prevent serious complications; however, in the U.S., managing and treating hypertension cost approximately 55.9 billion dollars between the years 2014 – 2015 (Virani et al., 2020).

Having uncontrolled hypertension can be dangerous, especially for African American males with the highest prevalence rate. In 2017, age-adjusted mortality among African American males was 54.1 per 100,000 for hypertension (Virani et al., 2020). Among African American males, managing and treating hypertension cost approximately $8400 in 2012 (Virani et al., 2020). The consequences of uncontrolled hypertension are significant, including increased morbidity, mortality, and cost burden; as a result, adequate treatment of hypertension can reduce the risk overall in African American males.

Self-management of Hypertension

While self-management strategies exist to manage hypertension, studies have revealed that African Americans tend not to have healthy and controlled blood pressure; they are also less likely to implement self-management practices (Adinkrah et al., 2020). Contributors to uncontrolled hypertension are likely due to specific barriers facing African American males, such as the inability to access healthy foods, living environment, the cost of healthier foods, and continue to choose traditional foods (Adinkrah et al., 2020; Long et al., 2017; Bertoni et al., 2011). However, knowing how to manage hypertension and having a means to adopt changes factor into the management of hypertension.

Unhealthy Food Consumption in African Americans

Traditional foods, such as eggs, fried foods, breads, organ meats, processed meats, fatty foods (i.e., margarine, butter, whole milk, buttermilk), and sugary drinks, eaten by African Americans likely contribute to uncontrolled hypertension (Henry, 2018; Long et al., 2017; Chan et al., 2015; Lui et al., 2013; Hu et al., 2013; Epstein et al., 2012). Despite the recommendations for healthier eating, African American males identified several barriers to adopting healthy eating. Barriers included the inability to access fresh fruits and vegetables, cultural preferences, regional preferences, taste preferences, cost, the convenience of pre-packaged meals, and resistance by family members to adopt healthy eating habits (Long et al., 2017; Chan et al., 2015; Bertoni et al., 2011).

The region of the U.S. where a person resides can contribute to the types of foods consumed. Individuals who live in the southern region of the U.S. tend to eat foods high in fat and sodium. According to recent studies, consuming a Southern diet pattern contributes to the higher incidence of hypertension in Black Americans compared to White Americans (Howard et al., 2018). African Americans may also reside in a food desert, inhibiting their ability to purchase healthy foods (Long et al., 2017). These barriers create a dilemma for individuals with hypertension that they may be unable to control.

Gardening in Hypertension Management

Having a personal garden or using a community garden provides several benefits to individuals. However, the inability to access healthy foods hinders the management of hypertension related to dietary intake (Bertoni et al., 2011). Research has demonstrated the effect of gardening on improving health. One study of Marshallese people living in Iowa demonstrated a decrease in Hemoglobin AIC, improving diabetes among those participating in gardening

(Weltin & Lavin, 2012). Additionally, Karen and Bhutanese immigrants living in Minnesota exhibited improved physical activity, mental health, and social support while participating in a community church garden (Hartwig & Mason, 2016). Gardening, whether urban or community, can potentially increase well-being, build community, and decrease food insecurity in communities without access to healthy foods (Weltin & Lavin 2012; Carney et al., 2011; Kortright & Wakefield, 2010).

Additionally, evidence shows an increase in fruit and vegetable consumption with access to these foods through community gardens in areas of low socioeconomic status (Booth et al., 2018). In a study about urban gardening, researchers provided Latino participants supplies to start a garden, and nutritional education emphasized increased knowledge to improve healthy eating (Palar et al., 2019). Furthermore, a comparison study focused on nutritional education (i.e., DASH diet) among African Americans provided access to a community garden and farmers' market, which revealed an association between gardening and increased fruit and vegetable consumption (Barnidge et al., 2015).

Several studies revealed the benefits of gardening on chronic disease and its impact on various populations' physical, social, and emotional health. Although evidence shows that gardening increases access and consumption of fruits and vegetables and improves health in several chronic disease states, it is unknown whether the convenience of readily accessible fruits and vegetables invokes self-management practices pertaining to the dietary habits of African American males with hypertension. Limited studies exist on the role of gardening and food selection from gardens in the self-management of hypertension among African American males. The increasing prevalence of hypertension among African American males who may suffer from

serious complications signifies the importance of knowing how African American males self-manage their hypertension.

Therefore, the final manuscript used a qualitative interpretive description method and a quantitative description of a 24-hour diet questionnaire to explore the self-management of hypertension among African American males who use a garden. The researcher chose the interpretive description method to generate an understanding of complex processes of human experiences relevant to the clinical practice of African American males with hypertension who garden (Thorne et al., 2004). Although some grounded theory components, such as constant comparison, were used in the data analysis, the researcher deemed interpretive description appropriate for this study to understand gardening among African American males with hypertension and provide insight into specific benefits of gardening for this population. This study will also add to the limited scientific knowledge on this topic.

Problem Statement and Purpose

Several factors continue to heighten the prevalence of hypertension among African American males, including difficulty implementing dietary self-management behaviors due to existing known barriers. The adoption of self-management practices leads to improved overall health in individuals with chronic disease; however, limited research exists regarding specific dietary behaviors of hypertensive African American males with access to fruits and vegetables. Controlling hypertension involves the implementation of individualized self-management practices to improve health. Therefore, this three-part dissertation delves into self-management of hypertension, specifically among African American males.

Chapter one of this dissertation consists of a manuscript regarding a concept analysis of self-management among persons with hypertension. The purpose of the concept analysis was to

clarify the definition of self-management in hypertension. The second manuscript of this dissertation, in chapter two, consists of an integrative review that explores the current evidence-based interventions for self-management of hypertension among African American males. Although evidence-based interventions exist regarding African American males, there is limited research on the experiences of gardening, food selection, and food preparation of African American males with hypertension. Thus, the final manuscript presents the findings of a study undertaken to understand the impact of access to healthy foods on hypertension self-management among African American males who use personal or community gardens. In addition to exploring African American males' experiences with gardening, the primary investigator examined food selection, preparation techniques, and the perceived effects of gardening on hypertension. Areas of gardening for participants consisted of personal (owned by the gardener on his property), community (shared land by several people), or urban (located in the city) gardens. Three themes emerged from the analysis, and the findings lay the groundwork for understanding the role of gardening as a self-management avenue for addressing chronic hypertension among African American males living in the Southern U.S.

Theoretical Framework

The dissertation study used an interpretive description (ID) design which allowed the primary investigator to gain a deeper understanding of the phenomenon of interest, given that no previous investigations addressed this area (Thorne, 2016). To guide interview questions and data analysis, the researcher used the theoretical frames of symbolic interactionism (SI; Blumer, 1969) and the Theory of Planned Behavior (TPB) (Ajzen, 1991). While TPB framed the study to understand the motivations for self-managing hypertension, SI was used to frame the study in order to understand the significance of gardening for African American males with hypertension.

SI is founded on how people interact with symbols, other people, and objects in their surroundings to find meaning (Aksan et al., 2009). SI focuses on three tenets that include:

1. Humans react to objects based on the meaning they attach to them,
2. The meaning is drawn from or results from social interactions with others, and
3. The meaning is managed and adjusted by the person via an interpretive process (Blumer, 1969).

Symbolic interactionism aligns with the interpretive description approach due to being grounded in naturalistic inquiry (Thorne, 2016; Blumer, 1969). The conceptualizations of meanings by Blumer (1969) align with the ontological assumption that several realities exist. Blumer's (1969) concept is reflected in the symbolic interactionism assumption, which maintains that meanings can change in response to encounters with things or other people. The definition of meaning may be based on the individual's perspective or socially constructed, while the definition of thought derives from an individual's interpretive process leading to action. A person's actions or changes are likely implemented based on their interactions with self, others, and the garden. During the interpretive process, the individual self-interacts through self-communicating based on interpretations of things occurring in one's life (Blumer, 1969). An individual's meaning of objects may change with regard to the situation, based on another person's perspective of the object and their interactions with the object; meaning may change multiple times. The participant's interactions and actions may result in a change in the meaning several times. Therefore, a new definition of self-management may emerge as a result of the interaction between African American men and gardens, changing food preparation methods, or self-management behavior.

In this dissertation, SI focuses on the individual (African American male) participant; social interaction (utilization of a personal or community garden and family support or nonsupport); the situation of being diagnosed with hypertension to interpret the meaning of dietary self-management during these interactions (Blumer, 1969). Figure 1 represents a diagram of the adapted SI concept map of African American males' interactions while gardening. African American males construct the meaning of hypertension self-management based on their beliefs, values, cultural norms, traditions, interactions with others, and gardening. The process of SI is cyclic and based on the meaning of hypertension self-management during multiple engagements with gardening and influenced by family interactions.

Using the naturalistic inquiry led the researcher to understand that multiple realities exist in participants meaning. Symbolic interactionism alignment with naturalistic inquiry positioned the researcher as the interpreter of the actions of participants. The researcher became part of the study, and through the interpretive description method's inductive reasoning, the researcher gained an understanding of the relationship between African American males, the garden, and hypertension self-management.

This study used the TPB to further guide the exploration of African American males' beliefs, attitudes, and perceived behavioral control of hypertension self-management while gardening (Ajzen, 1985). Performing behaviors are based on three concepts:

1. Attitudes or positive views affect a change in behavior;
2. Subjective norms are influenced by peer pressure or support from others to affect behavior change; and
3. Perceived behavioral control is viewed as one's ability to affect behavior change (Barley & Lawson, 2016).

The three concepts and beliefs (behavioral, normative, and control) determine intentions to affect positive behavior change (Ajzen, 2005). Reflecting on beliefs, past experiences, available resources, and the ability to change behavior may influence intention, but these factors are not always determinants of behavior change (Ajzen, 2005). Furthermore, Ajzen (1991) noted that motivation influences whether a person changes their behavior. In this study, TPB guided the creation of such questions as reasons for using a garden, use of the influence of the garden on a diet, food selection from the garden and while shopping, family or peers' influence, and change in eating habits of African American males with hypertension using a garden. TPB is based on concepts including the participant's attitudes, beliefs, and social norms, regarding self-management of hypertension, their perceived behavior control, and reflections on past experiences of hypertension and eating habits (Ajzen, 2005). These concepts influence participants' intention to adopt self-management behaviors.

Assumptions

Several assumptions exist in this dissertation and result from theoretical frameworks SI and TPB, as well as from the interpretive description methodology. The following section shows the assumptions of this dissertation.

Theoretical Framework Assumptions

The main assumptions guiding SI include the following (Blumer, 1969):

1. Human beings act towards objects based on the meanings the objects have for them;
2. The meaning of objects derives from or arises out of social interactions that one has with others; and
3. These meanings are handled and modified through an interpretive process used by the person in dealing with the objects he or she encounters.

TPB assumes individuals act responsibly based on information they have and reflect on the consequences of their actions (Ajzen, 2005).

Interpretive Description Methodologic Assumptions

Additional assumptions exist in the interpretive description methodology. The interpretive description allows the researcher to analyze and understand human experiences of health and disease relevant to clinical practice (Thorne et al.,1997; Thorne, 2016). The interpretive description method assumes that the researcher and the study participants interact to construct an understanding of the experience (Hunt, 2009). This construct indicates that evidence-based knowledge and theories cannot provide a clear understanding of the experience (Hunt, 2009; Thorne, 2004).

Research Questions

This dissertation aimed to understand the impact of access to healthy foods on hypertension self-management among African American males who use personal or community gardens and to explore changes in food preparation of the produce obtained from the garden. The primary investigator developed research questions based on the study's goal and a review of the review. The research questions include the following:

- What are the experiences of African American males diagnosed with hypertension who use a garden (personal or community)?
- What self-management behaviors (i.e., personal dietary changes, food preparation, shopping habits) are exhibited by African American males diagnosed with hypertension who use a garden?

- What is the impact of garden use on food selected by the preparer (i.e., self, partner, spouse, or family member), and how the food is prepared for African American males with hypertension?

Definitions

The following definitions of relevant concepts were used in this study of African American males with hypertension who use personal or community gardens. The specific concepts of the study's research include hypertension (high blood pressure), self-management, personal garden, community gardens, and food preparation. The concepts and their conceptual definitions are:

- Hypertension or High Blood Pressure – readings of systolic blood pressure (BP) ≥ 130–139 mm Hg and diastolic BP ≥ 80–89 mm Hg in the diagnosis of hypertension (AHA, 2020)
- Self-management – an action a person initiates to improve, maintain, or prevent the health condition of hypertension.
- Personal garden – land owned by the individual user to grow food such as raised beds, containers, or in-ground.
- Community garden(s) – Shared land (e.g., rented space) by individuals, groups, or families who share the responsibility of maintenance of the shared space and benefit from the fruits and vegetables produced (CDC, 2010; U.S. Department of Agriculture [USDA], 2020).
- Food preparation – The process a person uses to prepare food for eating and nourishment.

Limitations

The study's limitations involved the method and theoretical perspectives used to guide analysis and interview questions. Symbolic interactionism focuses on the social interaction of African American males with the garden, therefore not considering the whole person (Benzies & Allen, 2001). The researcher incorporated the use of TPB to gain an understanding of the attitudes, beliefs, social influence, and perceived ability that may lead to adopting a behavior change. However, a limitation of TPB is that it does not account for barriers to behavior intention, such as limited resources, adequate knowledge, opportunities, or life-changing events that may impact the intent to change behavior positively (Ajzen, 2015). Therefore, participants included had access to a garden at least two times in the last five years, which provided access to fresh fruits and vegetables to determine the impact of food on self-management of hypertension.

Delimitations

The delimitations of this study include geographical locations and inclusion criteria of participants. Geographical locations comprised two southern U.S. states, including Tennessee and Georgia. Selected cities chosen were because of initiatives to increase access to healthy foods in areas of limited resources and build sustainable communities through community gardens (Atlanta Regional Commission, 2021; Community Action Committee [CAC], n.d.; City of Knoxville, n.d.; In Our Backyards [IOBY], 2022; The Nashville Food Project, 2022). The participants must have used a garden (personal or community) at least twice in the last five years and have a self-reported diagnosis of hypertension.

Participants consisted of African American males who have the highest prevalence of hypertension in the U.S. The study's interview questions focused on the experiences of garden use and the impact that food selection (e.g., garden foods or buying habits) and preparation have on African American males' hypertension management through diet. Prior to participating in the

study, participants indicated they did not associate food selection with managing their hypertension; therefore, administering the diet questionnaire before the interview may have affected how the participants disclosed information about their purchasing and food selection practices.

Summary

Reducing hypertension is critical to preventing complications, including heart disease and stroke; therefore, this dissertation explores hypertension self-management practices involving gardening and diet choices of African American males who garden. Besides medication management, hypertension self-management also refers to lifestyle choices. Three manuscripts are presented in this dissertation: a concept analysis, an integrative review, and a multiple-method study geared toward self-management of hypertension. The first manuscript presents a concept analysis of self-management in hypertension, while the second manuscript presents a review of the literature on existing self-management techniques among African American men. Both manuscripts culminate in a study exploring the experiences of African American males with hypertension who garden. As part of the study, interview questions and analysis are guided by SI and TPB to explore how gardening influences consumption and shopping for food and how gardening can serve as a self-management strategy for African American males. Overall, this dissertation study will provide new knowledge about hypertension self-management practices aimed at improving clinical practice, future research, and hypertension management outcomes among this unique aggregate.

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APPENDICES

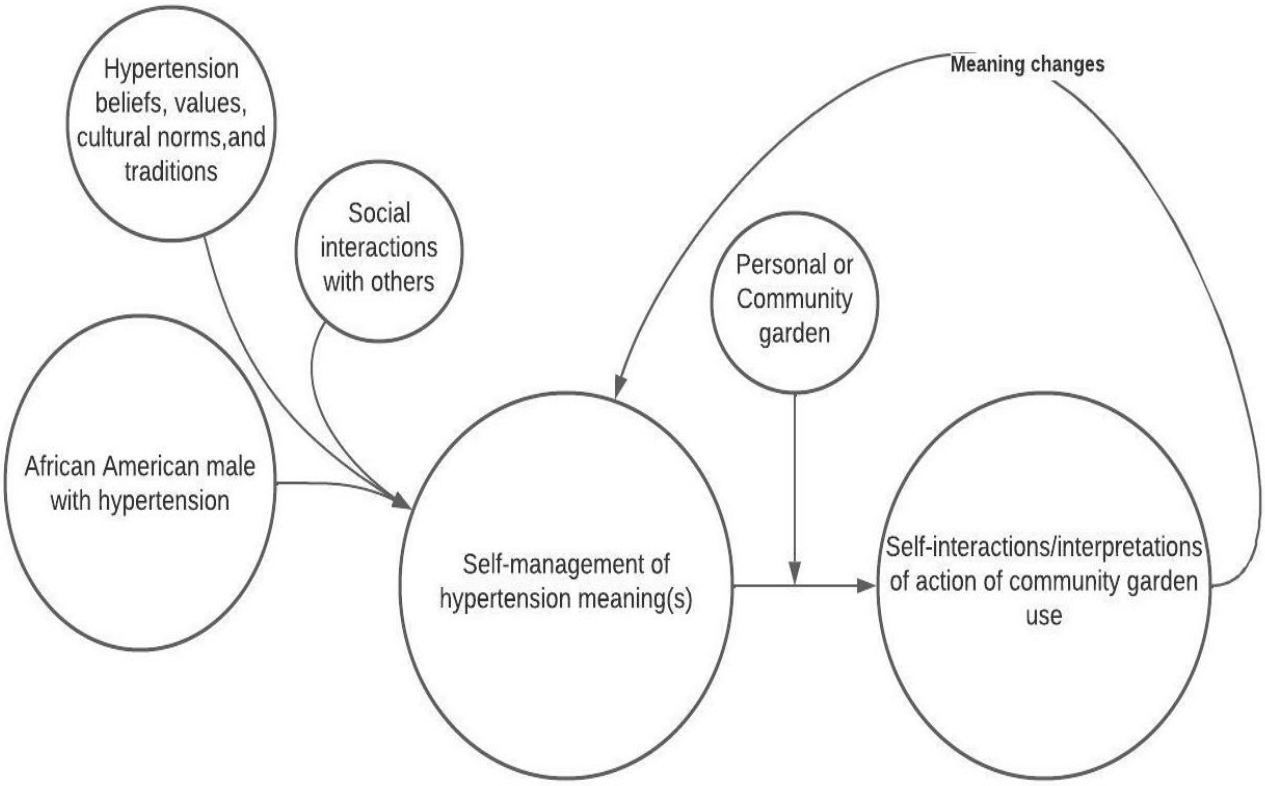

Figure 1: Blumer's Symbolic Interactionism Applied to African American Males with Hypertension

CHAPTER I
SELF-MANAGEMENT OF HYPERTENSION: AN EVOLUTIONARY CONCEPT ANALYSIS

This manuscript has been prepared for publication by Carrie McCoy. The manuscript has been prepared for journal submission to the *Advances in Nursing Science*. Carrie McCoy conceptualized, planned, and edited this manuscript with close supervision by Sadie Hutson. The initial format for this article was the American Medical Association (AMA) Manual of Style, 11th edition; however, the formatting was adjusted to American Psychological Association (APA), 7th edition for this dissertation.

Abstract

Self-management is a multi-dimensional concept used in healthcare. Self-management has been explored in multiple illnesses providing insight into the management techniques for specific disease states. However, the concept uses self-management in relationship to various chronic diseases and illnesses. However, the concept focuses on the individuals' lifestyle decisions to manage disease; additional factors influence self-management. As nurses educate patients on self-management behaviors, they require clarification on the self-management of hypertension. This concept analysis employs Rodger's Evolutionary method to clarify the concept of self-management for people with hypertension. The findings show a connection between a person's commitment to change, motivation, confidence in their ability with social interactions, and the facilitators and barriers to self-management in hypertension. The findings provide insight into future research exploring the empowerment of individuals' self-management of hypertension by nurses.

Keywords: concept analysis, self-management, hypertension

Introduction

Self-management of high blood pressure is important in decreasing the likelihood of developing serious complications, including cardiac disease, heart attack, stroke, and kidney disease (American Heart Association [AHA], 2017; CDC, 2021a). High blood pressure, also known as hypertension, is a widespread medical condition in the United States and globally. The World Health Organization (WHO; 2022) indicates that 1.13 billion people worldwide are affected by high blood pressure. In the United States, approximately 116 million people are affected by high blood pressure (Centers for Disease Control & Prevention [CDC], 2021b). High blood pressure is considered a silent disease as symptoms do not exist; therefore, individuals may be unaware of having hypertension until they enter the healthcare system (CDC, 2021a; AHA, 2017). Since 2013, research has revealed an increase in uncontrolled hypertension among people in the United States (Muntner et al., 2020). Most recently, researchers discovered more elevated blood pressure in U.S. citizens related to the coronavirus pandemic (Laffin et al., 2022). Individuals experienced isolation that resulted in the adoption of unhealthy lifestyle behaviors (i.e., sedentary lifestyles, unhealthy eating, and increased alcohol consumption), disconnection from healthcare services, and increased mental illness (Czeisler et al., 2020; Giuntella et al., 2021; Park et al., 2020). Recent increases in uncontrollable hypertension and isolation from healthcare services make a focus on self-management practices essential to managing and maintaining optimal health.

Background

According to the CDC (2020a), managing high blood pressure includes lifestyle changes (i.e., decreased stress, diet changes, increased physical activity, smoking cessation, limiting alcohol, and change in sleep habits) or lifestyle changes, plus medication adherence. The National Heart, Lung, and Blood Institute (NHLBI, 2022) indicates that heart-healthy lifestyle

changes should occur first in managing hypertension, followed by medication. Management includes knowing one's risk of heart disease, choosing healthy foods, increasing physical exercise, decreasing weight, smoking cessation, improving sleep, and managing stress. Managing blood pressure also involves a team approach upon entering a healthcare setting, including nurses, healthcare providers, and the patient. To adjust lifestyle behaviors, a person must be aware of their blood pressure readings (AHA, 2017; CDC, 2020b). Nurses and nurse practitioners play a prominent role in managing hypertension in healthcare. Himmmelfarb et al. (2016) revealed that nurses' and nurse practitioners' roles in hypertension management include monitoring blood pressure, educating, diagnosing, managing medications, and conducting research. The nurse/nurse practitioner role occurs in clinical, public health, and educational settings (Himmelfarb et al., 2016). Although nurses have played an integral role in managing hypertension and patients have a responsibility, these two must interact to implement self-management strategies effectively. To ensure this occurs, communication between the nurse and patient regarding self-management behaviors should occur (CDC, 2020b).

Self-management is a broad, multi-dimensional concept of nursing and healthcare. In the nursing profession, the encouragement and education of self-management practices have been at the forefront of preventing and managing chronic illnesses (NINR, 2016). According to Lorig and Holman (2003), the development of the concept of self-management occurred by Thomas Creer and colleagues. They initiated the term self-management as it relates to asthma patients actively participating in their care. Nursing theorists adopted self-management through the Individual and Family Self-Management Theory (Ryan & Sawin, 2009). The Individual and Family Self-Management Theory explores the context (e.g., conditions specific; physical and social environment; and individual and family aspects); processes (e.g., knowledge and beliefs;

self-regulation skills and ability; and social facilitation); and outcomes (e.g., self-management behaviors, health status; quality of life or well-being, and cost) related to self-management of chronic disease (Ryan & Sawin, 2009).

Self-management is defined across several healthcare organizations. An exploration of the definitions occurred to get a technical foundation of self-management. Throughout the exploration of literature and reports of self-management in healthcare, the term was used interchangeably with self-care in the discussion of managing health. The CDC uses the term self-management, while the World Health Organization uses the related term self-care. The CDC (2020c) defines self-management as a person's role in managing chronic disease. The AHA and WHO use the related or surrogate term self-care to describe how individuals manage a chronic disease. The AHA defines self-care as the act of maintaining health, managing symptoms, and monitoring disease (Riegel et al., 2017). Similarly, WHO (2022b) defines self-care "as the ability of individuals, families, and communities to promote health, prevent disease, maintain health, and to cope with illness and disability with or without the support of a healthcare provider."

Although the existing definitions of self-management provide a background to the concept of self-management in chronic illness, this analysis explores and clarifies the concept of self-management among people with hypertension. This analysis aims to explore the attributes, antecedents, and consequences of self-management in the context of hypertension using Rodger's evolutionary method.

Methods

Rodgers' (2000) evolutionary method was used to clarify and conceptualize self-management in hypertension. The evolutionary analysis method is to identify commonalities in research for further development or clarification of a concept. Rodgers emphasizes exploring

concepts that may operationalize differently in various health settings. This concept analysis explores the significance, use, and application of hypertension self-management (Morse, 2017; Rodgers, 2000). The evolutionary concept analysis method included six steps to analyze self-management: a) identification of the concept of interest and associated terms; b) identification and selection of an appropriate setting and sample for data collection; c) data collection to identify attributes, antecedents, and consequences of self-management; d) data analysis of attributes, antecedents, and consequences; e) identification of an exemplar, if appropriate; and f) identification of implications for further development of the concept (Rodgers, 2000).

Data sources/Sample

The literature search consisted of four electronic databases: PubMed, CINAHL (Cumulative Index to Nursing and Allied Health Literature), PsycINFO, and Google Scholar. Keyword searches included self-management, self-care, self-regulate, hypertension, lifestyle change, and concept. Articles were selected based on the following inclusion criteria: a) English prepared, b) peer-reviewed articles, c) adults with hypertension, d) publication timeframe of 2010 through 2022, and e) relevancy of the concept of self-management in hypertension. The initial search resulted in 556 articles. Peer-reviewed articles were eliminated based on duplicates, literature reviews, and irrelevancy to self-management of hypertension in healthcare yielding 46. The remaining articles were read thoroughly for relevance to self-management and hypertension, resulting in 19 peer-reviewed articles for the analysis. Figure 2 shows the literature search strategy.

Data analysis

A thematic analysis was performed to organize data extracted from the peer-reviewed articles of this analysis. The researcher reread the final articles and categorized them based on

defining attributes, antecedents, and consequences of the self-management concept in hypertension. Rodgers (2000) emphasizes using thematic analysis to examine the data for theme identification. Thematic analysis occurred separately for attributes, antecedents, and consequences of self-management (Rodgers, 2000). Related terms were identified from peer-reviewed articles and listed in table format. Initial codes were extracted from the data based on attributes, antecedents, consequences, and related terms of self-management from each peer-reviewed article and categorized by initial codes using an Excel worksheet. This method allowed for ease of review of themes based on the relevancy of self-management in hypertension. Analysis and further categorization of initial into secondary codes resulted in theme identification.

Results

The 19 peer-reviewed articles selected for this concept analysis included qualitative, quantitative, and mixed-method studies. The analysis of the concept of self-management generated four attributes, three antecedents, and two consequences. Each generated theme will be discussed further in relevance to self-management.

Attributes

Rodger (2000) describes attributes as contributing to defining a concept. A thorough review of the selected peer-review articles resulted in four defining attributes. This analysis described the attributes in themes of self-management as a) commitment to change, b) confidence, c) motivation, and d) hypertension knowledge. The attributes represent the defining characteristics identified in the literature and those most significant to an individual's subjective meaning of self-management of hypertension. There was some overlap in the attributes in how they defined

self-management in hypertension (i.e., commitment and confidence). Table 1 presents the attributes of this analysis.

Commitment to Change

A commitment to change resounded in the literature as a characteristic of self-management. The commitment means desiring to change old habits to adopt new routines that may result in positive blood pressure outcomes and improve self-management practices and better health (Balduino et al., 2016). Self-managing outcomes include improved blood pressure readings and decreased likelihood of serious complications (i.e., stroke, kidney disease, heart disease, or death; AHA, 2017; CDC 2020a). Several factors influence a person's commitment to these changes, including being spiritual and taking ownership (Gholamnejad et al., 2021; Abel et al., 2017). Spiritual and religious beliefs influence self-management decisions positively or negatively. Researchers identified that having spiritual and religious beliefs influenced participants' decisions to change positively and self-manage hypertension (e.g., medication adherence and stress management; Gholamnejad et al., 2021; Abel et al., 2017). A belief in a higher power provided the basis to work toward a commitment to care for their bodies to improve blood pressure outcomes.

To further commit involved participants obtaining ownership of their blood pressure through self-monitoring of blood pressure (Abel et al., 2017). In addition to monitoring blood pressure, individuals expressed regularly taking antihypertensive medications and incorporating a healthy diet and physical exercise to become more involved in their treatment of hypertension (Abel et al., 2017). Participation in these methods gave them ownership of hypertension. Taking ownership of one's medical condition necessitates active participation in self-management strategies and choosing to embrace methods to prioritize self-management. Hypertension self-

management, for some participants, remained a low priority in their life (Fix et al., 2014). There is a decision to be made about whether to self-manage hypertension. Making managing hypertension a priority aligns with committing to self-manage hypertension. Thus, committing to change requires adhering to self-management behaviors that lead to improved hypertension.

Confidence

The literature selected for this analysis reflected maintaining confidence as a relevant attribute. Several terms in the literature represent a person's confidence in their ability to self-manage hypertension. These included self-esteem, self-actualization, and self-determination. High self-esteem involves confidence in one's ability to undertake and achieve self-management of hypertension. Self- actualization is defined as a person's decision-making by reflecting on their life (McEwen & Dilks, 2019), while the definition of self-determination represents the decisions made by an individual based on their beliefs (Rozmus & Spike, 2019). Self-efficacy is also a defining characteristic of self-management. Self-efficacy refers to a person's confidence in their capacity to complete a task or approach specific situations (Resnick, 2018). Confidence means believing in one's ability and having a high sense of self-esteem.

Gholamnejad et al. (2019) found that self-actualization in elderly patients with hypertension developed from high self-esteem, independence, self-efficacy, and having a purposeful life, resulting in positive self-management behaviors. Participants also expressed self-determination toward improving hypertension through lifestyle choices to manage stress (Abel et al., 2017). Self-determination may improve outcomes in controlling high blood pressure (Yatim et al., 2019).

Warren-Findlow and colleagues (2011) further revealed that self-efficacy led to more effective self-management practices, including weight loss, a healthier diet, and medication

adherence. Individuals motivated to self-manage hypertension demonstrated confidence in their ability to make positive changes (Gholamnejad et al., 2019; Warren-Findlow et al., 2011, Abel et al., 2017). Being confident in one's abilities provides the basis for effectively managing hypertension. Making lifestyle changes requires confidence, motivation, and self-efficacy (Gholamnejad et al., 2019; Warren-Findlow et al., 2011).

Motivation

Motivation or a lack of motivation can influence self-management choices. Several study participants emphasized the motivation (or lack thereof) to engage in self-management behaviors, such as physical activity or healthy eating, which they attributed to others' support, resource availability, awareness of a hypertension diagnosis, or previous experiences (Abel et al., 2017; Rimando, 2015). In a qualitative study, participants reported that their grandchildren were motivators to continue self-management practices (e.g., consuming a healthy diet, adhering to medication, and participating in regular exercise; Rimando, 2015). Furthermore, Abel et al. (2017) reported that participants adhered to medications out of concern for serious outcomes of uncontrolled blood pressure and their grandchildren. Adverse effects witnessed among family members, peers, or friends with uncontrolled blood pressure (e.g., stroke or complication) acted as a motivator to self-manage hypertension (Yatim et al., 2019; White, 2018). In addition, individuals with additional co-morbidities (e.g., diabetes or hyperlipidemia) were motivated to adopt self-management behaviors related to diet changes, medication adherence, and increased exercise (Fix et al., 2014). Although individuals with hypertension do not usually have symptoms, some described having symptoms that led them to implement taking medication, exercising, eating less salt, or eating healthy (Franklin et al., 2016). Witnessing a life-changing event, having co-morbidities, and symptoms of hypertension led to the adoption of self-

management behaviors such as increasing physical activity, changing eating habits, limiting alcohol, ceasing smoking, and managing stress. The motivation to adopt healthy behaviors likely increases self-management of high blood pressure.

Hypertension Knowledge

An important characteristic of making self-management decisions is that a person has sufficient hypertension information to make informed choices about implementing self-management techniques. Self-management of high blood pressure involves having adequate knowledge about the medical condition, including the effects, symptoms, and consequences of uncontrolled high blood pressure (Long et al., 2017; Balduino et al., 2016; Franklin et al.; 2016; Rimando, 2015). Acquired knowledge about high blood pressure builds confidence in implementing self-management behaviors. Several studies focused on a lack of knowledge hindering the ability to manage hypertension (Adinkrah et al., 2020; Long et al., 2017; Petroka et al., 2017). Acquiring knowledge of causes, effects, and consequences alone provides some insight into the medical condition of hypertension; however, individuals must also know about medication and lifestyle choices that lead to positive hypertension outcomes. Knowing how lifestyle choices impact hypertension allows individuals to make decisions regarding adopting self-management behaviors for improved hypertension. In a cross-sectional design study, participants indicated not knowing the effect of alcohol consumption and tobacco use on hypertension; however, those with hypertension knowledge were more likely to adopt hypertension self-management behaviors (Adinkrah et al., 2020; Pickett et al., 2014). Gaining knowledge included seeking information through reading about hypertension, communicating with primary care providers, experiencing complications of uncontrolled hypertension,

witnessing complications of others, and interacting with peers or family members (Abel et al., 2017; Franklin et al., 2016).

Antecedents

Antecedents are defined as something that precedes the concept occurrence (Rodgers, 2000). Table 2 displays antecedents. Before adopting self-management behaviors for high blood pressure, a person may experience a life-changing event. The diagnosis of hypertension, existence of other co-morbidities, life stressors, or family/friend health crisis led to adopting self-management behaviors. The diagnosis of hypertension must occur before a person adopts self-management behaviors. Researchers emphasized that participants exhibited several emotions upon being told of a diagnosis of hypertension (i.e., shock, disbelief, denial, and fear) (Abel et al., 2017; Franklin et al., 2017). In addition, mental, emotional, or family stressors affect hypertension management (Yang et al., 2019; Pickett et al., 2014). However, stressors seemed to function as a cause of hypertension, which is likely to result in the implementation of self-management of hypertension (Bokhour et al., 2012; Moss et al., 2018).

Another preceding event to the adoption of self-management is that individuals must recognize and address self-management barriers to hypertension. Several barriers exist to self-managing hypertension that prevents individuals from adopting lifestyle changes, thus leading to uncontrolled hypertension. Studies revealed self-management barriers such as financial burdens, fear of injury while exercising, beliefs regarding medications, cultural traditions regarding food, multiple co-morbidities, and poor communication with healthcare providers (Adinkrah et al., 2020; Yatim et al., 2019, Long et al., 2019, Petroka et al., 2017; Rimando, 2015; Fix et al., 2014; Bokhour et al., 2012).

Food barriers remain a prevalent issue in the inability to self-manage hypertension. A qualitative study's participants emphasized a lack of finances to purchase healthy foods, as well as insufficient transportation, inaccessible healthy foods, and the convenience of unhealthy food options as barriers to self-management of hypertension (Petroka et al., 2017). Additional self-management barriers related to food include continuing to consume a diet related to cultural traditions (i.e., Soul Food; Long et al., 2017). Researchers indicated that individuals who eat what they know have difficulty adapting recipes to the dietary requirements of low-salt and low-fat diets (Petroka et al., 2019; Yatim et al., 2019; Long et al., 2017; Bokhour et al., 2012). However, Jones and colleagues (2022) revealed that having too many dietary resources available created confusion in deciding the appropriate diet to choose in managing hypertension.

Participants in several studies indicated they knew that changes to diet and improved exercise were important to improving blood pressure; however, they did not desire to change, or other priorities took precedence (Franklin et al., 2016; Balduino et al., 2016). Some participants emphasized continued participation in negative behaviors that could result in serious complications of hypertension, explicitly having a sedentary lifestyle, high fat diets, and medication nonadherence (Franklin et al., 2016; Petroka et al., 2017; Bokhour et al., 2012; Pickett et al., 2014). Continued participation resulted from an inability to change known eating habits (i.e., Soul Food), inability to exercise, family obligations, time constraints, and management of other chronic illnesses (Fix et al., 2014; Petroka et al., 2017; Bokhour et al., 2012).

In addition to food barriers, studies described physical activity barriers related to fear of injury and inability to exercise (Rimando, 2015; Bokhour et al., 2012); while other studies revealed the need to give more attention to other co-morbidities (e.g., diabetes and cancer; Fix et

al., 2014, Bokhour et al., 2012). Overcoming obstacles to self-management of hypertension can lead to adopting positive or continuing negative behaviors. Barriers to self-management influence how a person defines or perceives hypertension self-management and if the person will act on improving outcomes.

Self-managing hypertension in individuals also depends on having an effective social support network, including family, peers, friends, and healthcare providers. Managing hypertension ultimately is done by the individual; however, it cannot take place without others whose interactions influence hypertension outcomes. According to researchers, peers, and friends' interactions with hypertensive people and those with serious complications of uncontrolled high blood pressure, influence lifestyle changes in people with hypertension (Gholamnejad et al., 2019; Franklin et al., 2019).

The primary influence of social support networks includes family members. The support or nonsupport of healthy eating can positively or negatively influence self-management practices (Yang et al., 2019; Abel et al., 2019; Long et al., 2017). Long and colleagues explored self-management of hypertension using the Health Belief Model's cues-to-action. Researchers revealed that participants were likely to adopt self-management behaviors of healthy eating when prompted by a spouse or a healthcare provider (Long et al., 2017).

In a study of older adults with hypertension, Gholamnejad et al. (2018) emphasized that certain behaviors require support from others. Without support from others, many older adults fail to improve high blood pressure outcomes. Individuals improve their overall well-being with the support of other individuals (Zhang et al., 2020; Balduino et al., 2016). Isolated people from family or friends have difficulty managing hypertension (Zhang et al., 2020; Bokhour et al., 2012).

Consequences

Rodgers (2000) emphasizes that consequences are the results of a concept presented in the form of a condition or event. Several consequences exist for self-management of hypertension. One result of self-managing hypertension is improved blood pressure. The diagnoses of blood pressure control involve having a systolic ≤130 and diastolic ≤80 (AHA, 2017). To self-manage blood pressure, patients and healthcare providers must interact to develop a self-management plan (AHA, 2017).

Having controlled high blood pressure also lowers the risk of a cardiovascular event (e.g., heart attack or disease), stroke, kidney disease, or death (AHA, 2017; CDC, 2021a). Alternatively, negative results occur if individuals do not implement self-management behaviors. Researchers indicated negative consequences include individuals exhibiting uncontrolled blood pressure symptoms (e.g., headaches; Franklin et al., 2016). Improved blood pressure control can be managed through increasing physical activity, consuming a healthy diet, controlling weight, managing stress, limiting alcohol, stopping smoking, and adhering to medication (Gholamnejad et al., 2018; Long et al., 2017).

Exemplar

An exemplar provides a real-life example of the concept of self-management from a clinical practice setting (Rodgers, 2000). This exemplar is based on an interaction between a patient and the author in a clinical setting. K.D. presented to the clinic for his follow-up appointment to recheck his blood pressure after being on antihypertensive medication for three months. He is excited about having controlled blood pressure. Upon further discussion, K.D. made lifestyle changes because he does not want to take medications long-term. The

management plan included implementing medication use and self-management behaviors (e.g., a healthier diet, increased physical activity, and limited alcohol).

Further discussion reveals that barriers related to self-management exist, including consuming a healthy diet and increasing physical activity. The patient admits he knows he must choose low-fat and low-sodium foods but continues to eat pre-packaged food when working long hours. He is aware of the serious complications of not self-managing his blood pressure, as he has a family member that had a stroke due to uncontrolled blood pressure; therefore, he is consistently taking his medication. His greatest support comes from his spouse, who encourages him to take action to improve his blood pressure. Although K.D. has made strides in self-managing his blood pressure, the author continues to explore ways to empower him to set attainable goals.

Discussion

This concept analysis describes self-management attributes in the context of hypertension as internal factors (commitment, motivation, and confidence) influenced by external factors (life stressors, family crisis, supportive network, diagnosis, barriers, and co-morbidities). The clarified self-management concept incorporates one's commitment to change, self-motivation, and confidence in one's ability to self-manage hypertension, possibly resulting in improved high blood pressure outcomes. The process involves the initial diagnosis, life-changing events (e.g., self or others), hypertension information development, and the realization of barriers to self-management. Outcomes include improved blood pressure and cardiovascular risk. Figure 3 depicts the self-management concept diagram.

In this analysis, the author defines self-management as improving, maintaining, or preventing the health condition of hypertension by adhering to medication, monitoring blood

pressure, eating healthy, and increasing physical activity based on interactions with others (healthcare providers, family, friends, or peers). The definition of self-management as it pertains to hypertension has minimal variation compared to self-management and self-care definitions used by the CDC (2020c) and WHO (2022b). Each definition refers to self-management as the person's role or the ability to manage chronic illness. This concept analysis also aligns with some of the major concepts of the Individual and Family Self-Management Theory (Ryan & Sawin, 2009), specifically how the role of self-regulation, social facilitators, and knowledge and beliefs factor into adopting self-management strategies. In this analysis, attributes of confidence, motivation, and commitment vary slightly from the *Individual and Family Self-Management Theory*, as it emphasizes the personal "drive" that may affect hypertension self-management.

Self-management in hypertension includes adopting lifestyle changes identified by the NHLBI (2022). Throughout this concept analysis, self-management occurred based on a patient's beliefs in oneself, their supportive base, and their desire to make changes based on barriers to hypertension. Managing hypertension continues to involve the individual with assistance from others who support this endeavor (e.g., nurses, family, friends, and peers). Although this concept analysis attempted to define self-management in hypertension, the concept continues to be broad and based on an individual adaptation of practices to manage hypertension. Similarly, researchers in a qualitative study of diabetic adults defined diabetic self-care as adopted behaviors to manage diabetes, including performing specific tasks (eating a healthy diet, monitoring blood glucose, and exercising; Shrivastava et al., 2013). Therefore, this analysis is congruent with self-management in other medical conditions, except for tasks specific to managing hypertension (eating a healthy diet, monitoring blood pressure, limiting stress,

increasing physical activity, limiting alcohol, maintaining good sleep habits, and taking medication; NHLBI, 2022).

Self-management in patients with hypertension can incorporate various ways to obtain optimal outcomes. This concept analysis further clarifies that several factors result in self-management among people with hypertension, including an individual's lifestyle and behavior choices, social support, and barriers (life stressors, inability to access, family crises, and other chronic illnesses). Regardless of an individual's knowledge of hypertension self-management techniques, a desire to change must exist for improved high blood pressure outcomes.

This analysis revealed that self-management in hypertension occurs based on the individual's initiative (i.e., commitment, confidence, and motivation). Several questions developed from this analysis of self-management in relation to self-managing hypertension:

1. What type of commitment is in place that results in a person implementing self-management strategies?
2. What motivators exist, resulting in a person self-managing their hypertension?
3. What is the person's self-efficacy for managing hypertension?
4. What knowledge does the person have about hypertension to make the necessary changes to improve blood pressure?

These questions must be recognized and addressed prior to self-management occurring. The recognition may occur by the individual or by a healthcare provider.

In addition, an individual's ability can act as a facilitator or barrier to self-managing hypertension. The recognition of self-management barriers not only occurs as an antecedent to the concept; however, barriers can occur at any time during the hypertension process. Researchers divulged barriers such as lack of finances, lack of transportation, inability to access

healthcare, and lack of a support network (Gholamnejad et al., 2018; Petrokva et al., 2017; Long et al., 2017). In contrast, facilitators included support from the church, community, and access to healthcare (Long et al., 2017). Both facilitators and barriers can impact self-management behaviors of hypertension, resulting in adverse or improved health outcomes. These barrier fluctuations may influence a person to initiate or temporarily discontinue self-management of hypertension. Nursing must continue to recognize the fluctuation of self-management behaviors and assist individuals in maintaining self-management practices to achieve controlled blood pressure and better health.

This concept analysis emphasized the prioritization of hypertension self-management among individuals. However, making self-management a high priority seemed difficult for some dealing with multiple co-morbidities. Increasing hypertension knowledge of the disease process, treatment, and risk of serious complications may enhance the adoption of self-management techniques. The case of K.D provided an example of hypertension in a patient encounter and the questions that arise while in practice; however, focusing on one specific self-management technique at a time may increase the implementation of self-management behaviors.

Implications

Although time spent in healthcare is short, nurses and nurse practitioners have a critical role in assisting individuals in the self-management of hypertension. One element that remains a key factor in self-management of hypertension is patient-nurse communication. Nurses and nurse practitioners initially inform patients of newly diagnosed high blood pressure and lay the groundwork for self-management by communicating lifestyle changes that must occur to manage hypertension.

Nurses have a role in recognizing a person's self-management behaviors and the capability to implement self-management behaviors. This recognition is vital in assessing and communicating what a person needs to improve blood pressure outcomes (i.e., medication adherence, ability to perform physical activity, assess to healthy foods). Nurses must recognize the role of barriers in adopting hypertension self-management behaviors. In addition to nurses recognizing the role of barriers, nurses must assist patients in addressing the barriers that hinder hypertension self-management through the identification of available resources (i.e., community-based programs). In this analysis, researchers have identified the barriers among individuals with hypertension; however, nurses must continue to explore an individualized plan that includes barriers, ability, and support networks with each person with hypertension, as barriers may not be consistent.

Conclusion

The concept of self-management is important in managing hypertension and preventing the development of cardiovascular disease or complications. Self-management continues as a significant concept in healthcare pertaining to various disease states. This concept analysis supports the definition of self-management as actions a person implements to improve or maintain a healthy state. However, "self" indicates that self-management is the onus of one person. The definition of self-management in this context incorporates not only the individual ability but also a team-based approach through a supportive network and recognition of the barriers that hinder self-management of hypertension.

For an individual to succeed in self-managing hypertension, the diagnosis occurs first in a healthcare setting. Nurses and nurse practitioners must work collaboratively with patients to identify self-management barriers and create a self-management plan. Empowering individuals

to self-manage hypertension through increasing health literacy, assessing social determinants of health, providing social support, and encouraging adherence to antihypertensive medication, is essential to managing hypertension. Future research is warranted, focusing on empowerment-specific self-management strategies within community settings. The goal in self-management of hypertension lies with the person; however, nurses must provide a push toward the goal.

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APPENDICES

Table 1. Attributes of Self-Management Concept

Attributes	References
Commitment to change	Gholamnejad et al. (2019), Yatim et al. (2019), Abel et al., (2017), Balduino et al. (2016), Fix et al. (2014)
Confidence	Gholamnejad et al., 2019, Abel et al. (2017), Warren-Findlow et al. (2011)
Motivation	Abel et al., 2017; Rimando, 2015 Yatim et al., 2019; White, 2018 Fix et al., 2014 Franklin et al., 2016
Hypertension Knowledge	Adinkrah et al. (2020), Long et al. (2017), Petroka et al. (2017), Balduino et al. (2016), Franklin et al. (2016), Rimando (2015) Pickett et al. (2014)

Table 2. Antecedents of Self-Management Concept

Antecedents	References
Hypertension diagnosis	Abel et al. (2017), Franklin et al. (2017)
Life stressors	Yang et al. (2019), Pickett et al. (2014), Bokhour et al. (2012), Moss et al. (2018)
Barriers	Jones et al. (2022), Adinkrah et al. (2020), Yatim et al. (2019), Long et al. (2019), Petroka et al. (2017), Franklin et al. (2016), Rimando (2015), Fix et al. (2014), Pickett et al. (2014), Bokhour et al. (2012), Fix et al. (2014)
Support Network	Zhang et al. (2020), Abel et al. (2019), Yang et al. (2019), Gholamnejad et al. (2018), Long et al. (2017) Balduino et al. (2016), Bokhour et al. (2012).

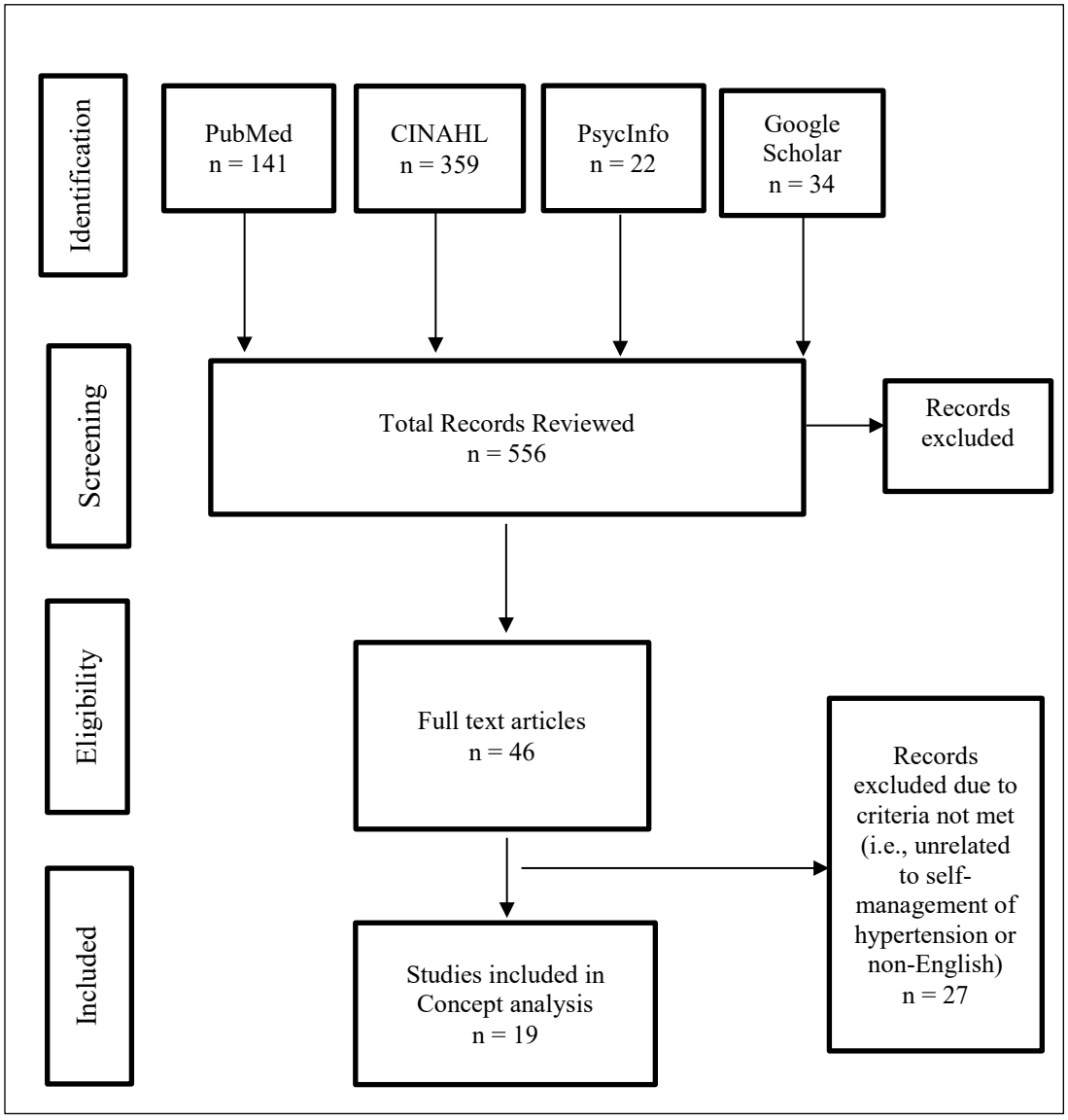

Figure 2. Study selection flowchart[1]

[1] Adapted from PRISMA chart: Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA statement. PLoS Med. 2009; 6(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

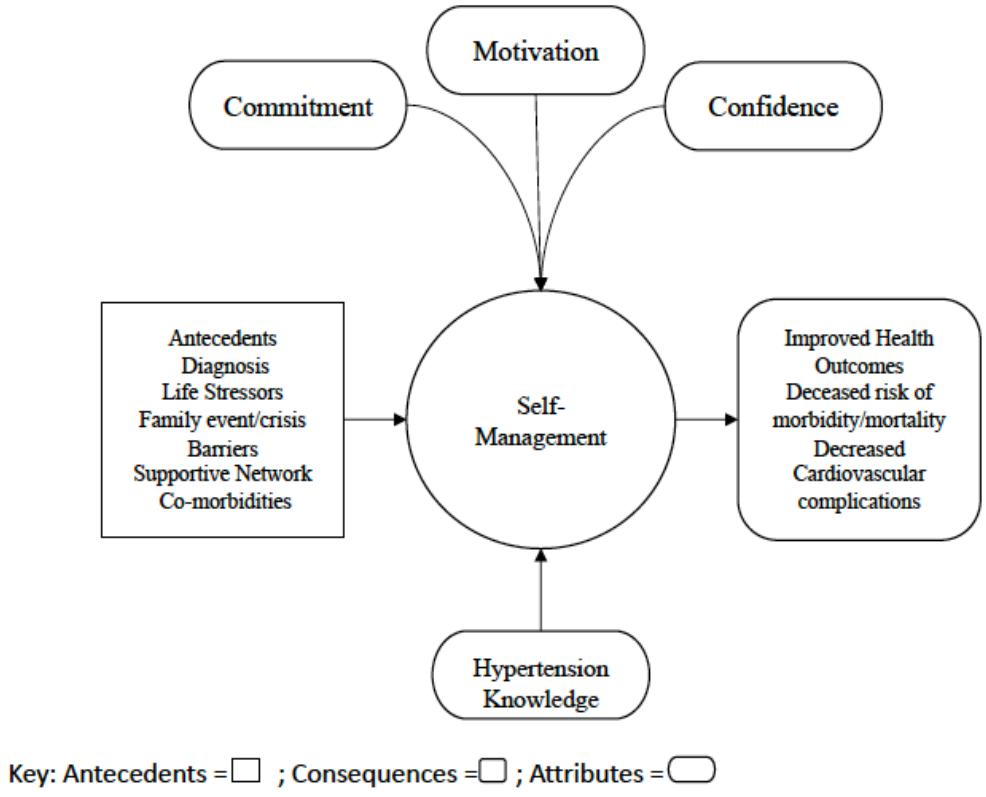

Figure 3. The Concept of Self-Management in Relation to Hypertension

CHAPTER II
AFRICAN AMERICAN MALES' HYPERTENSION MANAGEMENT: AN INTEGRATIVE REVIEW

This manuscript has been prepared for submission to the *Journal of Advanced Nursing* by Carrie McCoy and Katherine Morgan. Carrie McCoy is the primary author and Principal Investigator for this article. The original article was conceptualized and planned by Carrie McCoy with close supervision by Sadie Hutson, and feedback from Joel Anderson and Jennifer Jabson Tree. Katherine Morgan provided significant input, editing, and approval of the final manuscript. The required format for this journal is the American Psychological Association (APA), 7th edition.

Abstract

Aim: To synthesize and evaluate existing research on hypertension self-management among African American males and to explore interventions used to improve African Americans' hypertension outcomes.

Design: Integrative review of the literature.

Data Sources: The literature search included MEDLINE and CINAHL databases for English written, peer-reviewed articles published between 2010 – 2020.

Review Method: This integrative review was guided by Whittmore and Knalf's evaluation method and based on PRISMA guidelines. Of the 4,311 articles identified, a total of 17 met inclusion criteria. Garrad's Matrix Method was used to organize, analyze, and generate themes of the selected studies.

Results: This review identified interventions of community-based, faith-based, and person-centered approaches implemented to improve self-management of hypertension among African Americans. Engaging African Americans to become active participants in the management of their hypertension includes the development of interventions within their reach. Although barriers exist to managing hypertension, community-based interventions, specifically barbershop intervention, showed sustainability in hypertension management within the community and

setting most patronized by African American males. Additional interventions of faith-based outreach and support, as well as person-centered approaches, indicate potential improvement in African Americans' hypertension management.

Conclusion: The introduction of interventions within African American communities and settings likely encourages African Americans to become involved in their healthcare. Although community-based interventions exist targeting African American males, continued research is needed to explore additional community-based strategies specifically focused on hypertension self-management among African American males.

Impact: Established barriers exist to managing hypertension among African American males, while the implementation of management approaches in community settings exhibits a way to approach self-management of hypertension in this population. Providing community-based interventions for hypertension management within a familiar setting for African American males requires further research to improve health outcomes among African American males.

Keywords

African American, Black, integrative review, males, management, hypertension

Introduction

Hypertension, or high blood pressure, is an elevation in blood pressure (BP) as the blood is forced through the blood vessels (American Heart Association [AHA], 2020a; Centers for Disease Control and Prevention [CDC], 2020a; National Heart, Lung, and Blood Institute [NHLBI], 2021). Hypertension is diagnosed through repetitive BP readings of systolic ≥ 130 mm Hg and diastolic ≥ 80 mm Hg (NHLBI, 2021) and affects individuals globally regardless of age, gender, race, or ethnicity. However, in the United States (U.S.), African Americans, specifically males, experience a higher prevalence of uncontrolled BP leading to increased cardiovascular disease and higher mortality rates (Munter et al., 2020; Virani et al., 2020). Several methods exist to manage hypertension including maintaining a healthy diet, increasing physical activity, maintaining a healthy weight, limiting alcohol intake, ceasing smoking, alleviating stress, and improving sleep with or without antihypertensive medication (AHA, 2020b; CDC, 2020a; NHLBI, 2020). However, limited research exists focusing specifically on self-management of hypertension in African American males, who are among those most at risk of hypertension and its dangerous sequelae (Virani et al., 2020). Since self-management plays such a critical role in successfully lowering BP, it is important to identify how African American males currently manage their BP. This article reviews primary, peer-reviewed studies focusing on hypertension self-management among African American males to identify current self-management practices, facilitators and barriers to self-management, and gaps in the literature for this population.

Background

Hypertension is known as a silent disease due to the absence of symptoms (AHA, 2020a; CDC, 2020a), which often hinders diagnosis and early disease treatment. Uncontrolled BP of systolic ≥ 130 mm Hg or diastolic ≥ 80 mm Hg leads to negative health outcomes such as aneurysm, chronic kidney disease, eye damage, heart attack, heart failure, peripheral artery

disease, stroke, or vascular dementia (CDC, 2020a; James et al., 2014; NHLBI, 2021). Increased mortality, morbidity, and serious complications of cardiovascular disease and stroke contribute to higher cost and burden of hypertension (Virani et al., 2020). Since 2013–2014, cases of uncontrolled hypertension have increased, especially among African Americans (Munter et al., 2020).

Data from the 2013–2016 National Health and Nutrition Examination Survey (NHANES) reported the highest hypertension prevalence among Black males (58.6%) as compared to Black females (56%), White males (48.2%), and White females (41.3%; Virani et al., 2020). Cardiovascular disease could decrease by as much as 30% through the elimination of hypertension in males (Patel et. al., 2015). Of African American males with hypertension in the NHANES study, 16.8% of participants have controlled hypertension defined as systolic ≤130 mm Hg and diastolic ≤ 80 mm Hg (Virani et al., 2020). Data from NHANES (2006-2016), indicates Black males accounted for 54.1 per 100,000 deaths because of hypertension and had a higher risk of mortality than males of other racial groups (Virani et al., 2020).

As a result of high mortality in all Americans, the overall goal of Healthy People 2030 is to reduce mortality related to heart disease from 90.9 per 100,000 to 71.1 per 100,000 by improving BP (Office of Disease Prevention and Health Promotion [ODPHP], 2022). Evidence suggests controlling hypertension should begin with lifestyle changes, either in combination with or without medication (James et al., 2014). The use of self-management techniques such as regular self-monitoring of BP, healthy lifestyle (e.g., adaptation of healthy eating; increased physical exercise; effective communication with healthcare providers; and management of additional chronic disease [i.e., diabetes]) remains important in lowering complication risks among individuals with uncontrolled hypertension (CDC, 2020b). Pharmacologic treatment of

hypertension also decreases medication costs that arise with complications of hypertension (e.g., stroke and cardiovascular disease; Tajeu et al., 2017). Additional mechanisms that contribute to managing hypertension include the introduction of evidence-based and community-based programming. The Community Preventive Services Task Force (CPSTF, 2019, 2015a, 2015b), an independent entity created by the U.S. Department of Health and Human Services, recommends evidence-based programs to manage hypertension through self-measured BP monitoring, community health workers' support programming, and pharmacy-led programming.

Although self-management of hypertension through lifestyle changes and adherence to medications provides adequate lowering of BP, and the implementation of evidence-based programs exist, many African Americans do not readily implement behaviors (e.g., healthy dieting, limiting alcohol consumption, ceasing smoking, or adhering to medications) to manage hypertension (Adinkrah et al., 2020). Given the high prevalence of hypertension among African American males, research focusing on self-management techniques targeted toward this population is notably limited. With increased morbidity, mortality, and cost burden among African Americans, particularly African American males, the question of what is lacking to achieve BP control in this population remains unanswered.

Methods

Aim

This integrative review examines existing research regarding hypertension self-management among African American men. The aims of this integrative review include 1) to investigate and synthesize barriers and facilitators to hypertension self-management, 2) to review the effectiveness of interventions in this population, and 3) to provide insight into future interventions to improve hypertension outcomes among African American males.

Design

Whittemore and Knafl's (2005) integrative review method of identification of a problem was followed including a thorough literature search, data evaluation, analysis, and comparison of past and current literature. The following inclusion criteria were used to select peer-reviewed primary articles: (a) African American or Black adults, (b) 18 years or older, (c) diagnosed with hypertension, self-reported or medical diagnosis; (d) hypertension management, self-managed or treatment programs; and (e) perceptions of hypertension management. Exclusion criteria included reports, literature reviews, research conducted outside of the U.S., and studies focused on other racially or ethnically identified groups.

Search Methods and Outcome

The search incorporated 10 years of literature, from 2010–2020, in two electronic databases, MEDLINE (PubMed) and CINAHL. Key terms and Medical Subject Headings (MeSH) terms are shown in Box 1 (Attachment MeSH terms for IR.docx). Titles and abstracts were reviewed for relevancy to the integrative review: manuscripts were rejected due to duplicate articles from databases, non-English language, non-peer-reviewed, reports, adults who did not identify as African American, and inclusion of adolescents.

Articles initially included were thoroughly reviewed for inclusion criteria. Additional studies were excluded for the following reasons: studies with fewer than 10% African American male participants, duplicate studies using another title, and studies focusing on other racially or ethnically identified groups (i.e., Africans) whose experience may differ from African American males. Figure 4 shows the literature search strategy.

Quality Appraisal

In this comprehensive review, primary articles from peer-reviewed journals were selected, including qualitative, quantitative, and mixed methods studies. Considering the diversity of study designs included in the review, the evaluation of studies was carried out using the Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh et al., 2011). The QATSDD incorporates 16 assessment criteria to evaluate the quality of research using qualitative, quantitative, and mixed method studies (Sirriyeh et al., 2011). The QATSDD was validated (κ=71.5%) for assessment of reviews of health-related research (Sirriyeh et al., 2011). Due to limited research on self-management of hypertension in African American men, all appraised studies were retained for analysis. Table 3 shows a summary of included studies and appraisal scores.

Data Abstraction

Data analysis of selected research studies used the Matrix Method (Garrad, 2017), a method that allows for comparing and contrasting data across multiple studies, including author and date (descending); theoretical or conceptual framework; methodology; analysis and results/findings; conclusions and discussion; study limitations and strengths; and next steps for consideration. Each article was read thoroughly, then data were applied to the review matrix. Each peer-reviewed study was compared to evaluate hypertension self-management among African American males, which resulted in the generation of themes regarding hypertension management among African American males. In this integrative review, the term African Americans and Black is used interchangeably, based on the reviewed literature terminology.

Results

The initial search identified 4,311 manuscripts, and of these, 4,263 were rejected for failure to meet inclusion criteria or other reasons as described above such as focusing on populations other than African Americans. Forty-eight articles were extensively reviewed for inclusion and exclusion criteria, with 17 primary articles being accepted as having met inclusion criteria: three qualitative, eleven quantitative, and three mixed-method studies. The final 17 articles included six specifically studying African American men. The remaining 11 included both African American men and women: four enrolled more male participants, and seven enrolled more female participants. The literature analysis identified four themes: 1) hypertension self-management barriers, 2) community-based outreach and support; 3) faith-based outreach and support; 4) and person-centered approaches to managing hypertension as described in the following sections. The paper summarizes what is known and scientific gaps about hypertension self-management among African American males, which provides a foundation for future research and clinical practice. Box 2 shows the barriers to hypertension management (Attachment Barriers to HTN box IR.docx) and Box 3 shows community-based facilitators (Attachment Facilitators to HTN box IR.docx).

The majority of articles assessed using QATSDD scoring were of acceptable or high quality. The QATSDD scores for the three articles using qualitative methodologies ranged from 19 to 30 (out of a score of 42), the 11 studies using quantitative methodologies ranged from 31 to 38 (out of 42), and the three employing mixed methods ranged from 31 to 38 (out of 48). Among the lower-scoring studies, descriptive data was collected by focus groups among African American males without reference to sample size. Studies focusing on male participants in a

community-based approach to a barbershop intervention received the highest scores on the QATSDD; these studies met the highest standards of the QATSDD for quantitative articles.

Theme 1: Hypertension Self-Management Barriers

Self-management barriers to hypertension take many forms. Lack of engagement in healthcare may be a key for African Americans (Blixen et al., 2014). In this review, a lack of engagement is defined as not being involved or having a disinterest in hypertension management. In a qualitative study with 10 African American males and their female care providers, researchers identified several barriers to prevention and recovery of stroke including distrust in healthcare providers, lack of provider knowledge regarding treatment of hypertension for African American men, inability to understand medical terminology used by providers, and difficulty with appointments (e.g., cancellations or shortened visits; Blixen et al., 2014). In other studies, African Americans indicated a lack of hypertension knowledge as a barrier to managing hypertension, specifying the need for further education (Der Ananian et al., 2018; Long et al., 2017).

Lack of knowledge for African Americans included difficulty defining hypertension (i.e., symptoms of uncontrolled hypertension, normal versus abnormal range, and definition of hypertension; Der Ananian et al., 2018). However, they could identify lifestyle behaviors that contribute to uncontrolled hypertension and ultimately heart disease (Der Ananian et al., 2014; Long et al., 2017). African Americans in one study acknowledged self-management behaviors of medication adherence, improved diet, exercise, and smoking cessation while not enacting the changes in their own lives (Long et al., 2014). Additionally, African Americans described social factors such as being of low socioeconomic status potentially leading to more stress, decreased access to healthcare, decreased access to foods, and an inability to engage in inexpensive

physical activity as contributors to uncontrolled hypertension (Der Ananian et al., 2018). Facilitators to managing hypertension included having social support from family and peers (Long et al., 2014) and community through churches (Der Ananian et al., 2018).

Spikes and colleagues (2019) conducted a cross-sectional study of African Americans living in a southeastern city, diagnosed with metabolic syndrome, including hypertension, and their relationship between health beliefs, depression, medication adherence, and social support. Participants had been living with hypertension for a mean of nine years. In their study, they used one subscale of the Hill-Bone Compliance to High Blood Pressure Therapy Scale (e.g., medication-taking; Kim et al., 2000) to explore medication adherence (Spikes et al., 2019). The study findings revealed that 63% were adherent to their medications, while 38% of African American participants were nonadherent to their antihypertension medications. Researchers found no significance in beliefs about hypertension (seriousness, $p = 0.35$; actions $p = 0.75$; susceptibility, $p = 0.92$), social support ($p = 0.97$), or depression ($p = 0.97$) in relationship to medication adherence (Spikes et al., 2019). However, participants with multiple comorbidities had 2.63 greater odds of adhering to medications ($p = 0.03$; Spikes et al., 2019). Although participants demonstrated medication adherence to antihypertension over multiple years since diagnosis, African American men in a qualitative study described medication use as temporary in managing hypertension (Long et al., 2017). Participants reported they felt continued hypertension management was achieved by adopting a healthy diet and increasing exercise without long-term medication use (Long et al., 2017).

Long and colleagues (2017) qualitative study further explored attitudes, knowledge, and beliefs about hypertension of African American males living in the Southeastern U.S. ($n = 34$). They conducted semi-structured interviews in a focus group setting. The Health Belief Model

(Rosenstock, 1974) informed the themes derived from the analysis such as having cues-to-action through social support from spouses (e.g., healthy food preparation), perceived severity and perceived susceptibility to hypertension; perceived benefits of self-managing hypertension, and perceived barriers (e.g., temporary use of medication) leading them to continue to eat unhealthy/harmful foods. The researchers concluded that beliefs and support resulted in either a positive or negative effect on hypertension self-management. Participants revealed living in the Southeast influenced their food choices (e.g., fried foods and highly seasoned foods) that are unhealthy for their hypertension management (Long et al., 2017). This finding is congruent with African Americans in another study who described eating "soul food" consisting of high fat content (Der Ananian et al., 2018). African Americans described eating foods they liked based on their culture and food traditions (Der Ananian et al., 2018; Long et al., 2017). Scholars emphasized African American culture, food choices, and familial influence contribute to African Americans continuing their current dietary habits (Bertoni et al., 2011; Der Ananian et al., 2018; Long et al., 2017). The unhealthy food choices combined with living environment can deter hypertension management among African Americans.

Living in a food desert with minimal access to healthy food also affects self-management of hypertension. A mixed-methods study by Bertoni et al. (2011) explored barriers to African Americans adopting the Dietary Approaches to Stop Hypertension (DASH; Appel et al., 1997) diet in the food environment where participants lived (ability to access healthy food). The Southeastern participants indicated difficulty in adopting the diet due to poor availability, high cost, and quality of healthy foods in the area (Bertoni et al., 2011). In another region, African Americans living in the Southwest acknowledged understanding the need to eat healthy foods; however, they attributed consuming unhealthy foods to cost, convenience, and choice (Der

Ananian et al., 2018). As a result, both studies highlighted difficulties in obtaining healthy foods in a food desert.

Theme 2: Community-Based Outreach Approach

The authors of two manuscripts in this review examined the effect of non-pharmacological interventions on hypertension among African Americans. Notably, these methods incorporated community-based outreach or support through organized events, community centers, places of business, or social events. Barnidge et al. (2015) implemented the "Men on the Move Growing Communities" (MOTMGC) intervention in a comparison study of two Missouri counties from 2008–2010 (n = 397 per county at baseline; and n= 389 intervention county, n= 303 comparison county at mid-intervention). One county received an intervention of nutrition education (i.e., using DASH + sodium dietary information), cooking education (i.e., five cooking demonstrations at local churches or community centers), and access to a farmers' market and community garden to increase fruit and vegetable consumption, while the comparison county received access to a farmers market and community garden fruits and vegetables.

Despite the likelihood of participants from the comparison county attending intervention activities (thus decreasing effect sizes), the results demonstrated significant changes in weight and hypertension in the intervention county as compared to the comparison county ($p<0.01$). However, participants' engagement in various activities (nutrition education, cooking education, farmer's market access, or community garden use) made it difficult to determine which activity influenced hypertension self-management. A community garden may increase access to healthy foods for African Americans from a lower socioeconomic area, as participants report an increased likelihood of eating fruit and vegetables (Barnidge et al., 2015). It is notable that

Barnidge et al.'s success may be tied to the increase in the availability of produce from access to community gardens and farmers markets, especially when coupled with enhanced education about diet and behavioral changes when compared to other studies (Bertoni et al., 2011) where participants relied on fast food, local restaurants, and convenience stores leading to less success improving dietary patterns and reducing hypertension.

In addition, participants in the cooking demonstrations and nutritional activities were more likely to consume adequate fruits and vegetables and less salt and fat than those who did not participate (Barnidge et al., 2015). Although African Americans in this study participated in cooking demonstrations to learn to cook with less salt while eating more fruits and vegetables, this contrasted with Der Ananian et al.'s (2018) study in which participants thought modifying recipes altered the flavor of traditional dishes, which they identified as a potential barrier to the adoption of healthier cooking methods.

Some of the more successful interventions identified were community-based outreach studies that focused on reaching African Americans in areas patronized by men, such as barbershop-based interventions (Victor et al., 2011; Victor et al., 2018; Victor et al., 2019). Many Black men frequently visit barbershops for hairstyling and socializing. In their first study, Victor et al. (2011) conducted a randomized comparison study in which barbers provided hypertension educational pamphlets, BP measurements, and recommendations to see a health care provider. Some barbers did not provide BP screening or encourage physician follow-up by patrons, while some clients declined BP measurements (Victor et al., 2011). Reliable and validated measurements of BP were obtained with calibrated automatic cuffs. This intervention resulted in a drop in systolic BP ($p = 0.08$), implying possible positive outcomes from this community-based program for hypertension management among Black males.

Victor and collaborators followed the 2011 study with two additional cluster randomized studies investigating barbershop outreach by incorporating a pharmacist into their intervention. Researchers provided Black men with BP measurements, education, and an onsite pharmacist to explore hypertension management (Victor et al., 2018; Victor et al., 2019). Barbershop outreach with onsite pharmacists revealed a reduction in BP at 6 months ($p < 0.001$and sustained change at 12 months ($p < 0.02$) as compared with the control group (Victor et al., 2018; Victor et al., 2019). These studies indicated the sustainability and effectiveness of barbershop outreach programs in Black male hypertension management.

Several community outreach studies employed Community Health Workers (CHWs) in their interventions among African Americans, including CHWs from the community (Boulware et al., 2019), and another recruited a Black female (Tully at., 2015). Boulware et al. (2019) examined African Americans' use of a clinic in East Baltimore, Maryland through three interventions with a CHW, 1) a home BP monitor, 2) training in shared decision making with healthcare providers, and 3) training in self-management problem solving. CHWs provided support to participants in reporting uncontrolled BPs, and self-management behavior reinforcement through consistent follow-ups in the home or by phone. Participants experienced a decrease in BP at follow-up, but there was no statistical significance for either group; however, since each intervention group included CHWs, the CHWs' contribution to BP control was not measurable (Boulware et al., 2019).

Tully et al. (2015) further explored the effects of CHWs on BP control in a pilot study of Black men and women with uncontrolled BP >140/90 mm Hg in non-diabetics or >130/80 mm Hg in diabetics who lived in Milwaukee. Intervention group participants (n=41) received weekly contact with a CHW, and six group sessions based on the AHA's "Simple Seven" program on

hypertension management, while the control group (n=42) were seen by a physician in a clinic. Participants' systolic BP significantly decreased in the intervention group ($p<0.002$) at 6 and 12-month intervals; however, there was no significant difference in the control group. Participants indicated several barriers (i.e., transportation, family issues, employment, etc.) that limited group session attendance; however, CHW contact continued among those not attending group sessions (Tully et al., 2015). Participant behavioral outcomes included making lifestyle changes to dietary habits (i.e., improved management of salt intake, portion control, low sugar intake), increased exercise, self-monitoring of BP, and shared decision making with healthcare providers (Tully et al., 2015). Participants of both CHW studies (Boulware et al., 2019; Tully et al., 2015) demonstrated increased self-management behaviors due to the instructional components, participation with CHWs, and group hypertension management sessions, which encouraged lifestyle changes among African Americans. Participants emphasized the group sessions increased their engagement (Tully et al., 2015).

Theme 3: Faith-based Approaches

Several studies exist focusing on the roles of faith-based and religious organizations in hypertension management among African Americans (Baruth et al., 2014; Carter-Edwards et al., 2018; White, 2018). With the exception of Barth et al.'s (2014) study of ministers, the representation of African American females exceeded African American male participants in faith-based settings (Carter-Edwards et al., 2018; White, 2018). Baruth et al. (2014) conducted an observational study to explore African American pastors' health and health behaviors (n=40, males=29 and females=11) in African Methodist Episcopal (AME) churches in South Carolina. They examined several metrics including body mass index (BMI), waist circumference, perceived stress, fat and fiber intake, fruit/vegetable intake, and physical activity. All participants

self-reported all measurements except for physical activity, which was measured using The Community Health Activities Model Program for Seniors questionnaire (CHAMPS; Stewart et al., 2001), and some participants wore an accelerometer to measure activity levels (Baruth et al., 2014). Pastors were found to have at least two chronic diseases, including 68% having hypertension (Baruth et al., 2014), and there were no statistically significant differences between males and females regarding health behaviors. Baruth et al. (2014) concluded that providing health promotion programs to pastors will likely improve their health and positively affect the health of the congregation.

In a separate study, Carter-Edwards et al. (2018) conducted focus groups exploring the perceptions of Black males and church leaders (e.g., pastors, deacons, or ministry leaders) in a large congregation with financial resources toward BP programs and their ability to implement faith-based interventions. Participants indicated that programs should involve assessment, education, and management interventions; specifically focus on younger men; take into consideration busy schedules; incorporate spiritual approaches like prayer and be inclusive of supportive persons like family members. Participants in Carter and colleagues (2018) study revealed programs that include social activities, health fairs with appropriate health materials, women participants, and church leadership likely influence participation by Black men. Together, these studies demonstrate that Black men, leaders, and pastors tend to lead busy lives that often hinder their ability to participate in programs that improve BP (Baruth et al., 2014, Carter et al., 2018).

Researchers of another faith-based pre-and post-test intervention study investigated the promotion of hypertension self-management in churches (White, 2018). Participants received an initial BP reading followed by a four-week self-management program with a final BP reading

(White, 2018). In this study, 100% of the participants had hypertension and additional chronic conditions (White, 2018). Participants received a knowledge, attitude, and practice survey (KAP) to assess self-management of BP followed by four weeks of self-managing BP with resources offered by the church (resources were not identified in the study; White, 2018). Final assessment included the KAP survey and BP reading. Findings revealed that 30.4% of participants exercised two or more times a week, and 43.5% of participants exercised once per week during the intervention, while 87% of participants attempted weight loss (White, 2018). The findings did not reach statistical significance but did indicate faith-based settings as clinically significant to hypertension management based on an increase in the post-intervention KAP survey (White, 2018).

Theme 4: Person-centered Approaches to Manage Hypertension

Several studies examined person-centered methods to manage hypertension among African Americans. Wright et al. (2018) assessed mindfulness in African American college students and the relationship between BP and perceived stress. The study consisted of a cross-sectional correlational design conducted in a heart healthy education course among students (n = 20) enrolled in the semester-long course (Wright et al., 2018). They instructed participants to perform mindfulness daily while obtaining BP results pre- and post-mindfulness implementation. The results indicated a strong negative relationship between mindfulness and perceived stress ($p = 0.004$) but no statistically significant relationship between mindfulness and BP (Wright et al., 2018). Findings revealed a relationship between mindfulness and low perceived stress indicating the benefit of mindfulness (Wright et al., 2018).

Additional studies focused on person-centered approaches to managing hypertension in older African Americans. Authors of one longitudinal cohort study explored Black male

veterans and the effect of cardiorespiratory fitness (CRF) using the Bruce treadmill protocol among participants with resistant systemic hypertension (Narayan et al., 2017). Researchers provided study participants with a baseline exercise tolerance test used to determine CRF levels (Narayan et al., 2017). Re-collection of the baseline peak exercise capacity data did not occur at follow-up. If participants made lifestyle or medication changes, this metric in no way accounted for CRF changes at the follow-up (Narayan et al., 2017). Participants' mortality risks lowered for established age-based exercise capacity by 36% for moderate-fit and 62% lower for high fit indicating a correlation to exercise capacity and mortality (Narayan et al., 2017).

In a study of African American military veterans at two metropolitan and one small city Veterans Administration clinics, researchers investigated storytelling (Houston et al., 2017). The first arm of the study incorporated stories told by African American veterans on how they managed their hypertension. Storytelling was found to improve participants' emotional engagement (i.e., the story's emotional impact) and medication adherence; however, BP outcomes were inconclusive, with some reporting significant improvement and others not. One likely contributor to the mixed BP outcomes was inconsistent intervention delivery across study sites.

In the second arm, Houston and colleagues (2017) conducted a comparison study of African American veterans, with participants randomly assigned to one of two interventions: 1) a DVD intervention containing African American veterans' stories about how they treated their hypertension, as well as supplementary hypertension management educational information. Unfortunately, a variation occurred in the dissemination of DVD hypertension storytelling at the smaller city site when compared with the metropolitan site (Houston et al., 2017): participants of the small site watched fewer DVDs with no BP improvement. One metropolitan site indicated

improvements in BP results for the DVD-only intervention group (Houston et al., 2017). At multiple sites, researchers identified no measurable changes in BP; however, participants reported improved medication adherence (Houston et al., 2017).

Discussion

The research for this integrative review examined the behaviors and attitudes of African Americans, particularly males, regarding factors influencing hypertension self-management. The findings underscore that several methods have been successful, including community-based, faith-based, and person-centered strategies (e.g., mindfulness, storytelling) among many others.

African Americans often exhibit a distrust of the healthcare system. Their distrust may, in part, be due to a history of being misled by researchers and healthcare providers (e.g., Tuskegee Syphilis Study; Scharff et al., 2010). Understanding ways to improve trust and encourage engagement in one's healthcare is important for improving hypertension management among African American males. Several of the reviewed studies demonstrated successful ways of improving hypertension self-management by engaging with men at the community level.

In addition to mistrust of the healthcare system, the included literature also demonstrated a lack of knowledge about hypertension and associated complications among African Americans. Health literacy is important; for example, Houston et al. (2017) demonstrated that military veterans with better health literacy improved hypertension outcomes. Although the inability to define hypertension is common among all individuals, more research into the benefits of health literacy among African American males with hypertension is needed. Researchers must focus on the effects of health literacy on African American male hypertension management, especially culturally sensitive materials, and interventions.

Cultural and regional traditions, and beliefs, were found to affect behaviors that influenced hypertension positively or negatively (Long et al., 2017). For example, Southern food traditions typically result in high fat and salt intake, which have significant effects on uncontrolled hypertension (Bertoni et al., 2011; Der Ananian et al., 2018; Long et al., 2017). The role of the provision of healthy foods (e.g., fruits and vegetables) has been identified through community gardens and nutrition education; however, few studies exist on the long-term effects of community garden use in hypertension self-management (Barnidge et al., 2015). The community-based intervention of adapting known diets (i.e., DASH, low salt) to fit cultural traditions also needs exploration in hypertension self-management.

In this review, community-based participatory interventions lead to better outcomes in hypertension. Faith-based organizations, involvement of CHWs, and barbershop outreach exhibited improvement in blood pressure outcomes. The faith-based organizations analyzed had access to resources, whereas minimal research exists on faith-based organizations with limited resources (Baruth et al., 2014). A few faith-based research studies had higher female than male participation due to greater attendance by females (Carter-Edwards et al., 2018); however, barbershop interventions target businesses patronized by African American males.

Focusing on African American community interventions provided a support network and welcoming environment (e.g., family, church members, trusted persons) to increase the likelihood of African American males' adoption of hypertension management behaviors. While interventions in a barbershop setting were shown to be sustainable, further research into community-based, faith-based, and person-centered approaches are needed to improve hypertension outcomes.

Limitations

The studies reviewed were not limited to African American men due to the dearth of research focused exclusively on African American males. Approximately 35% of studies reviewed consisted of African American male participants only. In studies including African American men and women, typically, more females participated; therefore, these results may not fully represent the needs of African American men (Carter-Edwards et al., 2018; Spikes et al., 2019; White, 2018). Analysis of the literature did not reveal why African American women participated more often than African American men. This is an important gap in the literature. Focusing on African American male population is imperative to reduce health disparities in hypertension.

This review was limited to adults 18 years of age or older, and most of the included studies focused on 40–60-year-old participants. Only one study focused on African American young adults in college (Wright et al., 2018). The lack of available research on African American young adults aged 18–30 years indicates further exploration is warranted to prevent hypertension and hypertension-related complications.

Two studies reviewed used self-reported measures including BP, smoking status, waist circumference, BMI, height, weight, and hypertension diagnosis (Barnidge et al., 2015; White, 2018). The use of self-reported measures may lead to systematic self-reported bias. An automatic cuff for the upper arm provides the most accurate BP measurement; therefore, studies that used a calibrated blood pressure machine increased instrument/measurement fidelity (AHA, 2020c).

Conclusion

This review identified themes related to self-management of hypertension among African American males from 17 research studies to illustrate what is known about hypertension self-

management among African American males and scientific gaps, laying the groundwork for future research. This population remains at risk of increased health disparities due to a high prevalence of hypertension. The themes revealed that lack of engagement in the healthcare system and lack of access to healthy foods by African American males are barriers to hypertension management. Beliefs, perceptions, and cultural traditions have a role in hypertension self-management among African American males. This review describes interventions that have been developed to reach this population to meet their healthcare needs and encourage engagement in their healthcare. The interventions studied with the greatest success were aimed specifically at African American men, such as barbershops and future initiatives toward church leadership; therefore, new approaches should be explored such as improving access to healthy foods and culturally sensitive approaches to healthy food preparation. Further research is warranted to explore community-based approaches including self-management interventions focused specifically on lifestyle changes of healthy diet, physical exercise, decreased stress, alcohol, and smoking cessation. Further research also is needed to explore the role of engaging African American males in self-management behaviors through various approaches (e.g., community-based, faith-based, and person-centered methods) to improve hypertension outcomes.

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APPENDICES

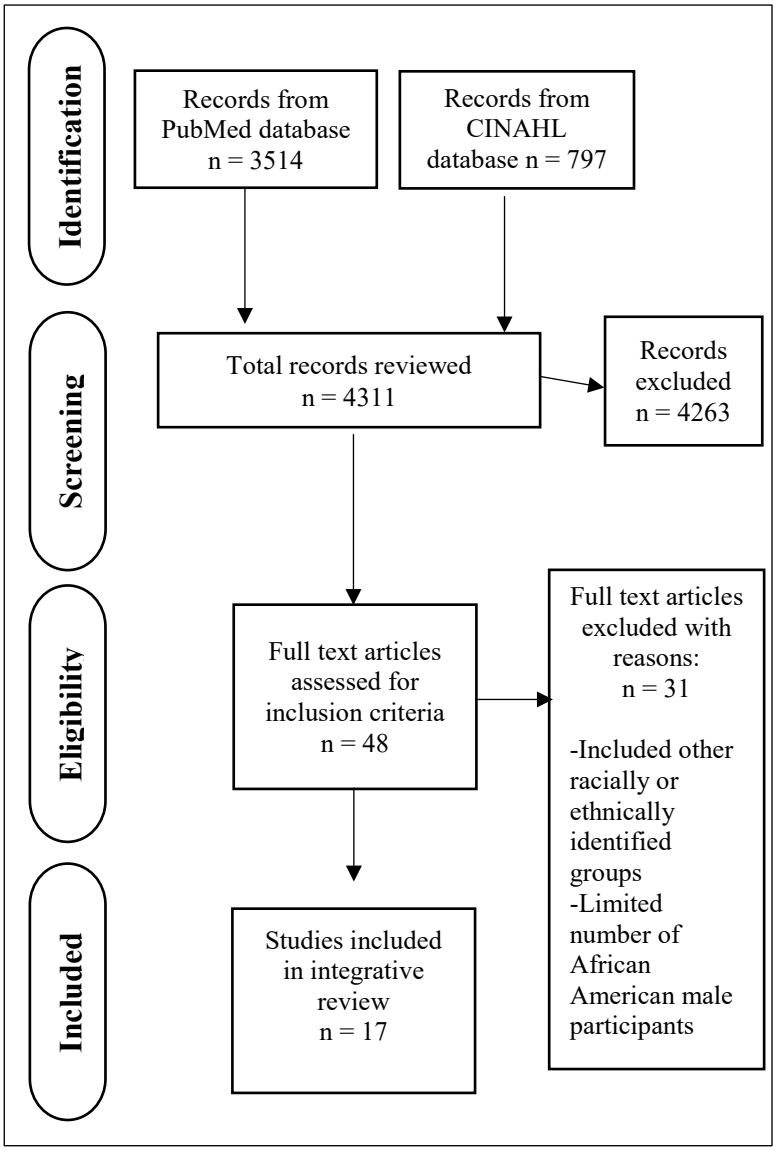

Figure 4. Study Selection Flowchart for Integrative [1]

[1] Adapted from PRISMA chart: Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA statement. PLoS Med. 2009; 6(7), e1000097. https://doi.org/10.1371/journal.pmed.1000097

Table 3. Summary of Included Studies

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Boulware et al. (2020)	35/42	To examine the effectiveness blood pressure self-management interventions	n = 159 African Americans in urban primary care clinic in Maryland Female = 73.6% Age 18 or older Uncontrolled HTN	Quantitative: Randomized comparative effectiveness trial. Achieving Blood Pressure (BP) Control Together Study (ACT) between 2013-14 Measurement: Hypertension Self-care Profile; Morisky Medication Adherence Scale; Health Problem Solving Scale Interventions: (1) Community Health Worker (CHW) + home blood pressure monitoring; (2) CHW + additional training in shared decision making; (3) CHW+ additional training in self-management problem solving. DoMyPART – education in shared decision making with physicians Problem Solving included 9 weekly group sessions on self-management education and problem-solving skills to overcome barriers to care.	BP achieved among 36%, 51%, & 52% for JNC7, and 50%, 65%, & 69% for JNC8 at 4 and 12 months. No statistical significance at 12 months. Follow blood pressure means decreased by 9.7 mmHg (systolic) and .6 mmHg (diastolic) Participants used blood pressure home monitor at 87%, 74%, and 74%. Participating in Problem Solving session increased likelihood of achieving self-care behaviors than DoMyPart participants.	Limitations: Low statistical power. 1/3 of participants had controlled BP at time of study enrollment. Low participation in sessions.	Further exploration of sustainability of blood pressure improvements in this population.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Victor, R.G. et. al. (2019)	31/42	To evaluate the sustainability of blood pressure program of Black male patrons of barbershops at 12 months.	n = 319 hypertensive Black male patrons of barbershops with HTN. Age 35-79	Quantitative: Cluster randomized trial (quantitative) Linear mixed model 30-minute field interviews with computer-based questionnaires Intervention – (1) pharmacy led with barber promotion follow-up; (2) barber promotion of primary care physician follow-up and lifestyle modifications.	Reduction in BP at 12-months of 28.6 mm Hg in intervention and 7.2 mm Hg in control group. Secondary outcome with decreased BP 14.5 mm Hg intervention group. Increased medication management, Primary Care Provider visits, self-rated-health, and patient engagement.	Strengths: Tailor made for black men Limitations: Lower participation in intervention group Study not blinded. Possible confounding due to overestimation of effect size.	Expansion of collaborative practice between pharmacist and physicians.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Spikes, T. et al. (2019)	33/42	To examine the effect of social support, HTN health beliefs, and depressive symptoms on HTN medication adherence.	N=120 African American participants with metabolic syndrome and HTN. Mean age =49.9 Gender = 22.5% male, 77.5% female	Quantitative: Cross-sectional study Measurements including Hill-Bone Compliance to High Blood Pressure Therapy scale, Enhancing Recover in Coronary Heart Disease Social Support Inventory, Beck Depression Index, and 3 subscales from the Beliefs related to High Blood Pressure in African American Scale. Descriptive statistics including percentage and frequency, Bivariate correlations, multivariate logistic regression using odds ratio. Health Belief Model	Participants exhibited an effect of social support and depression on medication adherence. Participants had a high perception of HTN risk.	Limitations: Sample mostly of higher socioeconomic status and female. Small sample size. Use of self-reported data may lead to bias. Recruitment of African American males difficult.	Need to explore access to healthcare and health literacy. Exploration of social factors and support effect on medication adherence in HTN. Need to explore African American males of lower socioeconomic status.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Der Ananian et al. (2018)	31/48	To examine perceptions and knowledge of African Americans' heart-healthy behaviors that lead to cardiovascular disease.	African Americans or Blacks (males 41%) Age 25-60	Mixed methods study n = 103 African Americans 14 Focus groups divided by gender and age (25-39 and 40-60). Qualitative: Grounded Theory analysis Qualitative: Chi-square analysis using questionnaire from AHA national survey on Women's health risk	Recognized risk factors to cardiovascular disease; however, many had a lack of understanding of the disease process of heart disease, hyperlipidemia, and HTN. Recognized the disease risk related to access to healthcare, health education, and access to healthy foods. Participants emphasized the role of diet and nutrition in the prevention of heart disease; however, many continued to consume high fat diets of traditional "Soul Food".	Strengths: Large sample size for qualitative analysis Limitation: Focus group responses not congruent to quantitative findings May not be representative of all African Americans	Presentation of culturally and ethnically appropriated information of cardiovascular disease and HTN material. Further identification of barriers to cardiovascular disease risk. Further education of cardiovascular disease and HTN to African Americans.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Victor et. al. (2018)	35/42	To examine the development of a pharmacy led blood pressure program for Black men patrons of barbershops at 6 months	n = 319 Black male patrons	Quantitative: Cluster randomized trial 30-minute field interviews with computer-based questionnaires. Intervention – (1) pharmacy led with barber promotion follow-up; (2) barber promotion of primary care physician follow-up and lifestyle modifications.	Reduction in BP through medication management in barbershops resulted in 27.0 mm Hg in intervention and 9.3 mm Hg in control group at 6 months Secondary outcomes with reduction in diastolic BP at 14.9 mm Hg in intervention group. Use of medications increased from 55% to 100% in intervention group and 53% to 63% control group.	Strengths: (1) retention of participants; (2) increase in use of anti-hypertensive medications; (3) convenience of intervention to participants. Limitations: Higher number of participants in control group. Cluster randomization not blinded. Possible confounding due to overestimation of effect size.	Focus on sustainability of intervention beyond 6 months.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Carter-Edwards et al. (2018)	19/42	To identify church leadership's perceptions and strategies in the development of future blood pressure programs; and their ability to lead blood pressure interventions for young Black men.	n = 19 black men Age = 18-50 years old n = 21 key informant (KIs) church leaders (28.6% male)	Qualitative: Community based participatory research Focus groups for age 18-35 and two groups age 36-50. Qualitative content analysis	Themes identified for KIs, and focus group participants included organization assess and capacities, factors influencing participation, intervention strategies, lifestyle, and self-management behaviors Participants indicated activities should target younger men; be scheduled around busy schedules; involve prayer and scripture; and include others (i.e., family support, mentors, peers, church leaders, and women).	Limitations: Large church with resources. Not generalizable to other black churches.	Further exploration of smaller and limited resource churches; difficult engaging black men in interventions. Need for interventions toward younger men and church leaders.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
White (2018)	35/42	To examine a church-based American Heart Association program on blood pressure self-management effect on decreasing blood pressure in African American adults, aged 18 and older.	n =23 African American adults (87% female 13% male) Members of the church Age 22-68	Quantitative: pretest-posttest single group design Studies conducted with tools measuring self-efficacy, pre-knowledge, attitudes, and behaviors of self-management Reliability: manual BP readings alpha=0.819 Health Belief Model	No significant relationship of blood pressure and knowledge; attitudes, and practice components. Participants willingness to self-manage HTN aligned with HBM	Limitations: Convenience sample was utilized; small sample size; one group pretest-posttest design. Participation bias due pastor being an investigator.	Further exploration of church-based self-management programs to enhance HTN self-efficacy. Further exploration of the variables of smoking and alcohol use in HTN. Use of longitudinal design and study in several churches.
Wright, R. et al. (2018)	31/42	To assess relationship between mindfulness, perceived stress, and blood pressure.	n = 20 African American College students enrolled in a Healthy Heart course at a Southeastern Historically Black College & University (HBCU) Males = 41% Mean age = 19.8	Quantitative: Cross sectional, descriptive correlational design Bivariate correlation analysis Newman's Health-Care Systems Model	Negative relationship between Mindful Attention Awareness Scale (MAAS) and Perceived Stress Scale (PSS). Positive relationships between MAAS and diastolic blood pressure. Need for interventions to reduce cardiovascular risk in African American college students.	Limitations: Convenience sampling, small sample size, low male participation. Strengths: Cost-effective and technology for surveys.	Conduct study early in semester for possible increased participation. Use of mindfulness in management of HTN.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Houston, T. et al. (2017)	32/42	To evaluate the association between blood pressure storytelling versus didactic only DVD in improving blood pressure self-management.	n = 619 African American veterans from 3 Veteran Administration medical centers (Southern city, Midwest, and mid-Atlantic city) 92% male Age >65	Quantitative: 2-arm multisite randomized controlled trial Linear regression model. Storytelling digital video disk (DVD) intervention and comparison DVD of HTN education only.	No significant change in blood pressure; however slightly lower systolic blood pressure in storytelling intervention group compared to education only group. Elevated blood pressure noted in comparison group (Variation noted by VA site). 40% with inadequate health literacy	Limitations: Participants with fairly good blood pressure control; loss for follow-up; not generalizable to other groups due to Veterans. Strengths: Targeted Veterans with uncontrolled blood pressure.	Explore sustainability of storytelling through video as being influential in self-management. Ways to disseminate educational material to African American males with HTN. Explore health literacy of African American males.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Long et al. (2017)	29/42	To explore knowledge, attitudes, and beliefs about self-management of HTN and hyperlipidemia and generate interventions to increase participant engagement in self-management behaviors.	n = 34 African-American males Age 40-65 Southeastern United States	Qualitative method: 4 in-person focus groups using semi-structured interviews Health Belief Model	Low perceived susceptibility to hyperlipidemia versus HTN. Living in Southeastern U.S. presents challenges to self-management including masculinity, regional, culture, and traditions. Gaps in knowledge found between HTN and hyperlipidemia.	Addressing challenges of health care system distrust; regional and cultural influences, perceived susceptibility, knowledge gaps.	Explore ways to improve African American males' engagement in self-management behaviors. Consider focusing on younger African American males' risk factors to HTN.
Narayan, P. et al., (2017)	32/42	To evaluate the association between cardiorespiratory fitness (CRF) and all-cause mortality in black male Veterans with resistant systemic HTN.	n = 1276 Black Veterans with resistant HTN	Quantitative: Prospective, observational cohort Bruce protocol to calculate cardiorespiratory and Exercise Tolerance Test (ETT). Cox proportional hazard models	Mortality risk decreased by 18% with each 1-Metabolic Equivalent (MET) increase in exercise capacity. Improvement in CRF decreases the risk of all-cause mortality Exercise capacity is a predictor of mortality.	Only black Veterans in the study with healthcare access lessening generalizability. Data at baseline only and not accounting for lifestyle changes and medication effect on CRF.	Need to explore exercise modalities and low cost/no cost interventions to participants with limited healthcare access and the impact of an intervention on HTN management.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Tully et. al., (2015).	36/48	To describe the development, implementation, and evaluation of a pilot program to provide culturally appropriate program to improve blood pressure control in blacks with uncontrolled HTN.	n = 110 Black people with HTN from two Milwaukee clinics. Female = 56% intervention and 55% control group	Quantitative: Matched control and interventional study Comparison of baseline and 6-month results; 12-month follow-up including BP and weight evaluations for intervention group. Qualitative: Survey questionnaire after 6-month program (n=35) and Focus group interview (n=36) Intervention included active involvement of CHW and participation in 6 group sessions. Group sessions included HTN overview (physician empower-led), get active (PT led), eat healthy (local chef), lower cholesterol (bionutritionist), smoking cessation (social worker), healthy weight (nurse-led).	No change in BP at 6 and 12-months between groups. SBP decreased significantly in intervention group [10.1 mm Hg intervention group and 7.3 mm Hg control group at 6 months; and 16.2 mm Hg intervention group and 8.7 mm Hg control group at 12 months]. No significant change in DBP in either group at 6- and 12 months Lifestyle changes included removing salt, managing salt intake, negotiating medication prescriptions, reducing high sugar foods, reducing portion sizes, and using BP monitors.	Limitations: Limited participation due to lack of transportation, childcare issues, severe illness, family crisis, housing transition, employment, social support, comorbidity, patient-provider communication, and health care discrimination.	Inclusion of topics in future programs related to patient-provider trust, relationship building, preparation of individualized - diet plans, inclusion of culture-specific food choices, including information about supplements and alternatives to medication, and recognition of spirituality to promote improved blood pressure and well-being.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Barnidge, E. K. et al. (2015)	34/42	To explore the intervention of providing access to fruits and vegetables and nutrition education through "Men on the Move Growing Communities" in the promotion of health changes in African American adults.	n = 397 African American residents of two Missouri counties Age ≥ 18	Quantitative: Community-based participatory research using Quasi-experimental with cross sectional surveys Chi squared, t test, linear regression Social Cognitive Theory	Participating in dietary and nutritional education were 3.06 more likely to eat five servings of fruits and vegetables daily. Significant change over time in HTN in intervention county from 61% to 45% decline in hypertensive participants. Nutritional education and activities personalized to cultural experience of participants.	Limitations: Possible study contamination due to proximity of comparison county to intervention county. Potential bias due to self-reported measurements of height, weight, fruit/vegetable consumption.	Need to explore self- care behavior including diet, exercise, and risk of HTN. Further exploration access to low-cost fruits and vegetables and community gardens.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Baruth et. al. (2014)	31/42	To evaluate physical activity and diet interventions effect on health behaviors of African American pastors.	n =40 African American pastors from 74 AME churches in South Carolina Gender: Male = 29 Female = 11 Mean age = 53± 7	Quantitative: Community based participatory research provided the Faith, Activity, and Nutrition (FAN) program Chi square and one-way ANOVA Measurements of blood pressure, perceived stress, waist circumference, physical activity, fruit and vegetable consumption, chronic health conditions, body mass index, and screening behaviors	No significant gender differences in behaviors (i.e., screening of health in the past year including blood pressure and blood sugar, mammogram, pap smear, or prostate exam. Female pastors participated in more moderate to vigorous physical activity per day than male pastors.	Limitations: All measures except physical activity were self-reported which may lead to social desirability bias.	Need to explore a health promotion intervention toward church leadership and tracking the activity of leadership.
Blixen, C. et al. (2014)	30/42	To explore young African American males and their care partners perceived barriers to post stroke care to improve post stroke care	n = 10 home dwelling African American men (mean age 53) and n = 7 African American women care partners (mean age = 53)	Qualitative: Focus group methodology using predetermined structured sequence questioning.	Barriers (themes) identified include psychological, knowledge, lifestyle, functional impairment, and self-identity. Three major themes included personal, family, and health care system affects health behaviors and promote psychological distress.	Limitations: Small sample size Focus on African American men may not be representative of entire population.	Need to explore behavior of late entry into health care system by African American males. Need to explore ways to include African American males in care and decision-making regarding care.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Victor, R. G. et al. (2011)	38/42	To explore a barbershop-based blood pressure intervention and its effect on improved HTN among Black male patrons.	17 barbershops serving Black male population; 15 barbershops at follow up	Quantitative: Randomized control trial intervention Intervention =9 barbershops/695 patrons versus 8 shops/602 patrons with education only. Mixed effects regression model (fixed effect – study arm and random effect – barbershop)	45% with HTN; 78% aware of HTN diagnosis; 69% HTN treatment; 38% controlled HTN Increased improvement in HTN of intervention group. Barbers measured 77% of blood pressure and counseled patrons to follow up with physicians (51%). Cost effectiveness stimulation of $5800 /barbershop or $50/patron with HTN.	Limitations: Barbers did not fully participate. Focused on one county and middle-class patrons, therefore not generalizable. Unable to collect data of costs of treatment due to individual primary care providers chosen by patrons. Strengths: Promotion of health promotion programs.	Need to explore those with limited or no access to healthcare in other urban centers, long term effect of intervention, and older patrons.

Table 3 continued

Author(s)	QATSDD score	Study Aim	Study sample/ characteristics	Methodology/Data collection	Results/ Findings	Strengths/ Limitations	Recommendations
Bertoni, A. G. et al., (2011)	38/48	To examine perceptions, attitudes, and barriers to Dietary Approaches to Stop Hypertension (DASH) diet among low SES African Americans. To examine the nutritional assessment of stores and restaurants of the participants environment.	n = 30 African Americans (Females 25; Males 5) Age: 34-63 52 stores and 114 restaurants within two zip codes in Forsyth County, North Carolina	Mixed method study Qualitative: Focus groups using open-ended questions. Quantitative: ANOVA for businesses identified as stores versus restaurants were assessed using the Nutrition Environment Survey in Stores (NEMS-S) and restaurants (NEMS-R).	Poor availability of healthy foods in area of participants. Local restaurants not offering DASH food options. High cost of healthy foods in area of participants. Support from family to adopt DASH diet a barrier.	Limitations: No random sample of residents and survey not performed of farmer's markets, community gardens, or produce trucks.	Dissemination of DASH diet with culturally acceptable options.

Note: QATSDD = Quality Assessment Tool of Studies of Diverse Designs, HTN = Hypertension

CHAPTER III
BENEFITS OF GARDENING: THE EXPERIENCES OF AFRICAN AMERICAN MALES WITH HYPERTENSION

This manuscript presents the findings of a multiple-method study exploring the experiences of African American males with hypertension who garden. The manuscript has been prepared for journal submission to *Family & Community Health*. Carrie McCoy is the primary author and Principal Investigator for this article. She conceptualized and planned the original article with close supervision by Sadie Hutson, Joel Anderson, Katherine Morgan, and Jennifer Jabson Tree.

Abstract

As hypertension continues at higher rates among African American males, changing dietary intake can improve outcomes. Gardening is associated with higher consumption of fruits and vegetables and easier access to healthy foods. Research on the benefits of gardening in diabetes, obesity, and cancer exists. However, limited research exists on the effect of gardening on the self-management of hypertension through dietary choices. This study aimed to explore the experiences of gardening, food selection, and food preparation practices of African American males with hypertension who garden. The study used a multiple methods approach, guided by qualitative interpretive description (semi-structured interviews) and quantitative descriptive methods (DASH diet questionnaire.) Data analysis included interpretive description qualitative analysis and descriptive statistics. Nine participants, ages 55-73 years, were interviewed. Three themes emerged:1) motivators for gardening, 2) keeping old or developing new dietary habits, and 3) the benefits of gardening. Findings revealed that African American gardeners benefitted from increased physical activity, alleviated stress, and gained satisfaction. African American gardeners exhibited few dietary health benefits from food selected as a result of gardening. However, as they recognized the need to make healthy dietary choices, many continued to make decisions regarding food consumption, preparation of garden-selected produce, and shopping

habits based on previous dietary preferences. Quantitative data augmented the qualitative findings by emphasizing that participants consumed more than the DASH diet's daily recommendations for meats, sweets, fats, and oil and less consumption of fruits and vegetables. However, according to MyPlate recommendations, the consumption of fruits and vegetables was met by participants. These findings lay the groundwork for future interventions targeting self-management of hypertension among African American men.

Introduction

Gender, ethnicity, and living environment (e.g., food desert or region) are all factors that contribute to hypertension prevalence (American Heart Association [AHA], 2017; Long et al., 2017). In the United States (U.S.), males aged 20-65 (51.7%) outnumber females (42.8%) in terms of hypertension prevalence from 2015-2018. (NHANES, 2021). A higher prevalence of hypertension has been found among African American males (58.3%), followed by White males (51%), Asian males (50.6%), and Hispanic males (51%; Virani et al. 2021). Evidence-based research indicates a higher prevalence of cardiovascular risk factors, such as hypertension and cardiovascular mortality, among people living in the South between 2011 and 2017. (Parcha et al., 2021).

Apart from living in the South, additional risk factors for African American men include residing in low-income areas, lack of access to healthcare services, lack of access to healthy foods, lack of finances, lack of social support (family or peers), lack of transportation, or community resources (Centers for Disease Control and Prevention [CDC], 2010a). Additionally, African American male preference for a traditional diet (regional or cultural foods), a Southern diet pattern, and a lack of access to fruits and vegetables contribute to uncontrolled hypertension in this population (Long et al., 2017; Chan et al., 2015; Epstein et al., 2012). Researchers described the "Southern" diet pattern as consisting of fried foods, fats, eggs, organ and processed meats, and sugar-sweetened drinks (Shikany et al., 2015). In a cross-sectional study, researchers demonstrated that African American males' diets consisted of mainly processed foods, sugary drinks, and meats instead of fresh fruits, vegetables, and grains (Lui et al., 2013).

Several approaches exist to self-manage hypertension and decrease the risk of cardiovascular-related deaths. Strategies include adopting a low-salt diet (1500 mg/day),

increasing physical activity by 30 minutes/day for at least five days/week, maintaining a healthy weight, smoking cessation, limiting alcohol to two drinks/day for men and one drink/day for women, maintaining good sleep habits, and alleviating stress with or without medication National Heart, Lung & Blood Institute [NHLBI], 2021; CDC, 2021b). In addition to adopting a low-salt diet to control hypertension, individuals must choose heart-healthy options of increased fruits and vegetables, such as the Dietary Approaches to Stop Hypertension (DASH) diet (NHLBI, 2021). The DASH diet recommendations for blood pressure control consist of consuming a) low-fat/fat-free dairy, b) six or fewer servings of lean meats, fish, or poultry a week, c) four to five servings of fruits and vegetables a day, d) six to eight servings of whole grains a day, e) limited saturated fats such as butter, cheese, or fatty meats, and f) limited sweets such as soft drinks, cakes, pies, etc. (Appel et al., 2003; NHLBI, 2021, 2020a). The DASH sodium trial revealed a reduction in blood pressure by 11 mm Hg for those with hypertension who consumed the diet over 90 days (Sacks et al., 2001).

For African American males unable to access healthy foods, gardening is a possible solution to gain access to fresh fruits and vegetables. The CDC underscores community gardens as being beneficial to the physical and mental health of residents, including access to fresh fruits and vegetables (2010b). In a comparison study, African American participants accessing a community garden was associated with increased fruit and vegetable consumption (Barnidge et al., 2015). Researchers also reveal that gardens provide access to healthy foods for individuals in food deserts (Palar et al., 2019; Carney et al., 2012; Kortwright & Wakefield, 2011).

Besides increased access to food, gardening provides additional benefits to health. The residents of two Toronto, Canada, neighborhoods emphasized the importance of home gardening

in improving access to food, physical exercise, and mental health (Kortwright & Wakefield, 2011). Researchers further found that adult gardeners aged 50 or older also increased physical activity and life satisfaction (Sommerfield et al., 2010). In addition, gardeners who participated in a community gardening study improved their body mass index and decreased weight compared to their neighbors who did not participate in the community garden (Zick et al., 2013).

Gardening also improves the health of individuals with chronic diseases such as cancer (Park et al., 2018) and diabetes (Weltin & Lavin, 2012). Researchers found that community gardening increased exercise, increased cardiovascular health, improved weight, and positively affected diabetes management in Marshallese immigrants (Weltin & Lavin, 2012). In a study involving mentoring on home gardening, researchers further demonstrated the potential of gardening in improving the quality of life, weight, and physical activity in breast cancer survivors (Bail et al., 2018). Furthermore, a 15-session gardening intervention among 70 or older Korean women showed improved blood pressure outcomes, blood lipid levels (HDL and total cholesterol), pro-inflammatory markers, and oxidative proteins, indicating the potential positive effects of gardening (Park et al., 2017).

Although studies have demonstrated the effectiveness of gardening in managing obesity (Zick et al., 2013), diabetes (Weltin & Lavin, 2012), and cancer (Bail et al., 2018), there continues to be a limited focus on gardening in the self-management of hypertension among African American males. Exploring the role of using personal or community gardens among African American males may be pertinent to gaining an understanding of the role of gardening on hypertension self-management in this group. Therefore, this study aimed to understand the experiences of African American males who garden (i.e., personal or community) and the impact

of gardening on hypertension self-management. The specific objectives of this article are to articulate a) the impact of having access to healthy foods on hypertension, b) hypertension self-management behaviors exhibited when using a garden, c) benefits attained from gardening, and d) the influence of gardening on food preparation, dietary choices, and buying habits among African American males.

Theoretical Framework

Symbolic Interactionism (SI; Blumer, 1969) and the Theory of Planned Behavior (TPB; Ajzen, 1985) conceptually framed this study. The characteristics of SI involve the relationships between a) African American males, b) personal or community gardens, and c) a diagnosis of hypertension to understand African American males' experiences. TPB is defined by the African American male participants' motivation to control their hypertension through gardening and food preparation. Intentions to adopt behaviors focus on one's self-efficacy and perceived ability held by African American men to self-manage hypertension. The self-efficacy and perceived self-management abilities of hypertension held by African American men serve as the foundation for behavioral intentions. The frameworks guided the development of an interview protocol and informed a comprehensive analysis of the experiences of African American males with hypertension who use a garden.

Methods

Design

A multiple-methods (QUAL-quan) design guided this study (Morse, 2009). The method layered an interpretive description design with a quantitative descriptive analysis of participant characteristics and current adherence to the DASH diet (Moore, 2001; Moore et al., 2008). The

interpretive description approach allowed the primary investigator (PI) to analyze and understand human experiences of health and disease relevant to clinical practice through exploring gardening and food selection as a potential self-management practice among African American males (Thorne et al., 1997; Thorne, 2016).

Sample

The University of Tennessee, Knoxville (UTK) Institutional Review Board approved the study (UTK IRB-21-06636-XM). After approval, the PI used a snowball sampling strategy to recruit a convenience sample of participants from four Southeast U.S. cities and surrounding areas. The PI identified each city based on area initiatives to increase access to healthy foods in communities, specifically through community gardens. Recruitment occurred through mailing letters and flyers to historically Black Fraternities and flyers sent to African American churches, placed in barbershops, co-ops, and community centers frequented by African American males in the selected areas. Twelve potential participants self-identified for the study and contacted the PI by phone or email to schedule a prescreening interview.

The PI conducted the prescreen interview by telephone to explain the study and determine eligibility for study participation based on inclusion criteria. Of the 12 potential participants, two opted not to participate before the initial screening, and one did not meet the requirements for inclusion. Nine individuals consented to participate as they met the following inclusion criteria: a) African American male, b)18 years of age and older, c) self-reported hypertension, d) garden use at least twice in the previous five years and e) and able to speak and understand English. Exclusion occurred if the participant had cognitive impairment with an inability to understand the study summary.

Participants received a study summary to review before the interview. The PI answered participant's questions about the study summary prior to the interview. Each participant provided verbal consent to continue in the study. Due to the ongoing coronavirus pandemic, participant interviews occurred in person or virtually, with which they felt most comfortable. Three of the nine participants met in a safe, secure location for the interview, while the remaining interviews occurred virtually. The use of a pseudonym throughout the research process ensured privacy and confidentiality.

Data Collection

Data collection involved obtaining demographic characteristics, a 24-hour recall diet questionnaire, and an audio-recorded interview. Demographics consisted of inquiring about participants' background information such as age, length of hypertension diagnosis, stage of hypertension diagnosis based on the American Heart Association's staging (AHA, 2017), current medications, adherence to medications, educational level, marital status, and insurance status. Following the initial interview, an additional demographic included if participants grew up on a farm.

The DASH diet questionnaire assesses a 24-hour intake of food and servings from eight categories (i.e., grains, fruits, vegetables, fats/oils, dairy, nuts/beans, sweets, meat/fish/poultry; Apovian et al., 2009). The tool has been adapted from the DASH diet online questionnaire and validated against a Block Food Frequency Questionnaire (FFQ; Apovian et al., 2009; Moore, 2001). The PI obtained permission and received a paper copy of the questionnaire from the researchers who created the web-based online questionnaire for this study. Analysis of each category of the DASH diet occurred based on the NHLBI DASH

diet categories (NHLBI, 2021). Data generated from the DASH diet questionnaire assessed dietary intake and adherence to the daily recommendations of a 2000 calorie/day diet while using a garden.

During the interview, the PI asked each participant to create a list of foods eaten in the last 24 hours. The PI read each dietary probe to the participant and recorded the information. The PI and participants identified serving sizes using the DASH online serving guide to help determine food servings consumed based on the 24-hour food list. Results of participants DASH diet questionnaire were compared to USDA MyPlate dietary recommendations. USDA MyPlate (2020) recommendations include five categories for a 2000 calorie/day diet for 60 or older adults (grains 6-9 ounce-equivalent, fruits 2 cups, vegetables 2.5 cups, protein 6 ounces, dairy 3 cups). Protein for the USDA MyPlate guidelines include eggs, meats, nuts, seeds, and legumes, while the DASH diet questionnaire separates nuts/seed/legumes from meats and does not include eggs. The MyPlate data excluded the intake of sweets, fats, and oils due to difficulty determining kilocalories/serving (sweets < 240 kcal/day) and grams (fats/oils < 27 grams/day) from the participants' 24-hour intake information.

The interview incorporated a series of semi-structured questions. The interview focused on measures used to control hypertension, gardening experiences, and the influences of gardening on dietary and shopping habits. Sample questions included: What do you do to lower your blood pressure? What made you decide to begin using a personal or community garden? What do you like or dislike about using a (personal or community) garden? Have your eating habits changed since using a garden? If so, in what way? How was your family supportive of your use of a garden or making dietary changes from the food you obtain from the garden?

Describe how you or your partner/spouse/family member prepare food obtained from the garden. In what ways does obtaining food from a garden influence changes in the diet of your family? How does using a garden change your choice of foods and what you bought at the grocery store? A UTK approved transcriptionist transcribed all interviews except the initial interview that the PI transcribed to become immersed in the data.

Data Analysis

Before beginning the research process, the PI established the research through "theoretical forestructuring" (Thorne, 2016, p. 70). According to Thorne (2016), "theoretical forestucture" allows the researcher to critically reflect on clinical knowledge, such as perceptions and approaches to self-management behaviors personally and professionally held by the PI to make the research relevant to clinical practice (p.70). To establish a "theoretical forestructure," the PI participated in a bracketing interview through UTK's Transdisciplinary Phenomenology Research group. The group consists of phenomenology and qualitative researchers from various areas of research who provide constructive criticism of the presented research. This process allowed the researcher to receive feedback from the group to address held assumptions, perceptions, or ideas that could lead to bias during the research process while allowing for reflexivity before the initiation of research.

Data analysis occurred in multiple stages of qualitative and quantitative and methods (QUAL-quan; Morse, 2009). Analysis of the data began with constant comparison of interviews followed by qualitative descriptive statistics. The quantitative analyses of the Dash diet questionnaires were compared to a 2000 calorie diet for DASH diet (NHLBI, 2021) and USDA MyPlate (2020) diet recommendations to enhance qualitative findings (Morse, 2009). Analysis

of demographic data and the DASH diet questionnaire (Moore, 2001) used SPSS version 28. Descriptive statistics (frequencies, mean and standard deviation) characterized participants. Diet questionnaires depicted the daily servings of food consumed 24 hours and salt and fat intake.

Qualitative data analysis followed an iterative process to examine the data for emerging patterns and themes of the participant's experiences of self-management and dietary choices during gardening. After receiving each transcript from the UTK approved transcriptionist, the PI listened to the audio file while reading the transcript to engage with and become immersed in the data (Thorne et al., 1997). This process allowed for the initial identification of themes and patterns. The PI continued reading the transcripts several times while journaling patterns expressed by participants of their experiences with gardening. Although phenomenology was not the distinct research method for this research, the researcher returned to the transdisciplinary research group with three de-identified transcripts for further analysis due to the group's expertise in qualitative descriptive interpretation. The transcripts were read line-by-line during the group meeting to recognize salient quotes and share tentative interpretations to inform the researcher's ongoing analysis.

Upon reviewing all transcripts, the PI uploaded transcripts to Dedoose web-based program (Dedoose, n.d.) to continue analysis and establish a code list. The researcher used constant comparison, an analysis method of grounded theory research, to analyze all transcripts, memos, or reflexive journaling to identify similarities, dissimilarities, and outliers of African American gardeners' experiences within the data (Polit & Beck, 2018; Thorne, 2016). The analysis included the comparison of African American males' attitudes, interactions with their gardens, behaviors, and intention to change.

To increase research integrity and trustworthiness, the researcher performed several steps during the research process through data collection, analysis, and writing of this manuscript (Morse, 2015). Thorne's (2016) interpretive description method describes the approaches as representative credibility, analytic logic, interpretive authority, and epistemological integrity. Measures by the PI included prolonged engagement with the data (credibility), creating memos and an audit trail of the research process (analytic logic), peer review of memos, coding, and debriefing by a peer mentor (interpretive authority; Thorne, 2016). Additional measures included incorporating qualitative semi-structured interviews and complementary quantitative methods using a 24-hour diet questionnaire to explore hypertension self-management practices of African American males who garden (epistemological integrity; Thorne, 2016).

Results

Quantitative Findings

The final sample comprised nine (n=9) African American males with hypertension who used a personal or community garden. Table 4 summarizes demographic characteristics. An attachment provides brief descriptions of each participant (Attachment Participant Description final study.docx). Two participants owned urban community gardens, and seven used personal gardens next to their homes. The average age was 65 years (range: 55–73), and they had hypertension for an average of 10 years (range: 3-18 years). Of the participants, seven consistently took their anti-hypertensive medications regularly. The participants had medical insurance, with five having additional comorbidities besides hypertension (e.g., diabetes, arthritis, thyroid disease, heart disease, enlarged prostate). All participants were highly educated, attending some college or having a college or higher degree. One participant

was divorced, with the remaining eight being married. Out of the nine participants, six of them grew up on a farm.

The dietary questionnaire results provided insight into participants' dietary intake over 24 hours. One participant began an intermittent fasting diet a week before agreeing to participate in the study. Figure 5 presents participant servings/day of the DASH categories and the mean/standard deviation of 24-hour food intake compared to the USDA MyPlate daily recommendations. DASH scores are averages of NHLBI (2021) recommendations for daily servings based on a 2000 calorie/day diet for the eight food groups (grains, fruits, meats, vegetables, nuts/seed/legumes, dairy, sweets, fats/oils).

The mean intake of fats and oils exceeded the recommended DASH daily servings of 2-3 per day. Participants, on average, also exceeded daily servings of sweets, dairy, nuts, seeds, and legumes. On average, the intake of fruits (2.86) and vegetables (2.84) was below the DASH daily recommendation, which is approximately 50% or more of fruits and vegetables compared to daily recommended intake of 4 servings per day. The intake of participants met or exceeded the intake of fruits and vegetables for the USDA MyPlate recommendations of 2 cups fruit and 2.5 cups vegetables; however, intake for protein and meat remained higher (3.64) than the recommendations for both the DASH diet (6 or less servings) and MyPlate (5.5 to 6 ounces) guidelines per day.

The DASH dietary questionnaire included additional questions on salt and fat intake in certain food types. Table 5 summarizes the results of the salt and food intake of the participants. Half of the participants used salt when cooking, while seven participants no longer used salt at the table when eating. During the 24-hour recall of foods consumed, many

participants did not eat certain food types containing salt or fat; however, regular meat consumption included pork or red meat. Most participants who ate meat trimmed visible fat before consumption.

Qualitative Findings

The findings include three themes and subthemes focusing on the experiences of African American males with hypertension who garden. These themes describe the impact of hypertension and gardening on the participants' food selection, preparation, and dietary choices. The themes are 1) motivators for gardening, 2) keeping old or developing new dietary habits, and 3) the benefits of gardening as voiced through semi-structured interviews with African American male participants. Subthemes of keeping old or developing new dietary habits include a) dietary changes, b) the selection of food purchases, and c) alterations in food preparation. The benefits of gardening consisted of subthemes of a) pride and satisfaction, b) sharing with others, c) stress relief, and d) increased physical exercise.

Motivators for Gardening

Each participant shared how and when they received a hypertension diagnosis and indicated that it did not influence their gardening decision. All participants gardened before obtaining a diagnosis of hypertension. Most participants grew up on a farm providing abundant food from raising animals and growing fruit trees and vegetables. Those participants emphasized they were continuing a family tradition on a smaller scale. Gardening represented a way of life that they knew from being a child. One participant described why he gardened as,

> "I think I told you I grew up on the farm… I've always lived in [Bakerstown] for 50-some-odd years, since 1969, but I've always grown a garden. It's, again, it's

> something our father taught us. It's in our DNA, and I guess I'll have a little small garden and grow tomatoes and stuff until I can't do it. (P3)

The gardeners who grew up farming stopped to go to college or pursuing a job. A participant who grew up gardening emphasized their return to gardening after leaving home.

> "Even growing up and after I had left home, I would still come up and help him every year in the garden, and we would get the vegetables. So, once I moved up here, it's a difference in doing gardening because you have to and doing gardening because you want to, and now, I'm at the point that I do it because I want to, so that's something I enjoy doing." (P2)

Although only two participants who grew up on a farm returned to large-scale community/urban gardening, the remainder gardened on a small scale next to their homes. Those who owned community gardens provided access to foods in a food desert. One participant emphasized his awareness of how big of a garden he could have in his neighborhood by stating, "of course, we're in an urban area and have to be very careful about what size garden I have and things of that nature." (P3). Regardless of the size, participants grew various vegetables, such as tomatoes, green leafy vegetables, herbs, legumes, peppers, and potatoes. Reasons for returning to gardening for those who grew up farming included sharing or enjoying gardening. One participant described gardening because "It was just the pleasure of growing them and knowing that people were getting nutrition value off of your, your vegetables." (P6)

Those participants who did not grow up on a farm gardened as a challenge to see if they could grow a garden. One participant expressed his reason for gardening as follows:

> "Well, to see if I could. That's all. I mean, like I said, I've always had a liking for plants and stuff. I mean, we have plants inside too. So, it's just natural. I don't know if it's part of my astrological sign or whatever, but my wife does. You know I learned a lot from her. I didn't know what you call plants (P8)

Whether the garden was large or small, personal or community, all participants described gardening as hard work. Other reasons included being able to watch things grow and fresh foods being readily accessible. Some participants enjoyed getting their hands in the soil because their families were gardeners and farmers. A few participants described the feeling of being able to walk outside and grab fresh food from their garden.

Keeping Old or Developing New Dietary Habits

Because of acquiring a diagnosis of hypertension, participants indicated they needed to make lifestyle changes related to dietary choices. Many faced the challenge of deciding whether to keep old or develop new dietary habits. Decisions included selecting what foods to continue to eat, what to buy when shopping, and how to alter food preparation techniques that could improve their blood pressure outcomes or overall health.

Dietary Changes

For the most part, participants divulged that eating habits changed a little due to gardening. They revealed eating fresh vegetables and being able to pick from the garden and eat foods they never desired to eat as a child. One participant expressed this change as,

> I give most of everything away but beets. My mom used to make me eat beets, and I didn't like them, but I have eaten some in my later years, and I'm like, this is not too bad." (P1)

Trying new foods from the garden also meant acquiring a taste for those foods. Specifically, one participant explored the health benefits of vegetables that resulted in weight loss by stating: “I’ve learned to eat certain things raw that I had never eaten before. I make turnip green salads, and it’s really good; then, I started looking at the health benefits of raw turnip greens. It’s unbelievable.” (P5)

A decision to change eating habits of foods selected from the garden and foods purchased from a grocery store occurred. Several reminisced about previous eating habits that have changed since being diagnosed with hypertension. Regarding eating habits, one participant stated:

> “I cooked everything either smoked, backbones, or ham hocks. I used some kind of bacon grease or bacon lard, the old country way. Everything was cooked the old country way; you know, the cabbage, the potatoes, the whole nine… four weeks ago, I would have been talking about frying fish and cooking fried potatoes with oil. We don’t use the lard anymore, but Crisco or peanut oil or something like that, so that’s just been a big change.” (P9)

Additionally, participants reiterated this by emphasizing they learned to use broth substitutes instead of meat or alternative seasonings to salt without altering the taste. Some participants indicated they ignored their food intake before being diagnosed with hypertension, such as sugary and salty foods. In contrast, others revealed family members told them to stay away from pork because it caused high blood pressure, especially ham. The decision between healthy and unhealthy eating seemed to be a struggle for some participants, as stated by one participant:

> "My eating habits, I can't honestly say they changed a little particularly when I'm harvesting. Like now that I'm not, I'll be back to my old sinful ways. But when I start or get back, I'll do better. I'll eat more vegetables." (P1)

The idea of having to make decisions resonated with other participants who specified they were gardening before receiving a diagnosis of hypertension; therefore, they rarely changed eating habits from foods obtained from their gardens.

The Selection of Foods to Buy

Some participants stated they learned new ways of shopping to buy healthier foods from gardening and due to having hypertension. Participants told childhood stories about minimal trips to the grocery store because they canned vegetables and cured meat for the winter. A few gardeners continued to freeze or can vegetables to store during the winter months or share with others. Since the participants were no longer farming and did not garden in the winter, many discussed going to the grocery store for items they could not get from the garden, particularly meats. One participant emphasized his shopping habits by saying: "I stick to the outer parameters of the store because through my reading and acknowledgment, all the harmful stuff is on the interior side of the store. Most of the outer sides, outer perimeter of the store, is the safest." (P5) Other participants reiterated this statement by indicating trying to stay away from prepackaged foods, while one acknowledged purchasing prepackaged foods out of convenience. Although participants desired to purchase healthier options, many revealed purchasing cakes, cookies, candy bars, chips, soft drinks, and pork rinds when shopping.

> "Because I'm looking for vegetables. Now, I try to stay away from processed foods. I try to stay away, but it's just so convenient. Particularly my schedule, I just don't have time

to labor over the oven. Just throw this in there or put this in the microwave. So, I tend to try to do more fresh vegetables than I do processed foods or canned foods." (P1)

Many felt that having fresh vegetables from their garden eliminated buying certain foods in the grocery store. Overall, they expressed being able to get food from the garden or their freezer whenever/

Alterations in Food Preparation

Being intentional about cooking with and using salt in food resonated with all participants. Some stated they developed a salt-sensitive taste in which they knew that they no longer required heavy amounts of salt in cooking or at the table. Participants noted that eating healthier with less salt or fat would improve blood pressure; however, participants and their families desired traditional cooking. One participant stated it this way: "I will do turkey every now and then, but I usually throw a hock in there. I always throw a hock in there. We have actually had two pots, one with hock and one with turkey." (P1) While another participant attempted to make a traditional way of cooking healthier by stating:

"… when I get the fatback, I scrape that salt off. I don't put it in the pot with that salt on it, and then, a lot of time, I'll take it and put it in warm water and let it sit to help get some of the salt out of it. But it gives it the flavor, though; that's the flavor." (P7)

Other male participants desired to break habits from earlier traditions of preparing and eating foods. One participant felt he was compromising the taste of foods for improved health and a long life. Overall, participants acknowledged the need to change salt and food intake in preparing foods retrieved from the garden. One participant noted:

> "Gardening is always relaxing, but when I ate the food before, I seasoned the wrong way so you can eat healthy foods all day long, but if you put the wrong things in, it becomes unhealthy for me. Some people tolerate it, but I just know I can't do it, so I don't put fatback in my greens anymore. I stop putting meat in my greens because you know it's easier for me to control the salt if I don't put anything extra in there." (P5)

Among some of the gardeners, their spouses prepared the food in the home, which continued to be prepared with salt or fat, while participants expressed not cooking with salt when preparing foods. Although decisions exist for participants between choosing what to eat, how to prepare foods, and what to buy, they revealed there were benefits from gardening.

Benefits of Gardening

Overall, participants admitted that gardening provided some benefits. Participants reported pride and satisfaction, sharing with others, alleviating stress, and increasing physical exercise.

Pride and Satisfaction

Having a garden gave participants a sense of pride, particularly when others complimented their gardens. Several participants emphasized comparing their garden with family or friends who had gardens through "bragging" about who grew the best vegetables. Regarding being proud of gardening, one participant stated:

> "There's a lot of pride in being able to put up. We do some canning, we do some freezing, and it's a lot of pride that goes into knowing that you have food in the freezer for the wintertime, and of course, you share a lot of it too, so being able to share it with other people." (P9)

Sharing with Others

In addition to having pride and satisfaction, participants emphasized enjoying sharing fresh vegetables and fruit with others from their gardens. Many participants shared with neighbors, church members, family, and their community. On the benefit of sharing, one participant stated:

> "For me, it's…I would say there is some pleasure that comes, some satisfaction. I would not say pleasure. I would say satisfaction because I know that there is a great need here in the community for fresh vegetables because of the food desert that we're in. That has kind of been my life mission now, even though I am not the best. I'm probably not the best spokesperson for it, but dammit, I am going to provide it." (P1)

Although the participant received satisfaction from sharing foods in his community, he knew he did not always represent healthy eating habits. In contrast, another participant changed his eating habits to improve his health while attempting to be an example for others. He described being an example as,

> "I tell a lot of people about eating healthier and buying vegetables, and I've always said I've got to be the example of that too because I can't be where I was and tell somebody else to eat healthy, and you know, this can benefit from this when I'm not showing them that myself." (P5)

Gardening also allowed participants to share information with younger adults and children on how to maintain a garden. One participant enjoyed assisting and educating elementary school staff and students in implementing a school garden, while several others shared information with young adults and family members about gardening.

Stress Relief

Overall, participants suggested their health improved through stress relief. The garden was a place of peace for all participants. Descriptions of gardening included peaceful, calming, relaxing, and a place to think. Several emphasized that peace for participants translated into providing stress relief which many said improved their health and likely their blood pressure. Participants emphasized this by stating:

> "I can take my frustration out on that cloud of dirt and everything else… try to bash someone's head in and whatever." (P3)

> To me, it's a relief, stress manage because I like seeing stuff grow, and at the same time, I know I'm going to get some benefit from it too, so it's sort of like a little therapy for me (P7).

Physical exercise

In addition to being a place of relaxation, participants revealed that physical exercise increased while gardening. Several described increased physical exercises from gardening, resulting in getting their heart pumping and working muscles. Regarding the exercise benefit gained from gardening, participants stated:

> "There's exercise involved in it, that's good for you. You're moving. You get your circulation really pumping because you're moving around." (P9).

Another described the impact of gardening on exercise by stating:

> "It's good exercise for my heart and everything cause I can dig a lot and use a lot of muscles and things of that nature, and I just like being out there in the sun and everything

and doing that kind of work." (P3)

Overall, participants found gardening reduced stress and increased exercise to improve their health.

Discussion

This study is the first to explore gardening experiences among African American males with hypertension. The study aimed to understand the impact of readily available access to fruits and vegetables, identify self-management behaviors concerning gardening, and explore food preparation and buying habits due to gardening. In this study, African American gardeners with hypertension did not perceive gardening as a tool for managing their hypertension directly through diet. In contrast, most participants with hypertension grew up on farms, and they all gardened before the diagnosis. African American male gardeners displayed pride in their gardens. The gardeners were motivated to garden due to the enjoyment of readily accessible produce. For them, the garden was also a source of satisfaction, a place of respite, physical exercise, and a way to give back to others (family, schools, communities, neighbors). The findings of satisfaction revealed by gardeners in this study aligned with Sommerfield et al.'s (2010) comparative study of older adult non-gardeners versus gardeners' satisfaction found in gardening. Older adults who gardened revealed improved life satisfaction compared with non-gardeners (Sommerfield et al., 2010).

Participants further suggested gardening provided benefits of increased physical exercise facilitating weight loss and improving heart function. Similarly, Weltin & Lavin (2012) endorsed the benefit of increased physical exercise through gardening in their qualitative study of gardeners. Zick et al. (2013) concluded that gardening improved weight and cardiovascular

health. Gardening also provided an escape for the participants. They viewed the garden as a relaxing, calming space to think and reflect. This idea of tranquility suggests that gardening relieved stress many felt caused their hypertension.

Furthermore, participants asserted that gardens provided fruits and vegetables, which allowed them to share food and knowledge about gardening with others. Gardening provided an opportunity to help others maintain a garden, learn about gardening, and provide food for those without access. Several participants valued being able to give produce to others, specifically those who shared with their community located in food deserts. The gardeners' benevolence transpired whether they ate healthily or not and manifested through providing for others in need. Sharing their gardening knowledge allowed others to reap the benefits of increased fruits and vegetables while providing satisfaction to the gardeners. Post (2005) emphasized the existence of a strong link between a person's altruism to improved health and well-being in a review of the literature.

Although, being diagnosed with hypertension sparked some participants to consider dietary changes from food selected from their gardens. The combination of gardening while having hypertension pushed participants to decide whether to eat, prepare, and purchase foods to improve hypertension. While gardening provided access to vegetables and fruit being grown by participants, they demonstrated a minor increase in consumption of those foods and changed salt intake. Reducing salt intake for participants included decreasing the amount used for cooking, eliminating the use of salt at the table, switching to low/no salt snacks, and substituting fresh foods for canned foods.

However, many continued to consume and prepare foods with high-fat content. The quantitative results enhanced these findings by revealing that participants exceeded daily recommendations for meats, sweets, fats, oils, nuts, and legumes daily compared to fruits and vegetables per the DASH diet (2021) recommendations. In contrast, participants met or exceeded the intake of fruits and vegetables according to USDA MyPlate (2020) recommendations. However, participants expressed decreasing salt intake as recommended by the DASH diet due to the knowledge that salt increases high blood pressure (NHLBI, 2021). Both dietary guidelines present dietary recommendation to improve health (USDA, 2020). Thus, the difference in intake for African American males reveals that specific diets may be easier to adhere to their recommendations.

In relationship to gardening, participants continued to eat vegetables obtained from the garden while deciding on preparation and shopping habits. As a result of stories about the connection between pork consumption and hypertension told by family or physicians, participants admitted to being selective of how often and what types of pork they consumed. For most participants, a compromise ensued between choosing to eat, cook, and buy healthy foods due to taste preferences or family members' desire to continue traditional cooking. Despite having access to fresh fruits and vegetables from the gardens, participants continued to occasionally prefer meats and sweets, consistent with Lui et al.'s (2013) study that African American males' diets consist of the same foods with less focus on fruits, vegetables, and grains. Those who adapted traditional recipes with less salt or meat felt it did not compromise the taste.

Concerning shopping habits, participants continued to struggle to buy healthier options and less prepackaged foods. Although some knew that shopping on the outer perimeters of the

grocery store provided added healthy choices, they continued to purchase baked goods, sweets, chips, fats, and oil. The qualitative findings on buying habits paralleled quantitative data that revealed a higher intake of fats, oil, sweets, and meat in 24 hours. Participants were incongruent in their reports of limiting salt intake to control hypertension while continuing to cook vegetables with salt and meats high in fat.

Alternatively, few participants explored the health benefits of foods grown in their gardens. As a result, these individuals changed their eating habits to live longer and healthier lives. Participants acquired a new taste for fruits and vegetables grown in their gardens introducing new foods into their diet. In this study, gardeners felt better, had improved blood pressure, and were healthier due to gardening benefits. The fact that some African American men maintained their diet through gardening suggests that they were highly motivated to improve their overall health. Most participants, however, alternated between old and newly adopted dietary habits to maintain health, while their garden provided benefits of exercise, satisfaction, and stress relief. The convenience of getting fresh fruits and vegetables from participants' gardens aligns with Barnidge et al.'s (2015) study on community garden access and DASH diet education, revealing an association between gardening and increased fruits and vegetables; this study showed that gardening provides access to fresh fruits and vegetables. Furthermore, this study revealed that gardening tasks include self-management practices of stress relief and physical exercise to improve hypertension.

Study limitations included several factors. Participant recruitment consisted of African American males aged 18 and older with hypertension. The participant's ages ranged from 55 to 73, and no young adults participated. Although recruitment of younger African American

men occurred, this age group may not be aware of having hypertension or not using a garden. The limited age of participants provides consideration for further exploration into hypertension awareness among younger African American males.

Further study limitations included participant recruitment of African American males from the Southeastern U.S with higher education. Therefore, this study is not representative of all African Americans. Research exploring individuals living in a food desert with access to a community garden may provide a different perspective on their relationship to food and self-management of hypertension.

Participants self-reported their hypertension diagnosis and stage of hypertension based on their last healthcare visit. Self-reporting could lead to recall biases. However, most individuals kept records readily accessible that provided their last blood pressure reading. Furthermore, the DASH diet questionnaire provided insight into participants' daily servings based on a 2000 calorie/day diet; however, several participants started diets before interviewing, which may have resulted in a misrepresentation of a normal intake of certain foods.

Conclusion

Despite the limitations, this study provides insight into how hypertensive African American males who garden manage their food consumption, food preparation, and buying practices. Although gardening may not directly influence African American males' hypertension management, this study reveals the challenge of preparing fresh produce in a healthy manner to manage hypertension. Gardening provides immediate access to healthy foods, likely increasing the consumption of fruits and vegetables. African American men continue to consume higher

amounts of meat, sweets, fats, and oils, which leads to uncontrolled hypertension. The desire to continue old habits results from taste preferences, denial, and requests by family members. However, the preparation technique used for fruits and vegetables determines their health benefits.

Further education on the DASH diet and adaptation of cultural recipes with fat and salt alternatives may improve health by encouraging healthier preparation and the consumption of fruits and vegetables. To manage hypertension, gardening provides benefits similar to those recommended by nurses and physicians, such as reducing stress, increasing physical activity, and eating a healthy diet. Nurses and physicians must assess individuals' ability to make dietary changes (i.e., the challenges in food selection and preparation) and encourage them to continue self-management practices to reduce hypertension. Future studies should address dietary choices specifically related to shopping behaviors of African American males with hypertension. This study briefly examined gardening as a determinant of shopping behavior; however, a better understanding of African American male shopping behaviors may provide greater insights into their dietary choices in relation to hypertension control. Increasing nurse and healthcare provider awareness of the food choices made by African American men while shopping or gardening is crucial to the nurse-patient partnership in establishing effective dietary programs for the treatment of hypertension.

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APPENDICES

Table 4: Background Characteristics of African American Male Participants (n=9)

Variables	Categories	Participants n (%) Mean ± SD	Range
Age		65 ± 5.39	55 –73
Hypertension timeframe		10 ± 5.43	3 – 18
Hypertension stage			
	Normal	3(33.3)	
	Elevated	1(11.1)	
	Stage 1	4(44.4)	
	Stage 2	1 (11.1)	
No. of meds.		2 ± 0.79	1 – 3
Take HTN meds. regularly		7(77.8)	
Educational level			
	Some College	2(22.2)	
	Bachelor's Degree	4(44.4)	
	Master's Degree	3(33.3)	
Marital Status			
Married		8(88.9)	
Divorce		1(11.1)	
Medical Insurance		9(100)	
Additional comorbidities		5(55.6)	
Type of Gardening			
	Community/Urban	2(22.2)	
	Personal	7(77.8)	
Grew up on a farm		6(66.7)	

Note: % = Percentage is represented by parenthesis; SD = standard deviation; HTN =

Hypertension; meds. = medications

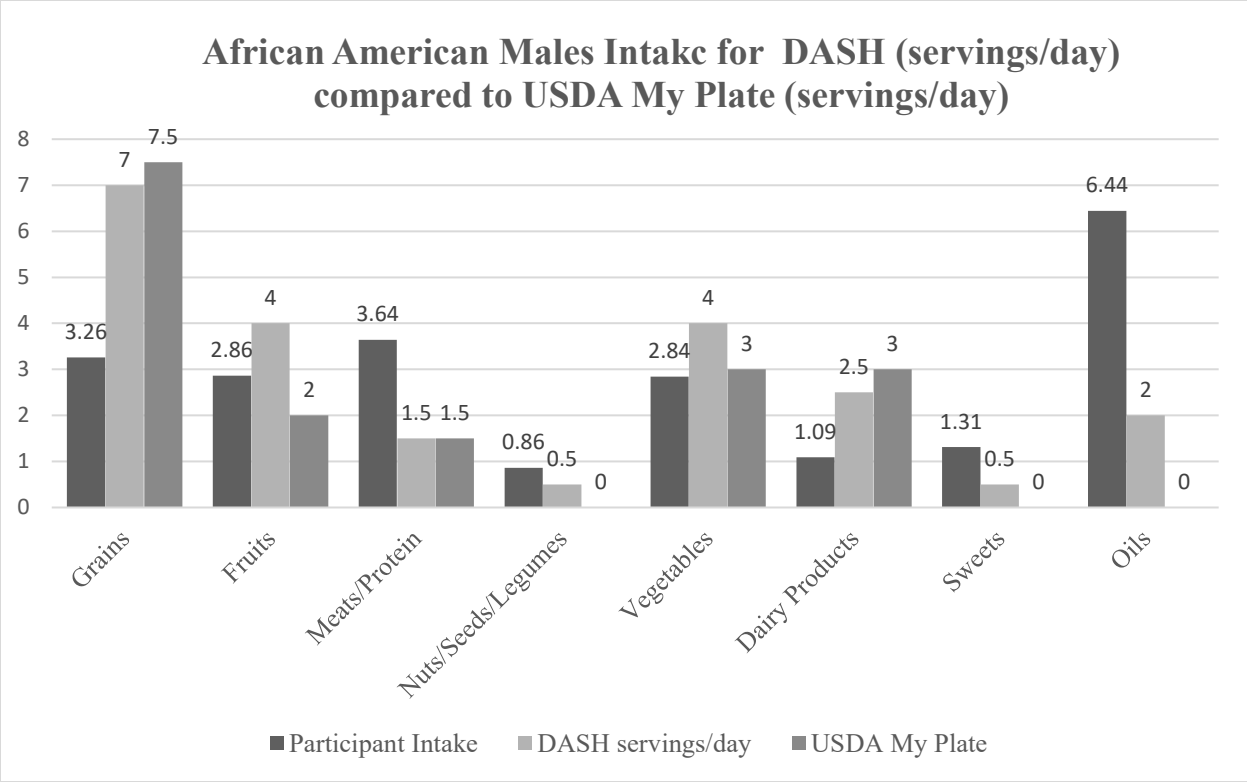

Figure 5. Bar Graph of African American Male Diet Questionnaire Intake

Note: This graph shows a comparison of the participants 24-hour intake per the Dietary Approaches to Stop Hypertension (DASH) diet questionnaire as it relates to the DASH and the United States Department of Agriculture (USDA) My Plate servings/day for a 2000 calorie diet. Dash diet servings/day - Adapted from DASH for Health at EMC2 where information lives: DASH Food Questionnaire by T. J. Moore, 2001: Boston University Medical Center. Copyright [2001] by Megan Murphy. Reprinted with permission. The USDA My Plate servings/day - Adapted from U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2020-2025. 9th Edition. December 2020. Available at DietaryGuidelines.gov. Nuts, seed, and Legumes for My Plate are included in Meats/Proteins.

Table 5: Salt and Fat Intake by African American Males

Variables	Categories	All Participants n=9 n (%)
Cook with Salt		
	Do not use	2(22.2)
	Lite	2(22.2)
	Regular	5(55.6)
Table salt use		
	Do not use	7(77.8)
	Lite	1(11.1)
	Regular	1(11.1)
Snack type		
	Did not eat	3(33.3)
	Low fat	1(11.1)
	Regular	5(55.6)
Soup type		
	Did not eat	5(55.6)
	Regular	4(44.4)
Meat type		
	Did not eat	2(22.2)
	Regular	7(77.8)
Ground Beef type		
	Did not eat	5(55.6)
	Lean	1(11.1)
	Regular	3(33.3)
Trimmed visible fat		
	Did not eat	5(55.6)
	No	3(33.3)
	Yes	1(11.1)
Skin on poultry		
	Did not eat	5(55.6)
	No	3(33.3)
	Yes	1(11.1)
Canned vegetable type		
	Did not eat	7(77.8)
	Regular	2(22.2)
Baked sweets type		
	Did not eat	4(44.4)
	Low fat	1(11.1)
	Regular	4(44.4)

CONCLUSION

Self-management of hypertension through making lifestyle changes can decrease the risk of complications of cardiovascular disease (CDC, 2021). Self-management of hypertension through implementing the DASH diet lowers the risk of cardiovascular disease, all-cause mortality, cancer, and stroke mortality (Soltani et al., 2020). The overall goal of this dissertation was to examine the concept of self-management, and current self-management practices, specifically among African American males, with a focus on how African American males incorporate self-management of hypertension through gardening. The dissertation consisted of three manuscripts exploring self-management in African American males.

The initial manuscript clarified the concept of self-management while further revealing that additional factors lead to adopting self-management techniques. The concept analysis positioned self-management in the context of persons with hypertension. Self-management in hypertension refers to activities a person implements to manage, prevent complications, or improve health outcomes. The analysis showed that acquiring knowledge about hypertension or life events may improve hypertension. Self-management practices can be implemented based on the individual's ability (confidence, motivation), acquired knowledge, recognition of existing barriers, and support (e.g., family, friends, and healthcare providers). The findings revealed that the author's definition of self-management is comparable to other healthcare organizations' definitions (CDC, 2020: WHO, 2022); however, the definition slightly varies due to task-specific attributes (commitment to change, confidence, motivation, and disease knowledge) required to self-manage hypertension.

The second manuscript examined the existing literature on self-management of hypertension among African American males. The manuscript highlighted knowledge and scientific gaps to improve blood pressure outcomes and enhance self-management of hypertension. Findings provided insight into techniques, such as barbershop and church-led interventions, that demonstrated efficacy toward improving hypertension outcomes in the African American male population. Articles included in the review were limited in their focus on African American males, as many of the current studies consisted of more female participants. However, the synthesis of the integrative review found that targeting businesses and community-based groups (such as barbershops) that attract African American male customers may improve blood pressure outcomes (Victor et al.,2018). Further exploration of faith-based and community garden interventions suggested a promising path toward decreasing the prevalence of hypertension among African American males (Carter-Edwards et al., 2018; Barnidge et al., 2015).

Therefore, the final manuscript included narratives from nine participants to explore the impact of their gardening experiences and garden-selected food on self-managing hypertension. This study identified self-management behaviors of African American males with hypertension, illustrated by the benefits of alleviating stress and increasing physical activity through gardening. Also, some participants identified health benefits from food selected from their gardens and improved hypertension. Secondly, the gardeners described the benefits attained from gardening as satisfaction, relaxation, and the ability to share food and gardening knowledge with others. In addition, they provided some insight into their eating habits compared to dietary guidelines showing some variation in the participant's ability to meet specified dietary recommendations for

fruit and vegetable consumption. In the study, African American male gardeners made consistent decisions between healthy versus unhealthy foods and whether to prepare foods healthily or to continue to eat traditional foods. In addition, participants held some knowledge of the effect of foods, fat intake, and salt on hypertension control.

Understanding the Gardening Experiences

This dissertation further provided insight into the benefits gained by African American males while gardening. Through gardening acquired a new taste for foods that included raw options. Due to hypertension, participants slightly modified their diets to include healthier options alternating with high-fat, salty options. Participants clearly narrated the benefits of gardening to include stress relief and physical exercise. For most gardeners, their interactions repeatedly changed their meaning of self-management based on their beliefs, interactions with others, and use of a garden.

The assumption prior to beginning this study was that African American males interacted with others and held certain beliefs about self-managing hypertension that the introduction of gardening influenced. However, participants revealed they gardened before receiving a hypertension diagnosis; thus, the garden played a role in the meaning of self-managing hypertension. Figure 6 depicts Blumer's Symbolic interactions representation of the interactions that gave meaning to self-management for African American males who gardened. Meaning through benefits gained by African American gardeners consisted of increasing physical exercise, finding a place of tranquility, altering their dietary habits, and giving them a desire to share with others (e.g., through food, community, and expertise/knowledge). Several factors influenced the meaning of gardening, including their reminiscing of farming as a child or family

use of a garden, interacting with family and peers through communication about "who has the best garden" or providing food to others, and their beliefs in self-managing through a gardening task.

African Americans chose what to change because of their use of a garden. Influencers of intent to self-manage hypertension included family/peer support, beliefs, and their perceived ability to make changes. Figure 7 depicts Ajzen's Theory of Planned Behavior among African American gardeners with hypertension. African American gardeners selected new habits to adopt, including eliminating salt and occasionally eliminating pork from foods they prepared. However, they adopted other self-management behaviors of reducing stress and increasing physical exercise through gardening. These findings correlate with other studies indicating that gardening increases physical exercise (Bail et al., 2018; Hartwig et al., 2016; Weltin & Lavin, 2012; Sommerfield et al., 2010).

Participants in this research exhibited that they were knowledgeable about their dietary decisions' effect on hypertension control. This knowledge allowed them to alter their dietary intake to meet those needs by eliminating salt, preparing foods healthily, and selecting foods while shopping. Although they knew their diets were not perfect, they self-managed in various ways by working in their gardens (i.e., exercising and relieving stress). Giving to others through food and sharing expertise around gardening benefited participants because it provided satisfaction from gardening. Participants ultimately compromised certain aspects of self-managing their hypertension to provide for others and share their gardening knowledge. This dissertation identified implications for clinical practice, health policy, and further research through the meaning of gardens and self-managing hypertension through gardening.

Implications for practice pertain to public health nursing and community-based setting. The benefits of gardening and recognizing the meaning of gardening for individuals with hypertension may lead to public policy initiatives. Further research into self-management of hypertension-related diet may lead to improved blood pressure outcomes.

Implications for Practice

Implications for practice pertain to implementing public health interventions in settings patronized by African Americans males, as emphasized in manuscript two, which underscores that managing hypertension is best performed in an environment or community setting frequented by African American males. Participants of the current study implemented self-management practices through gardening. Through local health departments, public health nurses may implement blood pressure monitoring, healthy eating, and gardening classes to increase access to healthy options while educating on heart-healthy eating. Integrating nurse-led programs in local churches and community centers can provide education on healthy eating habits for managing hypertension, reading labels for low sodium options, and self-monitoring blood pressure.

Both the National Heart, Lung, & Blood Institute (n.d.) and the American Heart Association (AHA, 2022) provide information on maintaining and preparing a heart-healthy diet. (i.e., culturally-specific recipes). In this study, it was not known if participants received information on healthy options of culturally-specific recipes and food preparation, although they were aware of decreasing sodium in foods. Community-based programs, including heart-healthy cooking demonstrations, can provide healthy options. African American male gardeners gained self-managing benefits of decreased stress and increased exercise, which improved blood

pressure outcomes. Community gardens remain beneficial, although the majority gardened at home. Referral to community gardens for those capable of gardening can increase specific self-managing behaviors.

A further recommendation is for health care providers (i.e., physicians, nurse practitioners, physician assistants) to initiate a discussion beyond medication that includes lifestyle changes through healthy food choices (i.e., Dietary Approaches to Stop Hypertension [DASH] diet). Healthcare providers do not readily refer to dieticians. They may not have time to educate patients on the dietary management of hypertension due to a lack of knowledge about diets (Locke et al., 2018). If healthcare providers' time does not allow, then referral to dieticians should occur for further discussion on ways to control hypertension through food selection. Providing educational literature on hypertension management, the DASH diet, and culturally appropriate recipes is essential in addressing self-management behaviors.

Implications for Policy

This dissertation study may inform policy. The research supports the continued development of community gardens to ensure healthy foods are in all communities. The use of gardens may also encourage the implementation of other self-management behaviors that improve hypertension. Because the majority of participants used personal gardens, policy should focus on reducing gardening restrictions imposed by homeowner's associations or city ordinances in neighborhoods.

Participants who operated community/urban gardens in food deserts provided food to their community. However, several participants of the current study provided food to their church members, family, and peers, which increased their intake of fruits and vegetables. The

initiation of local policy to provide funds to personal and community/urban gardeners who grow foods for underserved communities may reduce food disparities.

Implications for Research

The study's results underscore the need to explore various dietary recommendations' effects on hypertension management. African Americans in this study met the dietary recommendations of fruit and vegetable intake for MyPlate (USDA, 2020) while consuming less for DASH diet recommendations (NHLBI, 2021). In addition, research exploring the diets of average Americans compared to African American males can provide insight into diet patterns.

In the final manuscript, the participants' awareness of salt's impact on hypertension did not support their decision to continue to consume high fat food. Further research is needed to determine how well-informed African American males are about self-management strategies and how particular diets affect hypertension. In addition, research is needed to explore the communication of dietary management (DASH, low sodium diet) by healthcare providers with patients at diagnosis and follow-up visits. Further exploration of the compromise made in deciding what self-management practices to implement based on the social determinants of

Additionally, the third manuscript illustrated that African American males gained physical exercise while gardening. The need to examine blood pressure outcomes due to physical exercise over time in gardeners to explore the impact of physical exercise on hypertension outcomes.

Moreover, families play a role in self-management behaviors, specifically spouses who prepare the meals. The first manuscript illustrated that self-management behaviors might vary based on several factors, including support from family and peers. In addition, the findings of the

third manuscript found that some partners may assist with meal preparation or influence how meals are prepared. Further research including African American males and their partners/spouses in the exploration of meal preparation is warranted to gain insight into partner/spousal experiences with adapting meals for improved hypertension.

Lastly, focus on faith-based and community-based interventional research through gardening and hypertension education. Programs such as dementia faith villages for African American families (Epps et al., 2019) and a hypertension program (Savoca et al., 2013) focusing on young African American males showed promise in providing community support to improve health. Initiation of similar supportive interventions aligns with manuscript two findings that introducing interventions into communities improves hypertension outcomes. Such an intervention can include the initiation of gardening along with self-management education, blood pressure monitoring, and heart-healthy eating.

Summary

The dissertation provided insight into self-management of hypertension in three manuscripts: a) a concept analysis of self-management in hypertension, b) an integrative review of self-management evidence-based interventions for African American males, and c) a multiple-method study of the experiences of African American males with hypertension who garden. The final manuscript illustrated what gardening means to African American males with hypertension. Through gardening, African American males chose when to eat and prepare healthy foods (i.e., less salt, fat, and oils) while gaining benefits from the garden that impacted their overall well-being. The findings of this dissertation are critical to improving hypertension in African American males through effective communication by healthcare providers regarding diet self-

management practices and assessment of patients' ability and means to self-manage hypertension. In addition, an implication for policy regarding expanding gardens in communities provides further access to healthy foods. At the same time, future research is warranted to continue to address the need to reduce hypertension prevalence among African American males.

Although dietary changes play an essential role in self-managing hypertension, African American men found gardening beneficial in several self-management strategies through increasing physical activity and stress reduction. This dissertation offers a glimpse into the lifestyle choices of African American males who garden, which can be beneficial in managing hypertension. Overall, the findings enhance nursing knowledge regarding self-management practices related to the diet habits of African American males with hypertension. This knowledge can lead to developing interventions and further educating African American males about the impact of dietary choices on hypertension.

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APPENDICES

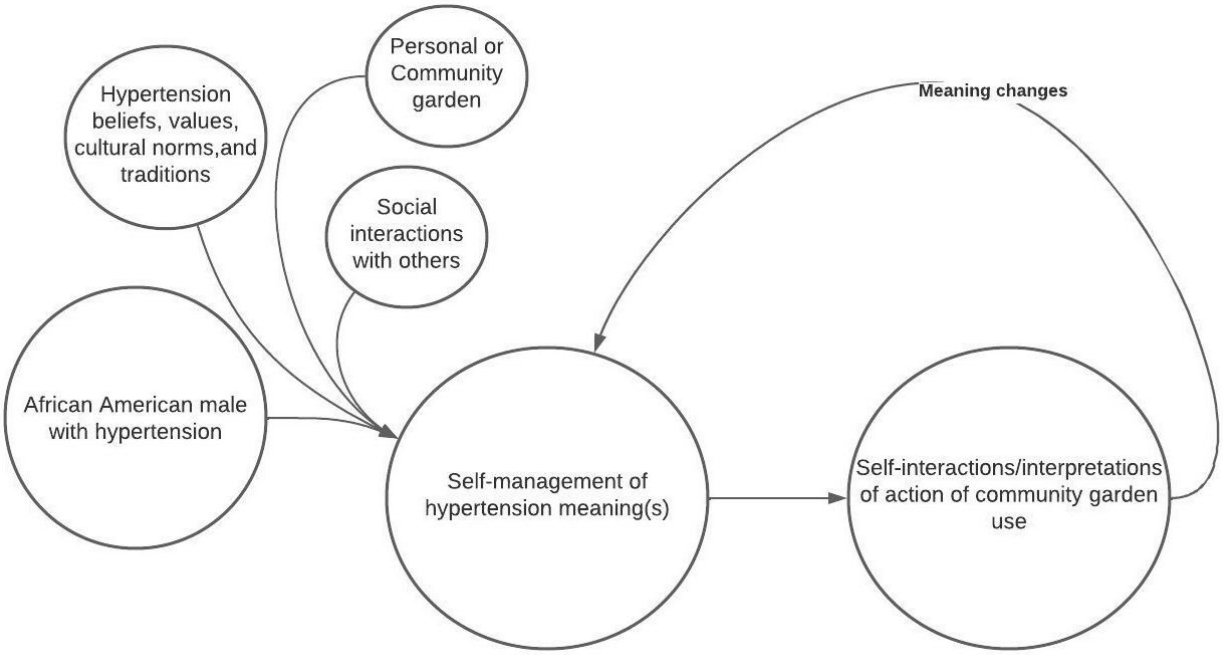

Figure 6. Blumer's Symbolic Interactionism of African American Males Revised

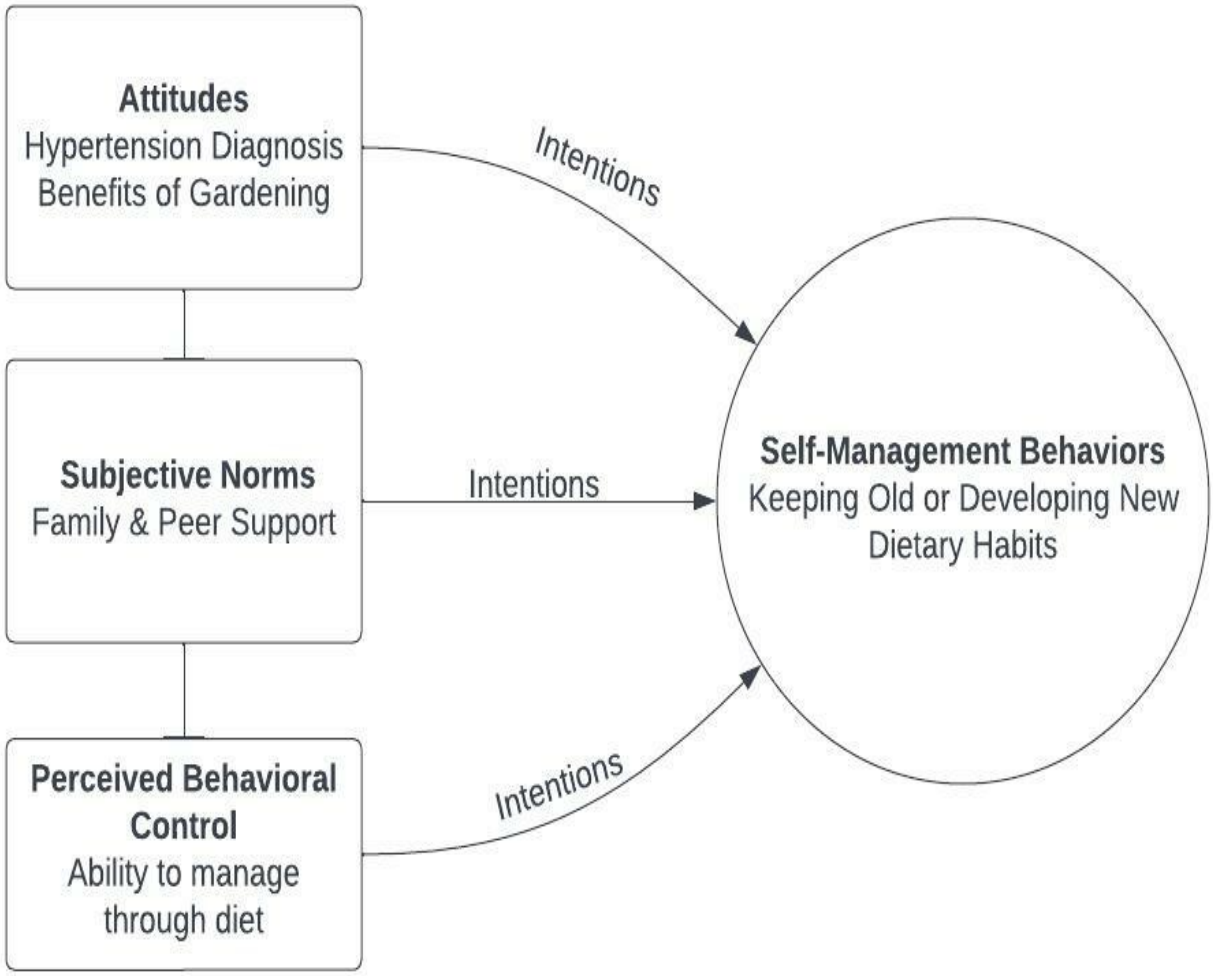

Figure 7. Ajzen's Theory of Planned Behavior in African American Male Gardeners

***Notes*:** Adapted from Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

VITA

Carrie R. McCoy has been a registered nurse for 20 years. Her nursing experience spans various areas including medical surgical, cardiology, trauma, clinical educator, nurse practitioner, and preceptor. Carrie's career focus began in microbiology when she received a Bachelor of Science in Microbiology from the University of Arkansas, Fayetteville in 1993. Prior to becoming a nurse, Carrie worked as a research associate in tuberculosis and leprosy research for Hansen Disease Center. Her desire to help others resulted in her returning to school to receive a Bachelor of Science in Nursing from Southern University Baton Rouge, Louisiana in 2002. She worked as a registered nurse for 6 years before pursuing a master's in nursing.

In 2006, Carrie relocated to Vermont where she worked as a travel nurse and made the decision to further her education. In 2010, Carrie received a Master's in Nursing/Adult Nurse Practitioner certification from the University of Vermont. During her master's program, Carrie worked as a clinical educator and graduate teaching assistant for graduate and undergraduate nursing students.

After receiving her master's in nursing, Carrie worked as an internal medicine nurse practitioner for 6 years in Burlington, VT and Knoxville, TN. As a nurse practitioner, she has served as a preceptor for graduate students from colleges and universities in Tennessee and Kentucky. In 2018, Carrie returned to school to pursue her doctorate in nursing at the University of Tennessee, Knoxville (UTK). While pursuing her doctorate, Carrie works as a nurse practitioner at UTK Student Health Center. She is a member of the Southern Research Nursing Society, Tennessee Nurses Association, and the American Nurses Association.