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Menopause, Rurality, And Obesity in Rural African American Women

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FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

MENOPAUSE, RURALITY, AND OBESITY
IN RURAL AFRICAN AMERICAN WOMEN

A dissertation submitted in partial fulfillment of

the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

NURSING

by

Colleen Marcia Kilgore

2014

To: Dean Ora Lea Strickland
College of Nursing and Health Sciences

This dissertation, written by Colleen Marcia Kilgore, and entitled Menopause, Rurality, and Obesity in Rural African American Women, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

Dorothy Brooten

Marcia Magnus

Luz Porter

JoAnne Youngblut, Major Professor

Date of Defense: November 10, 2014

The dissertation of Colleen Marcia Kilgore is approved.

Dean Ora Lea Strickland
College of Nursing and Health Sciences

Dean Lakshmi N. Reddi
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Florida International University, 2014

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DEDICATION

I dedicate this dissertation to my husband Charles J. Kilgore, MD. In the face of adversities your love, trust, patience support, and stubborn insistence made possible the completion of this work. I also dedicate this dissertation to my children Gary, Karensa, Nicole, Darien, and Charles-Julius as a reminder that learning is a lifelong endeavor. Bestowing honor to the name of my late father Roy Augustus Beharie.

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ABSTRACT OF THE DISSERTATION
MENOPAUSE, RURALITY, AND OBESITY IN RURAL AFRICAN AMERICAN
WOMEN

by

Colleen Marcia Kilgore

Florida International University, 2014

Miami, Florida

Professor JoAnne Youngblut, Major Professor

In the US, one in every eight deaths is due to an obesity-related chronic health condition (ORCHC). More than half of African American women (AAW) 20 years old or older are obese or morbidly obese, as are 63% of menopausal AAW. Many have ORCHC that increase their morbidity and mortality and increase health care costs. In 2013, 42.6 percent of AAs living in South Carolina (SC) were obese. The purpose of this cross-sectional study was to identify the cognitive, behavioral, biological, and demographic factors that influence health outcomes (BMI, and ORCHC) of AAW living in rural SC. A sample of 200 AAW (50 in each of the 4 groups of rurality by menopausal status), 18-64 years, completed the: Menopausal Rating Scale (symptoms); Body Image Assessment for Obesity (self-perception of body); Mental Health Inventory; Block Food Frequency Questionnaire; Eating Behaviors and Chronic Conditions, Traditional Food Habits, and Food Preparation Technique questionnaires – and measures for Body Mass Index. Most rural, and premenopausal AAW were single and not living with a partner. Premenopausal women had significantly higher educational levels. Sixty percent of AAW had between 1 and 5 ORCHC. Most AAW used salt based seasonings, ate deep

fried foods 1 to 3 times a week, and ate outside the home 1 to 3 times a month. Few AAW knew the correct daily serving for grains and dairy, and most consumed less than the recommended daily serving of fruits, vegetables and dairy. Morbidly obese AAW used more traditional food preparation techniques than obese and normal-weight AAW. Rural, and menopausal AAW had significantly higher morbid obesity levels, consumed larger portions of meats and vegetables, and reported more body image dissatisfaction than very rural AAW, and premenopausal AAW, respectively. Controlling for socioeconomic factors the relationships between perceptions of body images, psychological distress, and psychological wellbeing remained significant for numbers of ORCHC.

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LIST OF ACRONYMS

1.	African American	AA
2.	African American Women	AAW
3.	Analysis of Variance	ANOVA
4.	Analysis of Covariance	ANCOVA
5.	Apolipoprotein – B	APO-B
6.	Body Image Assessment of Obesity	BIAO
7.	Body Image Dissatisfaction	BID
8.	Block Food Frequency Questionnaire	BFFQ
9.	Bone Mineral Density	BMD
10.	Body Mass Index	BMI
11.	Cardiovascular Disease	CVD
12.	Center for Disease Control and Prevention	CDC
13.	Center for Epidemiology Scale-Depression	CES-D
14.	Collaborative Institute Training Initiative	CITI
15.	Community Based Participatory Research	CBPR
16.	Current Body Image	CBI
17.	Eating Behaviors and Chronic Condition Questionnaire	EBCCQ
18.	Estrogen Replacement Therapy	ERT
19.	European American	EA
20.	European American Women	EAW
21.	Emergency Room	ER
22.	Estrogen	E ₂

23.	Florida International University	FIU
24.	Follicular Stimulating Hormone	FSH
25.	Gastroesophageal Reflux Disease	GERD
26.	Health Related Quality of Life	HRQOL
27.	Hormone Replacement Therapy	HRT
28.	Ideal Body Image	IBI
29.	Kilo-Calories	K/Cal
30.	Luteinizing Hormone	LH
31.	Low-Density Cholesterol	LDL -C
32.	Menopausal Rating Scale	MRS
33.	Menopausal Transition	MT
34.	Mental Health Inventory	MHI
35.	National Health and Nutrition Examination Survey	NHANES
36.	Obesity Reduction Black Intervention Trial	ORBIT
37.	Physical Activity	PA
38.	Principal Investigator	PI
39.	Research Assistant	RA
40.	Reasonable Body Image	RBI
41.	Recommended Dietary Allowance	RDA
42.	Regional Medical Centers	RMC
43.	Research Question	RQ
44.	Socioeconomic Status	SES

45.	South Carolina	SC
46.	Story's Social Ecological Framework	SSEF
47.	Unites States	U.S.
48.	United States Department of Agriculture	USDA
49.	United States Food and Drug Administration	USFDA
50.	United States Department of Health and Human Services	USDHHS
51.	Vasomotor Symptoms	VMS

CHAPTER I

INTRODUCTION

In the United States (U.S.), two out of every three American adults are overweight (body mass index [BMI] between 25 and 29.9 kg/m²), obese (BMI between 30 and 39.9 kg/m²), or morbidly obese (BMI greater than 40 kg/m²), and one in every eight deaths is due to an obesity-related illness (Surgeon General, 2003). Obesity is an excess in body weight that occurs due to an imbalance between the number of kilocalories (kcal) consumed and used in activity and is influenced by behavior, environment, culture and genes (Kelemen et al., 2010; Matthews et al., 2001; U.S. Department of Health and Human Services [USDHHS], 2010). Obesity is associated with negative health outcomes such as hypertension, diabetes, asthma, sleep apnea, some cancers (i.e., colorectal, breast, endometrial), cardiovascular diseases, depression, and metabolic syndrome (Ford, Giles & Dietz, 2002; McCrary, Lin, Boushey, & Sinha 2005; Moorman et al., 2009; Waggoner, Stokes, Romero, & Casale 2008; Warren, Wilcox, Dowda, & Baruth, 2012; Zhu et al., 2005). The economic impact of obesity-related diseases has almost doubled the nation's healthcare expenditures from \$78.5 billion in 1998, to an estimated \$147 billion in 2008 (Finkelstein, Trogon, Cohen, & Dietz, 2009). Nationally, more African American women (AAW) than European American women (EAW) are obese (MMWR, 2009; Ogden & Carroll, 2010a). More than half of African American women (AAW) 20 years of age or older are obese, and the related morbidity levels are high (Freedman, 2011; MMWR, 2009; Ogden, Lamb, Carroll, & Flegal, 2010b). Data from 2005 to 2008 of the National Health and Nutrition Examination Survey (NHANES 111) supported obesity

prevalence of 51% for AAW and 33% for European American women (EAW) (Freedman, 2011).

Menopausal AAW (aged 40-59) have the highest levels of obesity (62.7%) and morbid obesity (23.0%) among ethnic groups of women (Hispanic and AAW) in the U.S. (Flegal, Carroll, Kit, & Ogden, 2012; USDHHS, 2010). Few menopausal AAW have healthy weight. In the southern U.S., 1 in 10 AAW is morbidly obese (Jackson, Doescher, Jerant, & Hart, 2005; Walker-Sterling, 2005). South Carolina has one of the highest obesity rates among states in the U.S (Trust for America Health & the Robert Wood Johnson Foundation, 2009); more than 60% of all adults in South Carolina are obese or overweight (South Carolina Department of Health & Environmental Control [SCDEHC], 2011). Of these, 76% are AAs, 80% are women, and more than 40% live in rural areas (SCDEHC, 2008; CDC - Behavioral Risk Factor Surveillance System [BRFSS], 2010; Warren et al., 2012). Of the 46 counties in South Carolina, Bamberg County ranks 5th for highest adult obesity rates and 7th for poorest health outcomes. Calhoun County ranks 6th for highest adult obesity rates and 23rd for poorest health outcomes Orangeburg County ranks 6th for highest adult obesity rates and 2nd for poorest health outcomes (County Health Ranking & Road Maps, 2012).

Factors Influencing Obesity

Individual factors for increased obesity among AAW include sociocultural, biological, and demographic (Bromberger et al., 2009; Fitzgibbon et al., 2008; Jefferson et al., 2010; Kumanyika et al., 2008). Sociocultural influences on obesity among AAW include cognitive factors (i.e., perceptions body size/image, mental health, and knowledge of healthy eating) (Bromberger et al., 2009; Fitzgibbon et al., 2008; Gracia et

al., 2007; Jefferson et al., 2010), and behavioral factors (i.e., choice of foods, portion size, eating habits, and food preparation techniques) (Airhihenbuwa et al., 1996; Fitzgibbon et al., 2008; James, 2004; Thompson et al., 2009), factors that are influenced by history, traditions and culture (Johnson & Broadnax, 2003). These sociocultural perceptions, practices and habits of many AAW are embraced across socioeconomic groups and influence their food choice and consumption (Patt, Yanek, Moy & Becker, 2004; Satia, Galanko, & Siega-Riz, 2004). However, they vary among AAW according to demographic factors (geographic location, and socioeconomic status [SES] - income, education, employment, and marital status) (Bramble, Cornelius, & Simpson, 2009; Henderson, 2007). Biological influences for obesity include menopausal status and increased vasomotor and depressive symptoms experienced during menopausal transition [MT] (Bromberger et al., 2009; Garcia et al., 2007). For most AAW, transition to menopause has been reported to last ten or more years which affects their health, obesity and morbidity levels (Bromberger et al., 2009; Gracia et al., 2007; Palmer et al., 2003; Pratt & Brody, 2008; Strickland, 2000). The health (BMI and obesity-related chronic health conditions) of many AAW is influenced by SES (Fitzgibbon, 2008; James, 2004; MMWR, 2009; Morland, Wing, Diez Roux, & Poole., 2002), and place of residency - (rural and urban) both of which impact obesity levels for AAW (Baltus, 2005; James, 2004; Morland et al., 2002). Kumanyika et al. (2008) and Dis (2002) reported that in the southeastern U.S., the highest rates of obesity and its related chronic conditions (physical and mental) occur among rural residents and are related to socioeconomic factors. Unknown is the impact of rurality (i.e. rural and very rural residency) on obesity among AAW. Since most obesity studies focus on obesity-related disease and occur in urban

areas, more research is warranted to understand the influence of these variables on the health (BMI and obesity-related chronic health conditions) of AAW.

The purpose of this study is to describe the impact of demographic, cognitive, behavioral, and biological factors on health (BMI and obesity-related chronic health conditions) in pre-menopausal and menopausal AAW living in rural South Carolina.

Sociocultural Factors

The diets consumed by most AAW have been influenced by diets consumed by their ancestors (Johnson & Broadnax, 2003). These diets are high in animal fats, sugars, salt, starches and nitrates, and low in fresh fruits, vegetables, grains, and water (Airhihenbuwa et al., 1996; Brooten, Youngblut, Golembeski, Magnus, & Hannan, 2012; James, 2004; Thompson et al., 2009) which amplifies the risk for obesity and related conditions linked to increased morbidity. In addition, food preparation and cooking techniques for many AAW stem from matriarchal practices established during slavery (Airhihenbuwa, Kumanyika, Agurs, & Lowe, 1995) when AAs had to enhance the flavors for foods of poorer nutritional value by employing cooking techniques now considered “cooking with soul” (Ard, Skinner, Chen, Aickin, & Svetkey, 2005; James, 2004). The practice of cooking with soul involves cooking salted, fried, battered or barbequed meat, fish, and vegetable products, and flavoring well-cooked vegetables with animal fats (Airhihenbuwa et al., 1996; James, 2004; Jefferson et al., 2010). It is uncertain whether the practice of consuming large portion sizes stems from slavery or experiences of being economical with available resources, acting as “insurance” against hunger for many low-income AAW (Eicher-Miller, Mason, Abbott, McCabe, & Boushey, 2009; Henderson, 2007; Kumanyika et al., 2008). However, most AAW

consume foods in larger portion sizes than those recommended by the U.S. Food and Drug Administration (2005), increasing caloric intake and obesity levels (Gaston, Porter, & Thomas, 2011) with a negative impact on their health outcomes (Waggoner et al., 2008).

Menopausal Transition

Two major transitional periods in women's lives are menarche and menopause. These periods are often associated with increased physical, psychological and emotional changes in women's lives (Palmer et al., 2003; Segraves, & Woodard, 2006). African American women enter MT an average of ten years earlier than EA women (Palmer et al., 2003), are living longer than in previous decades (MMWR, 2009) and experience increased negative health outcomes (Waggoner et al., 2008). Negative health outcomes for these AAW include greater (a) fatigue (Gracia et al., 2007), (b) depression (Bromberger et al., 2009; Pratt & Brody, 2008), (c) anxiety and low self-esteem (Cohen, Soares, Vitonis, Otto, & Harlow, 2006), (d) and obesity (Nelson et al., 2008) than found in EA women. During MT, AAW also experience more hair growth, aggressive behavior, sexual dysfunctions (Avis et al., 2009a, 2009b; Im, 2009; Shelton, Lees, & Groff, 2002), and vasomotor symptoms (VMS) (Gold et al., 2006a) than women of other ethnic groups in the U.S. The experience of MT varies considerably. Some AAW regard it as a natural, time-limited experience to be endured in midlife (Huffman, Myers, Tingle, & Bond, 2005) and others perceive it as liberating (Im et al., 2009b; Im, 2009a; Lindh-Astrand, Hoffman, Hammar, & Kjellgren, 2007).

The significant increases in obesity and subsequent morbidity among menopausal AAW when compared to EA women (Bromberger et al., 2009; Cohen et al., 2006; Gracia

et al., 2007) warrant research regarding perception of body size, dietary habits, menopausal symptoms, and depression among menopausal women.

Demographic Factors

Demographic factors in this study are SES and rurality. Higher morbidity generally is associated with lower SES, but among AAW, morbidity is common across all SES levels (Gold et al., 2006b). Socioeconomic factors influencing the health of AAW include levels of income, education, employment, and marital status (Glazer et al., 2002; Morland et al., 2002; James, 2004; Fitzgibbon, 2008; MMWR, 2009). Being single, a parent, head of household, and of low SES (i.e., low income, unemployed, less educated) contribute to AAW's increased anxiety (Glazer et al., 2002), thus influencing obesity levels and health (Eicher-Miller et al., 2009; Glazer et al., 2002; Weerts & Amoran, 2011). With more AAW than EAW experiencing food insecurities (Weerts & Amoran, 2011), the diets of many low-income AAW women are of poorer diet quality (as defined by the Dietary Reference Intakes and Healthy Eating Index) than EAW (Champagne et al., 2004).

Lower socioeconomic status is strongly associated with higher BMI and research supports high obesity levels in AAW of low SES (Baltus, 2005). Current research also supports high levels of obesity occurring among middle and high-income AAW (Ogden et al., 2010b). Although findings in most studies support the contribution of demographic factors (i.e., education, income, employment, marital status and residency) to increased obesity, these variables (Fitzgibbon, 2008; Gold et al., 2006b; MMWR, 2009) have not been considered within a context of cultural and ethnic norms. Research aimed at

exploring links between obesity among AAW and socioeconomic factors is essential for developing culturally appropriate programs.

Rurality

More than half the AA population reside in the south and eastern regions of the U.S., (i.e., Mississippi, Louisiana, Florida, Georgia, North Carolina, South Carolina) and more than 41% of South Carolina's population are AAs (U.S. Census Bureau, 2010). The AAW living in non-metropolitan areas of low population density (<25,000 as rural, and < 10,000 as very rural) had an increased risk for poverty (Kumanyika et al., 2008; South Carolina Budget and Control Board [SCBCB]; South Percentage Estimate of Population Urban 1950-2010 [Appendix A]; The Rural Health Report [RHR] – 2005 [Appendix B]). African American women in rural environments also reported increased food insecurity, obesity, and chronic conditions that influence their poor health outcomes across the lifespan (Strickland, 2000; Yadrick et al., 2001; Dis, 2002; Kumanyika et al., 2008). Kumanyika et al. (2008) found that higher prevalence of obesity occurs in both low and high-income AAW. In rural areas, differences in health and obesity levels were influenced, in part, by lack of resources and local poverty. In contrast, Patt et al. (2004) found that lower SES was not associated with higher BMI, and demographic factors did not affect levels of obesity, among a group of urban women.

Low SES increases barriers to the purchase of healthy food items, as many AAW living in rural areas (and less affluent urban areas) tend to purchase and eat cheaper food items that are high in calories to satiate their feast-or-famine (eating as much food as possible when it is available) eating patterns. This approach to food subsequently increases their risk for obesity (Eicher-Miller et al., 2009; Weerts & Amoran, 2011).

Although women living in rural areas experience similar chronic disease outcomes to their urban counterparts, women living in rural areas have a higher rate of obesity (Appel, Harrell, & Deng, 2002; Murray et al., 2006; Eberhardt, & Pamuk, 2004; Janssen, Powell, Crawford, Lasley, & Sutton-Tyrrell, 2008). Women in rural areas also have (a) exposure to herbicides, Freon, and chemicals from the manufacturing of chemicals, plastics and medications, (b) contaminated ground water (James, Landmeyer, & Campbell, 2010; South Carolina Budget & Control Board, 2003), and (c) inadequate street lighting, pedestrian areas, and exercise facilities (Patterson et al., 2004). In contrast, those living in urban environments often experience (a) exposure to carbon dioxide and radiation, (b) lack of green space, and (c) structural decay (Lopez & Hynes, 2006; Murray et al., 2006). Unlike AAW living in some urban areas, most rural AAW experience limited food choice influenced by: (a) targeted commercial marketing of food products high in fats, sugars, and starch, (b) limited access to affordable fresh fruits and vegetables, and (c) the high cost of dietary staples (Baker, Schootman, Barnidge, & Kelly, 2006; Grier & Kumanyika, 2008). Additionally, research found that proliferation of fast food and/or low-cost restaurants, take-out facilities, vending machines, microwave ovens, and convenience and grocery stores influence obesity levels in areas populated by AAs (Hargreaves, Schlundt, & Buchowski, 2002). It is important to conduct further research in this area with AAW living in rural and very rural South Carolina because of the state's very high obesity rate.

The lack of research on sociocultural and demographic factors influencing obesity among rural AAW is a major factor prompting the conduct of studies aimed at AAW. Most research on obesity includes urban AAW, but seldom rural AAW. Because of this, it is unclear if findings on obesity among urban AAW are applicable to AAW residing in

rural areas. Although urban and rural AAW, share some similar cultural experiences such as low income and being single heads of households, the contribution of a rural environment to obesity is unknown. Specifically, it is not known whether rural, very rural, and urban AAW share similar sociocultural perceptions and behaviors for body size and images; and mental health; knowledge of healthy eating, food choice, preparation techniques, and eating habits; or experiences of menopausal transition. Research on the importance of these factors for rural AAW is needed.

Obesity Interventions

Compared to EAW and urban AAW, research on obesity among rural AAW is limited (Yanek et al., 2001). Many studies are more than ten years old, report high attrition rates, and do not reflect the current state of research and delivery of healthcare (Annesi & Whitaker, 2008; Gerber et al., 2009; Kannan et al., 2010; Kumanyika et al., 2005). Although the number of obesity research studies among AAW has increased, much of this literature focuses on the influence of obesity on related health factors (i.e., asthma, cancer, depression, diabetes, hypertension, menopause, sleep apnea, and birth outcomes) with some evidence to support the negative effects of unhealthy diets and lack of physical activity (PA) on quality of life and morbidity and mortality levels in AAW (Hollis et al., 2008; Kicklighter et al., 2007; Svetkey et al., 2008). To date there are no studies exploring the influence of rurality, socioeconomic, cognitive, and behavioral factors, and menopausal symptoms on the health of AAW living in rural areas.

In summary, research is needed to understand the impact of demographic, cognitive, behavioral and biological factors on the health (BMI and obesity-related chronic health conditions) of AAW living in rural areas. The paucity of knowledge on

nutritional intake, food preparation, and eating habits of rural AAW signals the need for research describing the relationship between these factors and BMI and obesity-related chronic health conditions in AAW. Information gained from this study will address this gap and provide data necessary for developing culturally appropriate interventions for assisting AAW in modifying their diets and adopting healthier eating habits. The research is necessary for stemming obesity-related chronic health conditions among AAW residing in rural areas.

Theoretical Framework

The framework that guides this study is derived from Story's Social Ecological framework (SSEF) for creating healthy food and eating environments. The SSEF posits that three micro-level factors and one macro-level factor influence dietary and behavioral patterns which affect health and nutritional status (Story, Kaphingst, Robinson-O'Brien, & Glanz, 2008). The three micro-level factors are individual, social, and physical, while the one macro-level factor is the environment. Individual micro-level influences in the proposed study are defined as those factors which relate to (a) behaviors - food choices, food preparation techniques, portion size, and eating habits, (b) cognition – perceptions of body image/size, mental health, and knowledge of healthy eating, (c) biological – menopausal symptoms, and (d) demographic – SES, and rurality. These factors are expected to influence behaviors that have an impact on dietary intake. Second is the social factor, which connects AAW to their environment (i.e., family and community) through social norms that influence individual perceptions and actions. Third is the physical-environmental factor, which refers to the places where people eat or procure food, live or exercise, and their associated living contexts (i.e., home, work sites, shops,

and schools) which act as barriers that hinder or opportunities to facilitate healthy eating. Finally, at the macro or distal environmental level are factors that indirectly influence dietary intake and thus have an impact on obesity levels. These include food production, marketing and promotion; distribution systems; economic price structures; and agriculture policies (Story et al., 2008).

The proposed study will focus on the relationships between individual demographic, cognitive, behavioral, and biological factors that influence the health (BMI and obesity-related chronic health conditions) of menopausal and premenopausal AAW residing in non-metropolitan rural and very rural environments.

Individual Factors Influencing Obesity and Health in Midlife AAW

Individual Cognitive factors hypothesized to directly and indirectly influence the health of AAW include perceptions of body image/size, mental health status, and knowledge related to healthy eating. African American women are reported to underestimate their body size and consider larger body sizes as more culturally acceptable. Thus, many AAW favor larger and fleshier bodies (Kumanyika et al., 2008; Parescoli, 2007; Thomas et al., 2009). Additionally, AAW report increased psychological distress and depression influenced by family responsibilities and knowledge of healthy eating (Bromberger et al., 2009; Jefferson et al., 2010; Kim et al., 2009; Palmer et al., 2003).

Individual Behavioral factors posited to directly affect the health of AAW include food choices, portion size, preparation techniques, and eating habits. Food choices influence the types and frequency of foods eaten - including traditional foods high in fats, sugar, salts, and starch, and low in fruits and vegetables. Increased consumption of foods prepared outside the home (i.e., fried chicken, Mexican, Chinese, and fried fish (Krishnan et al., 2010) and eating at fast foods restaurants (Satia et al., 2004) al., 2002) influence the health of AAW.

Many AAW consume large portion sizes of foods and prefer high fat, salted, and cured meats. Common AAW's food preparation techniques include the use of salt-based seasoning, coating meats and vegetables in flour and/or batter, frying and barbecuing foods, and boiling vegetables with animal fat until soft (Jefferson et al., 2010; Krishnan et al., 2010).

Eating habits of many AAW are influenced by – types and frequency of foods eaten, age, demographic locations, convenience, health concerns, and appetite (Deitz, 2001; Thompson, et al., 2009). Eating habits include consuming three meals a day, eating a full plate, eating meat at every meal, snacking between meals, missing meals, emotional eating, and eating food they considered unhealthy (high in fats, sugar, salts, and starch, and low in fruits and vegetables) throughout the day (Hargreaves et al., 2002; James, 2004).

The Individual Biological factors hypothesized to have a direct and indirect effect on health of midlife AAW is the level of menopausal symptoms (i.e., vasomotor symptoms, anxiety level, depressive mood, irritability, and exhaustion).

Individual Demographics factors hypothesized to directly and indirectly influence the health of AAW include education, employment, income, marital status, and rurality. These factors have an impact on the types of foods eaten and preparation techniques used among AAW, and levels of dietary knowledge which have an impact on AAW's ability to choose, purchase, and consume healthy food items. Demographic factors are believed to affect AAW's health and increase morbidity. A number of studies have explored the eating habits and dietary intake of AAW, but most are conducted in urban areas and none have compared these variables in 'rural' and 'very rural' AAW. Story's micro-level individual factors provide a framework for the relationships of specific demographic, cognitive, behavioral, and biological factors on the health of rural and very rural AAW.

The independent variables represented by each of Story's four factors are (a) cognitive – perceptions of body image/size, mental health, and knowledge of healthy eating, (b) behavioral – food choices, preparation techniques, portion size, and eating

habits, (c) biological – symptoms of menopause, and (d) demographic – education, income, employment, marital status, and rurality. The outcome variable is the health (BMI and obesity-related chronic health conditions) of menopausal and premenopausal AAW.

Research Questions

Among rural and very rural AAW:

1. Are there main and interaction effects of menopausal status (pre-menopausal vs. menopausal) and rural status (rural vs. very rural) on cognitive factors, behavioral factors, and health outcomes (BMI, and obesity-related chronic health conditions)?
2. Are health outcomes (BMI, and obesity-related chronic health conditions) related to cognitive factors and behavioral factors?
3. Do these relationships remain when socioeconomic factors are controlled?

CHAPTER II

LITERATURE REVIEW

The magnitude and associated costs of addressing obesity-related chronic conditions in the U.S. continue to mount and will increasingly impact the nations' economy (Karp, 2007; Lewis, 2009; Owens, Lukes, & Umland, 2008). The obesity problem is particularly important for AAW who are reported to have the highest adjusted rates of obesity and morbidity compared with other major ethnic groups (Brown, 2009; Flegal et al., 2012; Moore, Harris, & Wimberley, 2010). Significant increases in obesity levels influence chronic disease levels in menopausal age AAW and will impact their future need for care services with their increasing age (Bittner, 2009; McCarthy et al., 2007; Utian, 2005; Yancy, Benjamin, Fabunmi, & Bonow, 2005). This review of the literature was conducted to explore whether cultural factors such as dietary habits, food preference, and preparation techniques were factors reported to influence obesity levels in AAW. African American women's cultural beliefs concerning sexuality and weight gain with regard to childbirth, marriage, and increasing age are also explored as are the menopausal experiences reported by AAW; these are compared to those of women from diverse ethnicities in order to ascertain the influence of MT on the health of AAW. It was hypothesized that AAW's socioeconomic status and residence in rural and very rural areas where there is less access to facilities for PA and good quality nutrition (fresh fruits and vegetables), but increased access to cheap prepared foods may all be factors influencing dietary intake and levels of obesity.

Search Strategy

The review of the AAW and obesity literature included articles published between January, 1990 and November, 2012 from refereed nursing, social science, allied health journals and books; these were searched through databases including CDC WONDER, CINAHL, EBSCO, MEDLINE, MERLIN, OVID, PsycINFO, PUBMED Central, and PROQUEST. Investigated were English language studies in which AAs and black participants were women. Keywords used in the search singularly or in combination were: culture, climacteric, depression, dieting, dietary modification, nutrition, eating, exercise, food habits, menopause, menopause transition, midlife, perceptions, perimenopause, obesity, obese, overweight, PA, rural, social, economic, urban, social, interventions and tested. Qualitative and quantitative research in which obese AAW participated was investigated. Additional searches of these databases were conducted to identify the presence of conceptual and theoretical frameworks used in obesity research and practice among AAW. Hard copies and electronic versions of tables of contents for obesity, cultural eating habits, and menopause were scanned from relevant articles. Additional literature sources were obtained by reviewing the literature cited in the reference lists of relevant articles for understanding obesity, culture, eating habits, and menopause in AAW.

Although the literature related to obesity is extensive and more research is being conducted among AAW, research among rural and very rural AAW remains sparse. The relationships between health (BMI and obesity-related chronic health conditions), and the role played in these relationships by socioeconomic, cognitive and demographic factors among this segment of the AA population is the focus of this chapter. The review

begins with discussion of the nature of obesity in AAW, followed by research relevant to the variables presented in this study's conceptual framework. The dependent variable is health (BMI, and obesity-related chronic health conditions), with particular emphasis on menopausal status; SES as indicated by income, education, employment, and marital status; the impact of cognitive variables on obesity including perceptions of the body, mental health status, and knowledge of healthy eating; the role of behavioral variables including food choice, portion size, eating habits and food preparation habits, and finally, the impact of rurality on health. Research on the influence of each independent variable on the health of AAW is reviewed in the context of discussion of these variables.

Obesity and Health

Obesity is described in western culture as excess body weight, which occurs because of an imbalance between inactivity and number of K/Cal consumed (Ogden, Carroll, McDowell, & Flegal, 2007; Surgeon General, 2003). The BMI is a standard index of weight adjusted for the height of an individual. Obesity and extreme obesity are defined as a BMI greater than or equal to 30 and 40 respectively, overweight as a BMI between 25-29.9, and normal weight as a BMI between 18-24.9 (Ogden & Carroll, 2010a; USDHHS, 2010). Body mass index is not gender specific, and does not measure percentile body-fat or allow for ethnic or age differences in body size (National Institute of Health, 1998).

African American women, however, often negate BMI's usefulness for measuring overweight and obesity (Brown, 2009). Findings in a number of studies support AAW's perception of BMI as an inaccurate representation of AAW's weight

and body size (Bramble et al., Cornelius & Simpson, 2009; Moore et al., 2010). Stevens, Cai and Jones (2002) explored whether the BMI cutoff point of 30 kg/m^2 , used to determine associated health-risk in EAW, was valid for AAW. They suggested that the BMI cutoff points for associated health risks differed among ethnic groups, and variations in BMI cutoffs were dependent on estimated risk and outcome for each condition (e.g. diabetes, hypertension, and hypertriglyceremia). However, Muennig, Jia, Lee and Lubetkin (2008) reported that mortality rates increased for AAW at BMI's $\geq 30 \text{ kg/m}^2$, and at BMI $\geq 25 \text{ kg/m}^2$ for EAW. These findings indicate the need for additional research to determine the relevance of BMI for assessing obesity levels and determining risk factors among AAW.

More than half of AAW aged 20 years or older are obese (Freedman, 2011; MMWR, 2009; Ogden & Carroll, 2010a; Santoro et al., 2004). Furthermore, more obese AAW reside in the southern U.S. (Baturka, Hornsby, & Schorling, 2000) where one in 10 midlife AAW is morbidly obese (Walker-Sterling, 2005). Among AAW, obesity increases with age and life transitions such as parity and menopause, and has been linked to increased menstrual cycle length, fibroids, depression and cancers (Beydoun et al., 2009; Freeman et al., 2001; Gracia, et al., 2007; Santoro et al., 2004; Report of the Advisory Committee on Research on Women's Health, 2001-2002; Wilbur et al., 2009). Most obese persons experience increased variability in biological marker levels for cholesterol, glucose and bone density indices that impact diabetes, CVD, activity, and morbidity levels (CDC, 2009a; Patt et al., 2004; Segraves & Woodard, 2006; Sowers et al., 2007). These negative outcomes are also implicated by changes in cardiovascular, respiratory, and endocrine disease that have an impact on levels of morbidity and

mortality among AAW (American Heart Association [AHA], 2004; Kumanyika et al., 2008; Tilghman, 2003; Williams, 2009).

Although osteoporosis and its related mortality are low among AAW (Castro et al 2005; Pothiwala, Evans, & Chapman-Novakofski, 2006), Castro et al. (2005) reported that among an ethnically diverse group of obese women (mean BMI of 30.6 kg/m^2), mean age 58.3 ± 0.24 years, AAW had significantly higher odds of low-density mineral levels (BMD) compared to EAW [OR 1.015 (1.007–1.14) for every unit increase in BMI $\geq 30 \text{ kg/m}^2$ (Castro et al., 2005). These findings suggest that age and obesity effect levels of BMD among AAW.

In addition to biological changes, a cross-sectional study by Bromberger et al. (2009) reported a significant prevalence of obesity and depression among diverse groups of menopausal AAW while other studies suggest that because AAW suffer more psychological mood change, distress, anxiety and low self-esteem across their life span, their risk for new onset depression is increased (Bromberger et al., 2009; Marsh, Templeton, Ketter, & Rasgon, 2008; Kowaleski-Jones & Christie-Mizell, 2010). A possible explanation for the link between distress and increased obesity was suggested by Wiczinski et al. (2009), who argued that psychological (dis)stress results from the stigma of being overweight and the inability to lose weight, while the material stress – stress to the skeletal system caused from carrying around excess body fat - resulted in chronic physiological stress which may influence mobility.

Factors attributed to increased obesity among AAW include unhealthy eating habits (Thompson, et al., 2009), educational and nutritional deficits, and lack of exercise (Fitzgibbon et al., 2008). Substance abuse, medication use, metabolic imbalances (CDC,

2009a; 2009b), and depression (Beydoun et al., 2009) play a role. These factors affect rural and very rural AAW's functional and health status by lowering their PA levels (Harley et al., 2009) thus increasing their risk of obesity. Other factors contributing to obesity among AAW include (a) increased body weight perceived as a healthy part of menopause and aging (Stevens, Kumanyika & Keil, 1994), (b) the perception that the BMI is not representative of AAW's body weight (Brown, 2009), and (c) traditional AA diet high in fats, starches, salt and sugars (Jefferson et al., 2010). Additionally, Dammann and Smith (2009) suggested that a lack of understanding and disconnect between diet and health [status] has led to increased incidence and prevalence of obesity among low-income groups - a problem common in rural AAW. Nelson (2009) suggested that AAs did not connect present behaviors to the prediction of future consequences, and these issues could be a contributing factor to high obesity rates among AAW who lack "future time perspective" (p. 2). This may help to explain the seeming disconnect between obesity and negative health outcomes, and the lack of awareness of links between diet, health and obesity reported in AAW by some researchers (Dammann & Smith, 2009; Dore, Yarborough, & Fournet, 2001; Moore et al., 2010).

These findings suggest that research on the possible link between cognitive factors such as perception of body size/weight and behavioral variables such as food habits is warranted to (a) increase understanding among nurses and other health care providers, (b) assist AAW in modifying and valuing healthier lifestyles, and (c) reverse the current trend of increasing levels of obesity which are linked to increasing morbidity for AAW (Beydoun et al., 2009). In the following section the role of biological factors pertaining to menopause are considered in order to identify the interactions between

these and the cognitive and behavioral factors that are associated with negative health outcomes.

Biological Factors: Menopausal Status

Menopause signals permanent cessation of all ovarian activities and is considered the culmination of the transition from fertility to infertility. Menopausal transition is the process that describes that journey. The journey is hallmarked by erratic menstrual cycles and is the “period that begins when a woman experiences variations in the menstrual cycle length, rise in Follicular Stimulating Hormone [FSH] and decline in Estrogen E₂] and ends with the final menstrual period” (Soules et al., 2001, p.876). The three phases of MT are defined as (1) premenopausal (regular menses), (2) perimenopausal (increasingly irregular menses for more than seven days from their normal cycle, and periods of amenorrhea), and (3) postmenopausal (amenorrhea for 12 consecutive months) (Soules et al., 2001).

The menopausal period is one of major transitions in the lives of women (Huffman et al., 2005; Rice, 2005) and is associated with physical, psychological and emotional changes (Palmer et al., 2003; Pinkerton, & Zion, 2006; Segraves & Woodard, 2006). During the next 5 to 10 years, it is estimated that around 21 million women will experience menopause, of which 3.5 million will be AAW (Rice, 2005; Strickland, 2000). Negative changes in hormonal and biological markers during MT are linked to an increased risk of cardiovascular disease (Matthews et al., 2009; Sowers et al., 2005), CVD, osteoporosis, and breast cancer (Matthews et al., 2009; Sowers et al., 2006; Underwood, Richards, Bradley, & Robertson, 2008; Zhu et al., 2005). For AAW other risk factors during MT include nutritional habits, physical inactivity, and increased BMI,

all of which influence depression levels (Avis et al., 2001; Bromberger et al., 2009; Nelson et al., 2008). Additionally, differences in cultural attitudes and beliefs about transition to menopause affect AAW's perceptions and management of their menopausal experience (Im et al., 2009; Nixon, 1998; Nixon, Mansfield, Kittell & Faulkner, 2001; Sampsel, Harris, Harlow & Sowers, 2002; Strickland, 2000).

Onset and Timing of Menopausal Transition

Research supports differences and commonalities among racial and ethnic groups in the onset of MT (Rousseau, & Gottlieb, 2004) that are affected by genetic, environmental, cultural and nutritional factors (Al-Qutob, 2001; Pinkerton, & Zion, 2006). The median age of onset to MT varies from 49.6 to 51 years for most American women across ethnic groups (Grady, 2006; Fantry et al., 2005; Palmer et al., 2003), and lasts approximately four years (Landgren et al., 2004).

Reports link early MT among AAW to depression, smoking and socioeconomic factors (Bromberger et al., 2007; Greenberg, Leongand, & Birnbaum, 2001; Wise, Krieger, Zierler, & Harlow, 2002). A number of studies indicate variations in the onset and length of time that AAW spend transitioning to menopause (Gary, Yarandi & Rivers, 2001; Palmer et al., 2003). Research has also found that AAW spend a longer period in this transition than women of all other ethnic groups living in the U.S. Results from Palmer et al. (2003) cross-sectional study of 17,070 AAW aged 35 to 55 years, to determine the age of natural menopause, suggested that earlier onset to MT occurred among non-obese AAW who smoked cigarettes and used contraceptives. The study also indicated that AAW enter MT between the ages of 40 and 54 years and experience erratic menstrual cycles 2 to 10 years prior to cessation of menstruation (Palmer et al.,

2003). Strickland (2000), in an earlier study, has described these variations in menstrual cycle as occurring in AAW around the ages of 42 to 54 years while Gary et al. (2001), reported that in a sample of 206 women in the southern U.S., transition to menopause occurred between the ages of 40 and 60 years. These findings suggest that MT spans 10 or more years and occurs later in non-smoking and obese AAW, much longer than Landgren and associates' (2004) findings that MT lasts approximately four years among women across all ethnic groups in the U.S.

Perceptions of Menopausal Transition

Research finds differences in women's cultural perceptions, attitudes, and beliefs about the transition to menopause (Dillaway, Byrnes, Miller, & Rehan, 2008; Huffman et al., 2005; Sharps, Oguntimalide, Saling & Yun, 2003; Im et al., 2009b; Lindh-Astrand et al., 2007). Familial and cultural practices (dietary, lifestyle, and social practices) that are generational and vary across and within cultures, influence women's' beliefs, attitudes, and habits (Jefferson et al., 2010). African and Asian American women, unlike EAW, believed the journey to menopause increased their acceptance of physiological change occurring in MT and aging (Sampselle et al., 2002). Whereas, EAW consider MT a harbinger of old age (Sampselle et al., 2002) that must be fought in order to maintain their identities, youth, levels of beauty (Dinnerstein, & Weitz, 1998) and community respect. African and Asian American women reported increased levels of familial and community respect, and Asian American women reported increasing honor attached to MT (Sommer et al., 1999; Im & Meleis, 1999)

African American women's attitudes and beliefs about MT affect their perception of menopause and influence their ability to successfully transition to

menopause. Findings from Nixon's (1998) study exploring the perceptions of 50 midlife AAW, and Huffman and associates' (2005) study exploring menopausal symptoms and attitudes of 226 AAW suggest that AAW considered transition to menopause as a natural, time-limited midlife transition that must be endured. Nixon (1998) reported that some AAW believed in "enduring it" (p.168) and "staying strong" (p.167) while getting through MT; others believed they were losing their minds. African American women believed that their MT journey experiences increase their acceptance of physiological and psychological changes occurring during MT and aging (Sampselle et al., 2002). However, although AAW during MT reported increased levels of familial and community respect (Sommer et al., 1999), they also described themselves as not feeling like a woman during the menopausal phase (Huffman et al., 2005).

To cope with MT changes, most women in Nixon's study reported relying on friends, spiritual beliefs and the use of natural remedies to combat MT symptoms. A subsequent study by Nixon et al. (2001), among 44 rural AAW, indicated that demanding familial responsibilities forced many women to ignore their menopausal symptoms and internalize their health-related needs by "staying strong" (p.87) during MT. In contrast, findings from the study by Sampselle et al. (2002), among 30 AA and EAW, which explored midlife development and perception of menopause, concluded that AAW welcomed menopause and considered it liberation from the fears of pregnancy and monthly menstrual cycles. The perception of being liberated from menstrual cycles and childbearing is a common belief among women worldwide (Im et al., 2009a; Im, 2009b; Lindh-Astrand et al., 2007).

These studies illustrate the dynamic relationship between societal belief and women's values regarding the experience of menopause. Lacking are studies aimed at clarifying inconsistencies of how the role of families and communities affect AAW's perceptions of what constitutes a 'real' woman, childbearing and sexual functioning, and the extent of familial support during MT. Qualitative studies exploring the role of cultural beliefs about aging, beauty, and management of MT are needed to determine how these factors affect AAW's self-perception, quality of life and morbidity rates.

Biological Markers

Increased serum cholesterol levels and BMI are age-related physiological markers in AAW (Freeman et al., 2001; Yancy et al., 2005) that appear linked to variability in hormones responsible for transition to menopause (Freeman et al., 2001; Guthrie et al., 2004). These hormonal changes are also reported to increase women's total and low-density cholesterol (LDL-C), Apolipoprotein B [Apo-B] levels, and the risk of coronary heart disease (Bittner, 2009) and stroke in AAW (Rosenberg, Palmer, Rao, & Adams-Campbell, 1999).

The literature provides conflicting information linking stroke and metabolic syndrome in women to variability in FSH, inhibin (A, B) ratio, and testosterone during menopausal transition (Janssen et al., 2008; Landgren et al., 2004). Reported incidences and prevalence of metabolic syndrome in AAW is low, and very little research exists exploring these links (Ford et al., 2002). Findings, in Kirkendoll et al.'s (2010) focus group of 30 AAW found that AAW experience increased levels of dyslipidemia, BMI, blood pressure and glucose that are all major components of metabolic syndrome. Negative changes in biological markers are also linked to decreased physical activity

levels that predispose AAW to additional risks for CVD, strokes, diabetes and hence higher morbidity levels (Beydoun et al., 2009; Bromberger, Harlow, Avis, Howard, & Cordal, 2004; Budoff et al., 2006; Kirkendoll et al., 2010; Williams, 2009).

Increased risk factors for osteoporosis occur in the postmenopausal phase for AAW and are linked to biological markers for BMI and serum cholesterol levels (Sowers et al., 2005; 2007). Deterioration of bone micro-architecture is measured by BMD levels and is used to measure biological markers for osteoporosis and fractures of the lower extremities during menopause and aging (Bohannon, 1999). Research has found that AAW have lower levels of serum calcium, Vitamin D (Pothiwala et al., 2006), cholesterol, and higher BMD levels during pre-and post-menopause (Sowers et al., 2006; Rousseau, & McCool, 1997; Zeigler-Johnson et al., 1998). However, Bohannon (1999) found that although AAW began menopause with high BMD levels these rapidly decline during the postmenopausal phase and result in increased risk of osteoporosis. Findings from Castro and associates' (2005) retrospective study examining BMD levels among a multi-ethnic sample of 3,206 postmenopausal women, aged 50 years and older, indicated that AAW's BMD levels decreased with each unit increase in BMI. The compound effects of increased BMI in AAW (Santoro et al., 2004; Zhu et al., 2005) and declining BMD are increased risk factors for osteoporosis and fractures in obese postmenopausal AAW (Castro et al., 2005). These studies suggest that menopausal AAW's hormonal changes increase their cholesterol and BMI levels, and lower vitamin and mineral levels and place them at increased risk for CVD, strokes, osteoporosis, and metabolic syndrome.

Harley and associates (2009) reported that changes in these biological markers affect AAW's functional and health status by lowering their levels of PA. Inactivity is reported to increase AAW's risk for obesity, and depression (Segraves & Woodard, 2006; Avis et al., 2005); hypertension and diabetes (AHA, 2004; Appel et al., 2002; Go et al., 2013); and metabolic syndrome (Kirkendoll et al., 2010). Lacking are studies among larger samples of AAW aimed at exploring the association among changes in biological markers (i.e., BMI, serum cholesterol), inactivity and dietary practices.

Depression

Increased physiologic and psychosocial changes in women's lives are correlated with increased risk and variability in levels of depression during each phase of MT (Bromberger et al., 2004, 2009, 2011; Avis et al., 2005; Fugate et al., 2008; Van de Velde, Bracke, & Levecque, 2010). The decline in E_2 , variability in cortisol levels, and increase in FSH and testosterone levels are linked to increased depression during MT (Avis et al., 2005; Bromberger et al., 2011; Freeman, Sammel, Lin, & Nelson, 2006; Fugate et al., 2008; Gold et al., 2006a). In AAW, variability in these hormone levels are linked to increased anxiety, and irritability and low self-esteem (Cohen et al., 2006; Gracia et al., 2007).

Among the major ethnic groups in the U. S., AAW experience high levels of depressive disorders (Bromberger et al., 2004). Findings in the (2001) study by Avis et al. suggest that AAW experience increased levels of depressive symptoms (mood), but lower levels of psychosomatic disorders. The reported differences in levels and types of depression experienced by women during MT suggest the need for more research

focused on links between sociocultural factors, psychological distress and increased depressive mood states in AAW.

Fugate et al. (2008) and Marsh et al. (2008) suggested that increased VMS in the late MT phases was associated with the prevalence of depression among AAW. In Fugate's (2008) longitudinal, multi-ethnic study of 506 women (AA = 302), urine estrone glucuronide, FSH, testosterone, and cortisol levels, menstrual calendars, and the Center for Epidemiology Scale-Depression (CES-D) scale were measured to determine the relationship between depression and MT among a subset of AAW. Results from this analysis indicated that depression increased with age, and more depressed mood occurred during the late MT stage; these depressive changes were related to VMS. In a similar longitudinal study, examining depression in a multi-ethnic sample of 3,302 women aged 42 to-52 years, Bromberger et al. (2007) concluded that women were more likely to experience depression during early and late perimenopause and post-menopause phases of transition or when using HRT/ERT. These findings suggest a relationship between depression and MT and indicate variability in symptom occurrence, types, and levels of depression during the early and late menopausal phase that merit further investigation among AAW.

Sexual Functioning

Most menopausal women experience sexual dysfunction and decreased libido attributed to variability in E_2 and changes in ratios of FSH and testosterone (Avis et al., 2005, 2009a). However, Avis and associates' (2009a) study found that AAW considered sex very important and engaged in more vaginal sex for pleasure and to relieve tension than women of other ethnicities during MT. Findings in a number of studies support a

high percentage of AAW reporting single status or not having a partner (Avis et al., 2009a; Cain, et al., 2003). The findings suggested that sociocultural and demographic variables (that include single status) may affect levels of stress in women across ethnic groups.

Psychological Wellbeing and Health-Related Quality of Life

African American women make up 13.1% of all women in the U.S., and are living longer than in previous decades (MMWR, 2009). However, they also experience obesity-related chronic health conditions that contribute to some of the highest mortality rates in the U.S. (Freedman, 2011; Waggoner et al., 2008). The increased morbidity reported among AAW decreases their health-related quality of life (HRQOL) (Angel & Angel, 2006; Freedman, 2002), and increases healthcare costs during MT and aging (Karp, 2007; Lewis, 2009; Owens et al., 2008; Utian, 2005).

Inconsistencies exist concerning the effects of physical, psychosocial, and demographic factors on HRQOL in women experiencing MT (Avis et al., 2005, 2009; Freedman, 2002; Gallicchio, Miller, Zacur, & Flaws, 2009; Gracia et al., 2007). Generalization of HRQOL experiences across racial and ethnic groups of women is difficult given women's unique social, economic, and physical experience. A number of studies found that women experience (psychosocial) adjustments to major and life changing events during MT such as (a) empty nest syndrome, divorce or being single-head of household; (b) career change, job loss or retirement, and (c) parenting of grandchildren or caring for elderly parents, that can all affect women's quality of life (Avis et al., 2009b; Gold et al., 2000; Sommer et al., 1999). The addition of these life-adjustments to psycho-physiologic and hormonal changes increases the risks for

depression, CVD, sexual dysfunction, and menopausal symptoms (Avis et al., 2005; Gracia et al., 2007; Randolph et al., 2003) that can dramatically affect AAW's HRQOL and health outcomes.

Women experiencing MT commonly report symptoms of myalgia, fatigue, body-image change, obesity, irritability, memory loss, VMS, sexual dysfunction, and anxiety that affect their health (Avis et al., 2005; Palmer et al., 2003). Among AAW the lack of social support (Angel, & Angel, 2006), and being single, a parent, head of household, and of low SES (i.e., low income, poor housing, and inability to purchase basic goods) contribute to AAW's increased anxiety (Glazer et al., 2002) affecting their HRQOL during MT (Glazer et al., 2002). However, Avis and associates' (2009b) study examined HRQOL during MT and suggested that MT did not affect HRQOL after adjusting for menopausal symptoms, and medical condition. Although research supports differences in most AAW's socioeconomic and health status across the lifespan as being consistently worse than other major ethnic groups (Gary, Campbell, & Serlin 1996; Gold et al., 2006b; Keppel et al., 2008; Ogden et al., 2010b), it is unclear whether menopausal transition differentially affects the HRQOL in AAW.

The inconsistencies presented by these findings suggest a need for research exploring relationships between physical and cognitive factors and their relationship to variations in SES; such research would contribute to understanding the main and interactional effects influencing the HRQOL experienced by menopausal AAW.

In summary most menopausal research has utilized multi-ethnic samples and longitudinal designs to determine physical and psychological 'changes' (Dillaway, 2005, p. 2) that occur during MT phases (Dennerstein & Soares 2008; Freeman et al., 2007a;

Gracia et al., 2007; Gold et al., 2006a). The primary focus for many of these comparative studies was the determination of the biological markers for menopause, cultural differences in symptoms, and variations in the menopausal phases linking biological markers (i.e., E₂, FSH, LH) to psychosocial and physical differences across racial and ethnic groups. However, few studies employed qualitative designs to explore the multidimensional aspects and totality of AAW's psychosocial experiences, cultural beliefs and expectations during MT (Applying, Paez, & Allen, 2007; Im, 2007).

Demographic Factors

Although findings in most studies recognize a relationship between demographic factors (i.e., education, income, employment, marital status and place of residence) and increased obesity, findings in many of these studies are inconclusive (Fitzgibbon, 2008; Gold et al., 2006b; MMWR, 2009). Flynn and Fitzgibbons (1998) suggested that AAs who experience poverty are more likely to idealize heavier body types that could lead to obesity. In addition, overeating may be an 'insurance against hunger' for many low-income AAW (Kumanyika et al., 2008). Results in the (2004) study by Patt et al., among a socioeconomic cross-section of 496 AAW living in northeastern U.S., suggested that lower SES was not associated with higher BMI, and demographic factors did not affect levels of obesity. Consistent with these findings, Welch and associates (2004) found that a multi-ethnic sample of 524 fourth-graders, from urban and rural environments, showed no association between race, location, and weight. However, these studies did not include rural AAW, whose health outcomes are reported as being consistently worse than those of other American women across the life span (USDHHS, 2010; Gary, Yarandi, & Rivers, 2001). Neither were these studies conducted in the southeastern U.S.,

that has the highest rates of obesity, and obesity related chronic conditions that occur among rural residents and are related to socioeconomic factors (Kumanyika et al., 2008; Dis, 2002).

Socioeconomic Factors and Menopausal Transition

African American women who live in South Carolina are among the lowest socioeconomic groups in the nation and experience high unemployment, employment in low paying industries, limited access to health care, little or no medical insurance (SCBCB, 2003), and less access to transportation. All of these difficulties impede access to health and social services. Forty percent (22,779) of all women in SC are unmarried and although only 15 % (660,000) of SC's population were considered in poverty, female headed household accounted for 32% (211, 200) of this proportion (American Community Survey, 2007). Gold et al. (2000) surveyed a multi-racial/ethnic sample of 16,065 women (Japanese, Chinese EAW and AA) aged 40 to 55 years who were experiencing MT and who were enrolled in the Study of Women Health Across the Nation from 1995-1997 to determine what demographic and lifestyle factors were related to menopausal symptoms. They found that AAW who had difficulty paying for basics (odds ratios = 1.15-2.05) and who considered themselves less physically active than other women their age (odds ratios = 1.24-2.33), reported more MT symptoms. Additionally, results from the (2002) cross-sectional, prospective cohort study by Wise et al. of (N= 603) premenopausal women aged 36 to 45 years, residing in Boston indicated that childhood and adult SES was associated with lifetime SES and onset of perimenopause. The incidence of perimenopause was also 1.75 times higher (95% CI 1.10 to 2.79) and median age at onset was 1.2 years younger (44.7 v 45.9 years) for

women reporting childhood and adult economic distress compared with women reporting no lifetime economic distress. These studies suggest that adverse socioeconomic conditions may be associated with increased co-morbidity for AAW experiencing MT.

Socioeconomic Factors and Obesity

Kumanyika et al. (2008) found that higher prevalence of obesity occurs not only in low, but also in high-income AAW. In contrast, Baltus (2005) examined the association between gender, race, SES, and weight among a group of 1186 AA men and 1137 AAW over 34 years. Baltus found SES was strongly associated with higher BMI, and that demographic factors did affect obesity levels in the low-income group. These findings, supporting increased obesity among low-income AAW, were consistent with the results in the (2007) study by Malpede et al. that explored racial factors related to beliefs about weight among AAW and EAW. Although research supports an association between adverse socioeconomic conditions and increased co-morbidity for obese AAW, Salsberry and Reagan's (2009) comparative study of the influence of childhood and adult economic status on midlife obesity in Mexican, EAW, and AAW, reported that having a past disadvantaged economic status increased risk for midlife obesity among Mexican and EAW, but not for AAW. These findings indicate that socioeconomic variables must be considered within the context of cultural and ethnic norms. More research aimed at exploring links between socioeconomic factors, rurality, and obesity among AAW is essential for developing culturally appropriate programs.

Cognitive Factors

Cultural Perceptions of Obesity and African American Women

The principal attitudes and behaviors that characterize the functioning of a group are considered its culture. These distinctive traits or worldviews (i.e., thoughts, beliefs, perceptions) are believed to govern rules of moral conduct that influence social interactions (i.e., family structure, roles) in racial, ethnic, and social groups (Adamopoulos & Kashima, 1999). These socially transmitted behaviors, patterns of assumption, beliefs, and practices unconsciously frame and guide the decisions and behaviors of a group (Campo & Mastin, 2007; Gore, 1999). African Americans perceptions of body size and obesity permeate across age groups. A number of researchers reported that among school and college age AA children, and caregivers of AA children, these groups chose larger figures to represent their ideal body size and were happiest with their body size and image (Rucker & Cash, 1991; Wang, Liang, & Chen, 2009; Welch et al., 2004; Young-Hyman, Herman, & Schlundt, 2000).

For most AAs, a socially transmitted belief is that women should have larger and fuller figures (Flynn & Fitzgibbon, 1998; Wolfe, 2000). In an attempt to provide an explanation of the historical, cultural and psychosocial factors influencing obesity among AAW in the U.S., Johnson and Broadnax (2003) suggested that, historically, AAW with “fuller figure, broader hips, fleshy and large” bodies represented good healthy bodies which were (a) conducive to bearing healthy children (b) working hard, (c) nurturing and supporting their family (p. 69). These full-figured, fleshy AAW were prized by AA men for marriage and by slave owners for breeding; they served as a vehicle to increase the slave owner’s economic wealth by producing healthy babies.

Many AAW embraced the “Mammies” physique that required their acquiescence to gross obesity, a necessary protection from the advances of slave owners and to negate the slave owners’ wives’ superstition about sexual relations occurring between the mammies and their husbands (Johnson & Broadnax, 2003).

The preference for AAW with full figures also permeates the popular media today, where AAW (e.g. Beyoncé Knowles, Oprah Winfrey, Patti LaBelle, Star Jones, Monique, Sherri Shepherd, Whoopi Goldberg, and Wendy Williams) are celebrated role models who refute the idealized, thin body image of American beauty. However, Tirodkar and Jain (2003) found that on television one in four AA actors were obese compared to one in 50 non-AA actors. This likely reinforces the idea among AA people that obesity is acceptable (Campo & Mastin, 2007; Gillen & Lefkowitz, 2009; Parescoli, 2007). These findings indicate that history, environment, and cultural perception are factors supporting obesity in AAW. More research is warranted to explore the relationship between societal values and the perceptions of overweight and obese AAW.

Research findings suggested that AA men prefer overweight, fleshy, and full-figured women, who they consider sincere, hardworking, and good mothers and companions. Whereas, AAW’s fitting the ideal (thinner) body statue are looked upon with superstition (Glasser, Robnett & Feliciano, 2009; Parasecoli 2007). Parasecoli (2007) suggested that AA men associate overweight and obese AAW with comfort, stability, and increased sexual and gastronomic pleasures. These findings suggest the need for research on the links between historical and popular cultural values to determine psychological and cultural factors influencing AAW’s ready acceptance of the larger body image.

African American Women's Perceptions of Obesity, Body Size and Image

The American cultural ideal for women with an 'ultrathin body' (Flynn & Fitzgibbons, 1998) is not a cultural attribute embraced by AAW (Berens, 2010; Chandler-Laney et al., 2009; Parasecoli, 2007; Williams, 2009). In contrast, most AAW perceive the larger derriere as ideal and celebrate their 'chunky' and abundantly fleshy bodies, bodies that are revered in AA communities (Kumanyika, Wilson & Guilford-Davenport, 1993; Parasecoli, 2007). Many AAW consider increased weight and change in body image/size following child birth, menopause, and advancing age, as a natural occurrence to be celebrated (Kumanyika et al., 1993). Obese and overweight AAW perceive themselves as attractive and smaller than their actual body size, weight, or BMI (Baturka et al., 2000; Stevens et al., 1994), even when they meet the criteria for being overweight or obese (Chandler-Laney et al., 2009; Moore et al., 2010). Chandler-Laney et al. (2009) suggested that AAW's perceptions of body size were not influenced by the perception of women from other racial/ethnic groups.

Although most obese AAW report a dislike for the negativity associated with obesity, many do not consider themselves obese; as one AA woman lamented, "when you are fat you can't get into the chair, tub, bathroom...you can't get around, that's when you know you are obese" (Bramble et al., 2009, p.63). Researchers have found that AAW associate negative connotations with the word "obese" when used to describe body size (Thomas et al., 2009; Ward, Gray, & Paranjape, 2009). One woman stated, "I do not like the word obese...[the] negativity...I would rather be called fat" (Bramble et al., 2009, p. 63). Among a group of teenage AAW, the word obesity was only considered applicable to people who weighed between 300 and 700 pounds and were seen on

television (Dietz, 2001). However, ambivalence and dissatisfaction about being obese and being labeled as such did not affect most AAW's preferences for large derrieres and thicker thighs as their culturally ideal body image (Beren, 2010; Parasecoli, 2007).

Perceptions of obesity and body size differ between AA and EA women (Moore et al., 2010; Bramble et al., 2009). Unlike EA women, most AAW do not perceive thinner stature as ideal (Fallen & Rozin, 1985) and are less concerned with dieting (Baturka et al., 2000) and less influenced by others' perceptions of their body size (Chandler-Laney et al., 2009). Conflicting cultural factors hindering AAW's weight loss efforts facilitate overeating (Connolly, 2011); these may be women's satisfaction with larger body size, increased weight and the perception (cognition) that an increased body size is a healthy part of menopause, aging, and pregnancy (Beren, 2010; Brooten et al., 2012; DiLillo et al., 2004). Additionally, Parescoli (2007) reported that AA men encourage AAW to maintain fleshy bodies to have "large derrieres" and maintain "healthy weight" (p110). It is likely that the preferences of AA men are factors affecting AAW's perceptions of 'healthy' weight and thus impeding their weight loss efforts (Kumanyika et al., 2008; Steese et al., 2006; Thomas et al., 2009). Other cognitive factors influencing obesity levels are the perceptions of many AAW that BMI calculations are inaccurate representations of their weight and body size (Bramble et al., 2009; Brown, 2009; Moore et al., 2010) and poor "health" (status) the primary prerequisite for weight loss (Befort, Thomas, Daley, Rhode, & Ahluwalia, 2008). It is likely that these perceptions are influencing AAW's self-image and unhealthy eating habits. Understanding how rural and very rural menopausal, AAW perceive body image/size is important for identifying ways to combat obesity in this group.

Furthermore, many AA's are reported to have a 'live-for-today mentality' that make healthy diets and PA unappealing methods for offsetting chronic disease (Nelson, 2009; Eyler et al., 2002; Steeves, Bassett, Thompson, Fitzhugh, 2012). This approach to life may provide an explanation for AAW's perception that the increased energy levels required for PA, are similar to the physical activities of daily living (ADL), and health is the ability to be active enough to perform ADL (Martin et al., 2010). Research on the influence of these factors on obesity among rural AAW is minimal.

Although most studies reported overweight and obese AAW as being comfortable, accepting, and satisfied with their larger body size (DiLillo, Gore, Jones, Balentine & West, 2004; Welch, 2004), there is increased ambivalence among young AA adults who are concerned about being overweight and obese. Recently a number of researchers reported that among high school and college AA students with increased BMIs, most perceived themselves as overweight and obese and were more likely to be dieting (Drane, Paxton, & Valois, 2004; Yost, Krainovich-Miller, Budin, & Norman, 2010). This suggests that among younger generations of AAW perceptions about body size and image are changing. However, while AAW acknowledged familiarity with weight loss measures and the need to maintain a healthy weight (Yost et al., 2010), many reported that their desire for a fuller figure was to please their significant others (Allan, 1998; Demarest & Allen, 2000; Gore, 1999; Parasecoli, 2007). These studies suggest that cultural beliefs, perceptions, and social pressures in the environment are factors influencing obesity among AAW rather than mainstream identification with obesity and body image/size.

Behavioral Factors

Physical Activity

Low PA levels are a major factor influencing increased BMI and obesity levels among AAW in the U.S. (Kumanyika et al., 1993; Richter et al., 2002). Studies have found that obese AAW experience lower levels of general wellbeing and exercise performance (Patt et al., 2004; CDC, 2001) and these characteristics are influenced by their perceived self-efficacy (Eyler et al., 2002a). Additionally many AAW's decreased participation in PA is due to (a) their negative perceptions about PA, (b) lack of time because of social and cultural pressures, (c) increased time spent on hair care, and (d) lower resting metabolic rate (Albu et al. 1997; Harley et al., 2009; Thomas et al., 2009). Furthermore, younger rather than older AAW, and those with higher education and income levels reported increased participation in PA for weight control and vanity rather than to avoid ill-health (Eyler, et al., 2003; Young, He, Harris, & Mabry, 2002)

Cultural factors are reported to hinder obesity-related intervention among AAs. These include the perception of health as the ability to be active and declining health as an inevitable condition of aging (Drayton-Brooks & White, 2004). Martin et al. (2010) found that among a group of older AAs, being healthy was defined as “being able to work...to get up and do things for yourself [and] go where you want to...have no pain...that means being healthy all over” (p. 316). Furthermore, many AAW perceive PA and work as being similar, and consider leisure-time as time for resting and not performing PA. Many AAW do not participate in leisure-time PA (structured - group exercise - or strenuous housework), and are not overly concerned about being obese;

since obesity is not considered unattractive in the AA community (Airhihenbuwa et al., 1995; Eyler et al., 2002a; Kumanyika et al., 1993; Sanderson, Littleton, & Pulley, 2002).

However, AAW did report increased motivation for PA when they exercised with a friend or in groups (Young et al., 2002). The latter was highly favored in women who attended religious establishments; some reported that praying and spiritual guidance were important for weight loss, and health-related activities were important for sustaining their weight (Davis et al., 2005a). Young et al. (2002) suggested that AAW are becoming more active because of reasons related to health and vanity. But the level of PA in AAW is still below CDC recommendations (Eyler et al. 2002a; 2002b); Kumanyika (2002) posits sociocultural barriers pertaining to attitudes and perceptions, and lack of PA models are factors influencing obese AAW's limited success at weight loss.

These findings suggest that because there are numerous cultural factors related to AAW's perceptions, self-efficacy and motivation for PA, further research is warranted to establish their impact on obesity levels. Studies that motivate AAW to modify perceptions and behaviors about PA, and perceptions of leisure time and work and for increasing their participation in group activities is lacking. Also, lacking are culturally specific PA models developed for obese AAW in places of work and worship that provides health and, or financial incentives. Since few studies have included rural AAW, experiencing MT, research is necessary to establish the influence of menopausal status on PA and obesity levels, in rural AAW.

Dietary Habits & Nutritional Factors

Nutritional and educational deficits, unhealthy eating habits, and inactivity are factors attributed to increased overweight and obesity among AAW (Fitzgibbon et al., 2008; Thompson et al., 2009). Although AAs have been in the U.S. for hundreds of years, Kittler and Sucher (2008) proposed that acculturation changes related to culturally-based food practices and habits are among the last to change. These beliefs support James' (2004) findings that AAs considered healthy eating an adoption of the dominant culture and therefore a departure from their own. African Americans, similar to other minority groups, consider food and the sharing of food an expression of nurturing, socialization and caring (Airhihenbuwa et al., 1996; Bramble et al., 2009). Older AAs prefer to eat at home and consider eating as a spiritual or intimate event exclusively for the invited and family. Social events like church meetings, dinners, cook-outs, and family reunions encourage familial socialization and communal eating where traditional foods are prepared and shared, and where "everybody cooks, and everybody eats"(Gore, 1999, p.77). Changes to traditional recipes are not encouraged or supported by the AA family and the community (James, 2004).

Food choices for AAs are generational and influenced by the cultures of Africa, conditions experienced during slavery, and access, availability and affordability of food items (Ard et al., 2005; James, 2004; Airhihenbuwa et al., 1996). Airhihenbuwa et al. (1996) reported that among a cross-section of AA males and females, food choices were passed down through successive generation and still influenced by slavery. Participants in the study concurred that "they ate what their parents ate [including] fried and spicier types of foods, [and] we took garbage and made it into a meal" (p. 251). The high intake

of smoked, salted, and nitrite-cured animal by-products, used when AAs could not access or store healthier foods, persists (James, 2004). Thus, the food choices and preparation techniques for most AAW stem from matriarchal practices established during slavery, when cooking with soul meant boiling, frying, and roasting to optimize the flavor of the cheapest cuts of meat (i.e., ham, pork, and animal intestine); and cooking corn, sweet potatoes, and leafy vegetables until very tender (Ard et al., 2005; James, 2004).

The practice of cooking with *soul* include cooking with lots of salt-based spice, using one pot to cook a meal, overcooking vegetables with ham hocks and adding sugar (resulting in low fiber and high fat content), and drinking pot liquor (Henderson, 2007). Cooking with *soul* also means (a) cooking chicken with the skin intact and coating meats in wheat or corn flour, and deep-frying, (a) garden produce (b) seafood – shrimp, fish, catfish, (c) meats - chitterlings, pork chops, and salted pork fatback until crispy, (Airhihenbuwa et al., 1996; James, 2004; Jefferson et al., 2010). Roasted or barbequed meats high in fats (pork or beef ribs) required the addition of sauces that contained mustard, sugar, and salt-based spices to enhance the taste (Jefferson et al., 2010). Thus the high nutritional fat content of many AA meals is influenced by the practices of not trimming meat fats, eating fatback, reusing oils, and using fats for enhancing foods that are lacking in flavor (Airhihenbuwa et al., 1996). Additionally, starches and sweets such as bread, sweet potato and fruit pies, cakes, rice, potatoes, and macaroni with cheeses are dietary staples in the kitchen of many AAW (Airhihenbuwa et al., 1996; James, 2004; Jefferson et al., 2010).

These techniques (a) ensured digestion of the least desirable types of foods (b) provided a diet that ensured AAs had at least minimal caloric energy to perform hard labor, and (c) nurtured the spirit and comforted the soul. Today, hard labor is the exception and not the norm for many AAW who adhere to unhealthy diets (James, 2004; Walker-Sterling, 2005). Although research suggests that AAs' food choices, preparation techniques, and culinary practices maintain kinship and group identity, they also hinder the adoption of healthier food choices and preparation techniques (Kittler & Sucher, 2008).

Rural AAW are engaged in more cultural and lifestyle eating and snacking on sweets. 'Lifestyle eating' is an eating pattern characteristic of the AA culture: eating large Sunday meals, having meat and starch for every meal, and eating together only on weekends (Hargreaves et al., 2002; Sims et al., 2008). Findings in Hargreaves et al. (2002) study among 40 rural AAW in Tennessee supported increased snacking, missing meals, and using more frozen, prepackaged, and convenience foods when preparing meals. Additionally, Schlundt et al. (2003) reported that levels of education were associated with snacking and low-fat eating. In contrast, Evans et al. (2009) found that levels of education did not decrease the amount of fats consumed by urban, midlife AAW women, ages 45 to 64. Whether lifestyle eating is the same for rural AAW, residing in SC is unknown.

The dietary intake of many young adult AAW is similar to those of other minority groups in the U.S. (Hamilton-Mason, Hall, & Everett, 2009; James, 2004; Satia et al., 2004) consisting of fast and convenient foods that are high in caloric but low in nutritional values. Satia et al. (2004) surveyed 658 AA participants (59% female, 37%

college graduates, 75% overweight/obese), with a mean age of 43.9 (SD=11.6), in North Carolina to explore dietary intake, demographics, psychosocial behaviors, and eating habits related to frequency of eating in fast food restaurants. Findings suggested that differences in education levels, knowledge of the Food Guide Pyramid, and ability to purchase healthy foods were significantly related to less eating at fast food restaurants. Consumption of fast foods and eating in restaurants are related to social and cultural pressures, including lack of time, work schedule, housework, cleaning, caring for children and family members (Hamilton-Mason et al., 2009; James, 2004). The time taken by these activities is compounded by the plethora of low-cost and conveniently located fast food establishments that contribute to the increase in obesity levels among AAW (Kumanyika et al., 2008; Morland et al., 2002). These issues are further compounded by the popular AA media (magazines) that focus primarily on “fad diets and a reliance on God or faith” for assistance in weight and diet management (Campo & Mastin, 2007, p. 229). In addition, television focuses on unhealthy foods during peak viewing hours (Pratt & Pratt, 1996; Tirodkar & Jain, 2003). Sankofa and Johnson-Taylor (2007) suggested that much of the American media focuses on cultural and behavioral factors (i.e., criminal acts, negative sociocultural behaviors) and disregards pertinent information (i.e., healthy foods, environmental, affordability, and access to products) necessary for improving the health outcomes in AAs. This suggests that perception of healthy foods, preferences, dietary practices and food preparations are cultural factors leading to increased obesity among AAW. A step toward determining the cognitive disconnect among nutrition, diet, obesity, and health outcomes would provide information that increases the contextual understanding of these relationships among AAW.

Nutrition and Food Preparation

Research suggests that lifestyle behaviors and familial responsibilities affect AAW's mental health (i.e. depression, and physiological wellbeing) status and influence health (i.e. BMI and obesity-related chronic health conditions) outcomes, which impact their morbidity levels (Kim et al., 2009; Young et al., 2002). Social pressures resulting from life style (i.e. time needed for work and preparation of nutritious meals) and familial responsibilities are factors influencing food preparation techniques, and eating habits; they also affect the nutritional values of many foods consumed by AAW (Baturka et al., 2000; Jefferson et al., 2010; Hargreaves et al., 2002; Richter et al., 2002).

Historically, food preparation techniques for many AAW stem from matriarchal practices established during slavery (Airhihenbuwa et al., 1995) as noted previously. Currently, many rural AAW adhere to diets high in animal fats, sugar, salt, and starch (Thompson et al. 2009). In their study of Afro-Caribbean and AAW aged 40 years and older, Bramble and associates (2009) examined cultural factors related to PA, healthy eating, and weight management. They concluded that tradition, food habits, and perceptions of obesity differ among ethnic groups.

Eating habits differ among groups of AAs by age and demographic locations. Deitz (2001) reported that, in a focus group data of AAW ages 18 to 35, healthy eating was described as consuming three meals a day with foods from the four food groups (protein, fats, carbohydrates, and dairy). However, Hargreaves et al. (2002) reported that many AAW in their study did not adhere to three meals a day; instead, eating patterns for most were influenced by health concerns, appetite, and convenience. Women

reported snacking between meals, missing meals, emotional eating, and eating food they considered unhealthy throughout the day (Hargreaves et al., 2002).

Many AAW considered a ‘good’ diet the ability to have a full plate, eat meat, and not have to fill up on starches (James, 2004). These findings are in contrast to the new U.S. Department of Agriculture and U.S. Department of Health and Human Services guidelines recommends meals with smaller portions, less meat, more fruits and vegetables, and grain (USDA & USDHHS, 2010). Guidelines that concur with research suggesting that consuming 5 or 6 small meals and eating the largest, and most caloric dense meal earlier in the day increased satiety and metabolism (Castro, 2004; Yunsheng et al., 2003).

Fitzgibbon et al. (2008) found that among 213 obese AAW ages 30 to 65 years, enrolled in the Obesity Reduction Black Intervention Trial (ORBIT), the treatment and control groups’ mean kcal energy intake at baseline ranged from 2374 (SD=984) to 2458 (SD= 1088). The percentage of nutrients (kcal) intake was M=44.5% (SD=8.3) carbohydrates, M=41.8% (SD= 6.6) fats, M=12.1% (SD=2.4) saturated fat, and M=15.1% (SD= 3.3) proteins, these percentages exceeded recommended intake based on the 1992 Food Guide Pyramid (Fitzgibbon et al., 2008). These AAW consumed less of their kcal for each food group servings than the daily U.S. Recommended Dietary Allowance (RDA)(2010) for fruits - including juices, (M=1.3%, SD= 1.0), and fiber (M=8.7g/1000, SD= 3.5), dairy - milk, yogurt, and cheese (M=1.0, SD= 0.8), grains - bread, cereal, rice, and pasta (M=4.8, SD= 2.9); and more kcal from vegetables (M=3.4 (SD=2.0), meats (M=3.2, SD=1.9), fats/oils and sweets (M=3.7, SD=2.0). These

findings are consistent with findings from other researchers (Dietz, 2001; Wilson, Musham & McLellan, 2004).

Gaston and associates (2011), reported that the portion size for food consumed by AAW was larger and with more calories than that recommended by the U.S. Food and Drug Administration (USFDA), Dietary Guidelines for Americans, USDA & USDHHS (2005) and may influence high caloric intake. A study of 351 midlife AAW of various bodyweights enrolled in the *Prime Time Sister Circles* (PTSC) program examined relationships among SES, psychological factors, and health behaviors (i.e., physical exercise, eating patterns). Results indicated that of the obese women in the study, few (16%) regularly observed their food portion size, 11.5% counted caloric intake, and only 5.7% measured their food portion. Most reported regularly eating fried and fast foods (53.8%) and high-calorie sweets (59.1%) (Gaston, Porter, & Thomas, 2007).

Results from the 1995 to 2005 Black Women's Health Study (BWHS) used to explore the effects of restaurant foods on incidence of diabetes, among 44,072 participants, suggest that consumption of foods prepared outside the home increased from 18% to 32% of total calories intake (Krishnan et al., 2010). The highest to lowest foods prepared outside the home were (a) fried chicken, (b) Mexican, (c) Chinese, and (d) fried fish; however, pizza consumption declined from 10% to 4% weekly (Krishnan et al., 2010).

Eating at fast foods restaurants negatively influence nutritional intake, and increase obesity levels in AAW. In Satia et al. (2004) study, participants who ate at fast food restaurants decreased their vegetable intake ($p < 0.05$), but increased total fat intake

($p < 0.0001$) from 28.3g for infrequent eaters to 39.0g for frequent eaters. Frequent eaters at fast food restaurants were younger, physically inactive, obese, never married, and non-consumers of multivitamins (Satia et al., 2004). In addition to consuming more fast and restaurant prepared foods, AAW reported increased use of frozen, prepackaged, and convenience foods when preparing meals (Hargreaves et al., 2002). These changes supports AAW's shift towards diets lower in grains and folates and higher in saturated fats, sugars, and starches that are nutritionally dense (Dammann, & Smith, 2009; Gary et al., 2004; Hargreaves et al., 2002).

Studies exploring the nutritional values for foods consumed by AAW focus on either excessive or insufficient nutrient intake, such as calcium found in dairy foods, minerals, and vitamins from fruits and vegetables, and carbohydrates and saturated fats that disproportionately influence disease outcomes among AAW (Blanchard, 2009; Kannan et al., 2010; Sharma et al., 2009). Lacking are studies to determine where, what and how AAW spend funds for food allocation. Such studies are necessary for developing interactive educational tools that instruct AAW in basic nutritional science that are no longer mandatory in preschool through 12 grades (Briggs, Safaii, & Beall, 2003).

Research findings in a number of dietary studies that included micronutrient intake suggest that AAW consume less calcium than EA women (Blanchard, 2009; Kannan et al., 2010; Teegarden, 2003; Wooten & Price, 2004) and a prevailing perception by many AAW that they are lactose intolerant influences their consumption of low calcium dairy products (Blanchard, 2009; Dore et al., 2001; Kannan, et al., 2010). Lactose intolerance has been reported as a factor that leads to low consumption of

calcium rich dairy foods that are also high in vitamin D (necessary for those who spend little time in the sun) (Blanchard, 2009; Kannan et al., 2010). Consequently, many AAW omit calcium rich dairy foods, resulting in dietary calcium levels lower than the current RDA of 1,000 to 1,200 milligram (mg) daily for adults 19 years and older (USDA, 2005; 2010). Such a diet reduces the potential benefits gained from consuming three to four daily servings of the low-fat dairy foods (Blanchard, 2009; Kannan et al., 2010; Teegarden, 2003; Wooten & Price, 2004) that have been found to reduce chronic diseases (i.e., obesity, hypertension, diabetes, atherosclerosis, and osteoporosis) affecting AAW, promote weight loss in obese persons (Blanchard, 2009; Wooten & Price, 2004) and increase the long-term risk for lower BMD levels at midlife. In addition, Houston et al. (2005) reported that among a group of AA and EA women, dairy, fruit, and vegetable intakes were inversely associated with lower extremities limitation and impaired ADL, among AAW.

Results from studies by Kannan et al. (2010) and McCrary et al. (2005) indicated that a higher percentage of AAs' energy came from consuming carbohydrates and sodas; but their diet was lower in supplemental vitamins of A, C, D, and E, as well as calcium and magnesium. Lower levels of vitamin supplements consumed by AAs hindered the growth of intestinal microflora belonging to clostridia cluster IVX, which may be a contributory factor to the increased levels of colon cancer among AAs (McCrary et al., 2005). In addition, Johnson, Ralston and Jones (2010) found that a sample of 20 AAW in South Carolina consumed less water than women of other ethnic groups. A diet low in water affects the synthesis and bioavailability of all other macro and micronutrients in the body.

However, among middle-class suburban and urban AAW with higher SES residing in affluent neighborhoods facilitates the adoption of acculturation factors that influence their perceptions of healthy foods and modifies preparation techniques and eating habits (Baltus, 2005; Kumanyika et al., 2008; Ogden et al., 2010b). These relationships do not pertain to low-income rural and urban AAW whose food preparation techniques and eating habits are affected by food insecurities, cost, preference, and preparation techniques that remain traditional (Airhihenbuwa et al., 1996; Henderson, 2007; James, 2004).

More than in previous years, AAW similar to women of other ethnic groups are consuming more fast and convenience foods; that are readily available, easier and faster to prepare than conventional cooking techniques, but are calorie-dense (Dammann, & Smith, 2009; Gary et al., 2004; Shankar & Klassen, 2001). The abundant variety of these available foods effect food-choice patterns and traditional preparation techniques that may influence AAW's inability to consume a balanced nutritional diet (Henry et al., 2003) or conversely, the traditional food preparation techniques practiced by many AAW may influence their fast food and convenience food choices.

In case, AAW's burgeoning obesity levels and risk for obesity-related chronic conditions influenced by both cultural and socioeconomic factors (Drayton-Brooks, & White, 2004; Hargreaves et al., 2002). The paucity of knowledge on nutritional intake, food preparation, and eating habits of AAW, especially those in rural areas, signals the need for research on the relationship between nutrition intake and food preparation factors and obesity. Although more studies are exploring obesity and its relationship to health and PA among AAW (Beydoun et al., 2009; Thompson et al., 2009), most are

interventional, conducted in urban settings, and report high attrition rates. In many ethnically diverse studies, samples of rural AAW are noticeably smaller or absent (BeLue, Taylor-Richardson, Lin, Riveria, & Grandison, 2006; Smith et al., 2007). Research focusing on links between obesity and menopause among rural AAW is lacking. Consequently, research in this area is necessary for increasing understanding of the relationship between perceptions of obesity, actual body image/size, and dietary habits, and the health of rural, menopausal AAW.

Demographic Factors

Rurality and Health Status

In the US, people who live in urban inner cities and in populated rural areas have increased risk for poverty, poor health, and mortality than suburban residents (Dis, 2002). Thus, place of residence (house, apartment, with/without - access to safe environment for PA, transportation, adequate street lightings, and access to healthy food supply) and demographic location (living in southeastern verses northern regions of US, or living in rural and very rural verses urban areas) play significant roles in the health of AAW. Research findings support higher morbidity and mortality rates for AAs living in inner cities and populated rural areas (Jackson et al., 2005; Miniño, Xu, Kochanek, & Tejada-Vera, 2009). In Rural southern regions of the US where more than half of the AA population resides, mortality rates for AAs are highest (Jackson et al., 2005; Miniño et al., 2009).

Rural women are described as having a higher rate of obesity than their urban counterparts (Eberhardt & Pamuk, 2004; Janssen et al., 2008), but lack adequate health care, are employed in low paying light industries, and agricultural and service industries

that affects their health outcomes with respect to chronic disease (Kahng, 2010; Appel et al., 2002; Murray et al., 2006). In 2011, the population in SC was estimated at 4,679,230; of these 28.1% (1,299,727) reported being AA (U.S. Census Bureau - Quick facts, 2012).

Among *rural* residents in South Carolina, 48% of all rural residents are hospitalized out of county versus 19% in urban areas. Rural AA residents were 12% more likely to die from a stroke, and 57% more likely to die from diabetes than rural EA residents. *Very rural* AA residents were 70% more likely to die from diabetes than were very rural EA residents. Compared to AAs in urban environments, very rural AA residents were 37% more likely to die from heart problems, 44% more likely to die from a heart attack, 52% were more likely to be hospitalized for hypertension, 18% were more likely to visit the ER and 55% were more likely to be hospitalized out of county.

For mental health conditions, 81% of rural residents and 89% of very rural residents are hospitalized out of county versus 33% in urban areas. Additionally, 54% of South Carolina's uninsured rural residents are non-EA and more than 18% of rural residents who visit the emergency room have no source of insurance (SCORH Report, 2005). These results suggest increased morbidity and mortality, and unequal access to health care that influence health outcomes for rural residents in SC.

The Rural Environment

The rural environment differs from the urban environment in that rural areas have (a) increased exposure to herbicides, Freon and medicine, (b) contaminated ground water – from wells, and (c) low population density, (SCBCB, 2003), as well as cesspools for sewage, unpaved/dirt roads, lack of sidewalks, lack of garbage pick-up and the need

to use of city county dumps, and inadequate street lighting and exercise facilities (SCBCB, 2003; Patterson et al., 2004; Wilbur et al., 2009). In contrast, urban environments have: (a) increased exposure to carbon dioxide and radiation, (b) high population density, and lack of green space, and (c) structural decay (Lopez & Hynes, 2006; Murray et al., 2006). Although these have not been shown to affect levels of obesity among AAW. South Carolina ranks second for multiple myeloma, third for oral/pharynx and esophagus, fourth for pancreas, eight for cervical, and eleventh for stomach cancers (Johnson et al., 2005). Lacking is collaborative nursing research describing environment factors that influence morbidity and mortality levels of rural residents. Future studies must examine air pollution (i.e., herbicides, insecticides), and contamination of ground and well waters (i.e., Freon, chemicals) released from light manufacturing industries (Landmeyer, & Campbell, 2010) and their influence on the high cancer, CVD, and respiratory disease rates reported for SC residents (Johnson et al., 2005).

In socially disadvantaged areas, such as most rural areas, AAs frequently experience increased poverty, unequal distributions of quality and healthy food choices, and a lack of adequate facilities for physical activity, which are precipitatory factors for obesity (Baker et al., 2006; Morland & Filomena, 2006). Findings in a number of studies support (a) more overcrowding in homes/facilities, (b) more PA facilities but not enough affordable access to these facilities, (c) insufficient, and poor quality educational and health programs, (d) poor quality foods, (e) unsafe public transportation, and (d) lack of health care access and open spaces for PA as factors influencing increased obesity levels in AAW (Dis, 2002; Davis et al., 2005a; Eyler et al., 2002a; Richter et al., 2002). Thus,

the lack of access to affordable physical activity programs, inadequate time to participate in programs, and lack of familial encouragement and support are sociocultural factors related to increased obesity among urban AAW (Eyler et al., 2002a; Young et al., 2002).

Interventions in Rural Communities

Interventional research among obese, rural AAW is sparse because most studies on obesity includes urban AAW. Rural AAW are seldom included, and while some research finds increased obesity among high-income AAW, many of the studies fail to provide information to differentiate between residence and other demographic factors. In addition, most studies in rural communities are designed as quasi-experimental interventions that include community-based participatory research (CBPR) approaches for building community capacity and increasing social support and individual behavioral change for increased ownership of issues (Anderson-Loftin et al., 2005; Johnson et al., 2010; Parra-Medina et al., 2010; Zoellner et al., 2011). The majority of studies reviewed explore factors related to ethnic and racial differences in obesity levels, and psychosocial and health issues affecting AAs. Because of this, it is unclear if findings on obesity among urban AAW are applicable to rural AAW. Although both groups of women share some similar cultural experiences, such as low income and single heads of household, the contribution of a rural environment is unknown. Also unknown is whether rural and urban AAW share similar views about weight, food preparation and eating habits, or experiences of menopausal transition. Research supports familial and cultural practices (dietary, lifestyle, and social) as generational (Jefferson, et al 2010). Fewer studies focused on cultural factors related to increased obesity, dietary habits, and beliefs unique to AAW in the southeastern U.S., that hinder adoption of healthier practices. Therefore,

it is important to determine the role of culture and environment as a step toward understanding obesity among AAW.

Summary

This review of the literature was conducted to explore whether sociocultural factors such as dietary habits, food preference, and preparation techniques influence obesity and morbidity levels in AAW. Cultural beliefs and practices concerning obesity, and menopausal transition reported by AAW are also explored.

Two out of three Americans are overweight or obese and obesity-related chronic conditions negatively affect health outcomes for a number of diseases (CDC, 2010; McCrary et al., 2005; Moorman et al., 2009; Warren et al., 2012). The increasing cost for obesity-related chronic conditions is expected to increase proportionally with rates of obesity and aging (Finkelstein, Fiebelkorn, & Wang, 2003; Finkelstein et al., 2009). With more AAs than EAs being obese (MMWR, 2009; Ogden & Carroll, 2010a), and more than half AAs being 20 years of age or older, the related morbidity levels for AAW are high (Freedman, 2011; MMWR, 2009; Ogden et al., 2010b) and costly.

Menopausal AAW (aged 40- 64) have the highest levels of grade two and grade three BMI among ethnic groups of women in the U.S. (Flegal et al., 2012). In the southern U.S. one in ten AAW are morbidly obese (BMI greater than 40 kg/m²) (Jackson et al., 2005; Walker-Sterling, 2005) and South Carolina had one of the highest obesity rates with more than 66 percent of all adults being overweight or obese. Most were AAs (76 percent), 80 percent were women and more than 40 percent live in rural areas (CDC, 2010; SCDHEC, 2008b).

Although there are studies exploring the relationships among obesity, health status (diabetes, hypertension, cardiovascular diseases, and some cancers), physical activity (PA) and dietary intake among AAW (Beydoun et al., 2009; Thompson et al., 2009), most are conducted in metropolitan urban settings, feature racially diverse samples that have small subsamples and often report high attrition rates for AAW (Annesi & Whitaker, 2008; Gerber et al., 2009; Kannan et al., 2010; Kumanyika et al., 2005). The findings clearly indicate that high obesity levels in menopausal AAW influence their morbidity rates, but culturally specific studies that describe sociocultural and obesity-related factors influencing menopausal AAW living in rural areas are lacking.

Sociocultural factors are reportedly influenced by history, traditions, perceptions, and behaviors of AAW. They include perceptions of healthy and unhealthy foods, PA, body size, and obesity, as well as eating habits, food preparation techniques, and portion sizes (Airhihenbuwa et al., 1996; Fitzgibbon et al., 2008; Jefferson et al., 2010; Thompson et al., 2009). Although some research suggests that sociocultural factors influence both the foods chosen and consumed by AAW (Patt et al., 2004; Satia et al., 2004), Bramble et al. (2009), and Henderson (2007) reported that practices varied among AAW according to their geographic location and SES. Lacking is sufficient research to determine the influence of demographic factors (geographic location, and SES) on sociocultural factors related to dietary habits, PA, and obesity in rural AAW.

African American woman's perceptions of their weight derive from a number of sources that include AA men preference for overweight, fleshy, and full-figured women (Parasecoli, 2007) who are associated with comfort, stability, sincerity, hard work, good

mothers, and increased sexual and gastronomic pleasures. Research in this area, however, is sparse. Befort and associates (2008) concluded that negative health conditions were the factors most likely to motivate AAW to modify dietary, PA practices, and address lifestyle challenges that led to improved health. However, more research is necessary for understanding AAW's perceptions and motivations for maintaining a larger body size in light of the evidence that obesity is associated with increased morbidity. Results of such studies might elucidate barriers and point to why there is little success for most dietary and PA interventions developed specifically for AAW (Fitzgibbon et al., 2008; Hill, 2009; Rimmer et al., 2009).

Some studies suggest that during menopausal transition the health of many AAW and EA women is influenced by biological changes in hormone levels (Bromberger et al., 2009; Pinkerton & Zion, 2006; Segraves & Woodard, 2006; Soules et al., 2001). But unlike EA women, most AAW reported increased levels of vasomotor and depressive symptoms, and decreased psychological wellbeing during the transition to menopause - factors contributing to their increased obesity and morbidity levels (Bromberger et al., 2009; Garcia et al., 2007; Palmer et al., 2003; Pratt & Brody, 2008; Strickland, 2000). These findings support variations in menopausal women's experiences and indicate inconsistencies in evidence supporting universal symptomatology across racial and ethnic groups (Gold et al., 2000; Huffman et al., 2005 (Beydoun et al., 2009; Bromberger et al., 2009; Thompson et al., 2009; Avis et al., 2009b). Research that describes associations among menopausal status, sociocultural perceptions and practices, and levels of obesity is warranted to determine their influence on the health of AAW.

Increased levels of obesity linked to hormonal changes during MT also influence CVD, hypertension, diabetes, and dyslipidemia status (Sower et al 2005, 2007; Budoff et al., 2006) and symptomology for metabolic syndrome is well known (Kirkendoll et al., 2010). Few studies, however, have explored associations between AAW's high levels of hypertension, diabetes, dyslipidemia, and increased waist circumference for metabolic syndrome during MT (Kirkendoll et al., 2010). To increase the quality of healthcare more research to link these variables would help to educate clinicians for improving diagnosis of metabolic syndrome.

Nutritional and educational deficits, unhealthy eating habits, and inactivity are cited as factors attributed to obesity in AAW (Fitzgibbon et al., 2008; Thompson et al., 2009). Most AA's adhere to diets high in animal fats, sugar, salt, starch, and use traditional food preparation techniques that increase Kcal value (Brooten et al., 2012; James, 2004; Thompson et al., 2009). Although, older AAW report eating most of their meals at home (Gore, 1999; James, 2004) the nutritional value of many home-prepared meals is typically lacking (Houston et al., 2005; Jefferson et al., 2010). Sociocultural factors such as history, cultural beliefs about foods, lifestyle eating (Hargreaves et al., 2002; Sims et al., 2008) and the communal sharing of traditional foods at social events are all contributory factors, and influence levels of CVD, hypertension, and dyslipidemia among AAW.

Education levels did not influence fat consumption levels in a group of AAW in one study (Evans et al., 2009). However, other research reported that acculturated middle-class, suburban and urban AAW adopted food preparation techniques and eating

habits prevalent in their neighborhoods (Baltus, 2005; Kumanyika et al., 2008; Ogden et al., 2010b) which suggests that SES and environment do make a difference.

Most AAW do: (a) consume larger food portions, (b) don't measure portion size, (c) eat more meals outside the home, and (d) use more prepared, frozen and tinned foods during meal preparation (Gaston et al., 2011; Kishnan et al., 2010). These studies support sociocultural, and demographic factors as influencing dietary habits, food choices and preparation techniques in AAW (Baltus, 2005; Kumanyika et al., 2008; Ogden et al., 2010b), and support differences in eating habits based on demographic location (Deitz, 2001). No study, however, describes the relationships of these factors among rural and very rural, menopausal AAW.

Low PA levels - below CDC recommendations - (Eyler et al. 2002a; 2002b) are also a major factor influencing increased BMI and obesity levels among AAW (Eyler et al., 2002a; Kumanyika et al., 1993; Richter et al., 2002). Drayton-Brooks and White (2004) reported that most AAW perceive health as the ability to be active and declining health as an inevitable condition of aging. Many AAW also perceived being overweight and obese as attractive (Airhihenbuwa et al., 1995; Eyler et al. 2002a; Kumanyika et al., 1993; Sanderson et al., 2002). These findings are consistent with a number of researchers who suggest that AAW's decreased PA participation is due to negative perceptions and behaviors about PA such as (a) time spent away from work is for resting – not strenuous exercise, (b) lack of time to exercise, (c) increased time spent on hair care, (d) perceptions about obesity, and (e) lower resting metabolic rate (Albu et al. 1997; Drayton-Brooks & White, 2004; Harley et al., 2009; Thomas et al., 2009). Although the literature supports sociocultural barriers, attitude and perceptions as factors

influencing lack of PA studies focused on similar factors among menopausal AAW are lacking.

Gaps in the research also suggest that future studies must explore rural AAW's perceptions of what constitutes a healthy diet and what type PA model is necessary to decrease obesity-related chronic health conditions in this group (Gillan, Humphries, & Naquin, 2011; Henderson & Ainsworth, 2000; McAllister et al., 2010).

Though the number of community-based obesity interventions developed specifically for AAW is increasing, few interventions are effective at decreasing and maintaining healthy weights among obese AAW and even fewer are effective among rural AAW (Agurs-Collins et al., 2009; Bronner & Boyington, 2002; Van Duyn et al., 2007). Reasons suggested include inconsistencies with AAW's own perceptions of what constitutes a healthy diet and PA, as well as findings that AAW's perceptions are influenced by ethnicity, region, cultural and religious beliefs which are reported to affect the validity and reliability of many obesity interventions (Bronner & Boyington, 2002; Gillan et al., 2011; Henderson & Ainsworth, 2000; McAllister et al., 2010).

While the influence of SES on the health status of most AAW (education and income levels, employment, and marital status) is supported (Fitzgibbon, 2008; James, 2004; MMWR, 2009; Morland et al., 2002). Few studies reported on the influences of SES, and place of residence (rurality) on obesity and morbidity levels (Kumanyika et al., 2008; Dis, 2002). Even though demographic factors are linked to variable access to nutritional foods and rural residents' ability to engage in PA, studies describing rural AAW perceptions of their living environments and the effects of socio-demographic variability on food choice and availability, and dietary intake are particularly lacking.

The paucity of non-interventional studies (Palmer et al., 2003) aimed at exploring the relationships among culture, behavior, biology (menopausal transition), and demographic factors among AAW (Smith et al. 2007) residing in rural and very rural areas of the U.S. is a gap the proposed research aims to address. Such information is necessary to aid development and delivery of more culturally appropriate healthcare for ethnically diverse women.

CHAPTER III

RESEARCH DESIGN AND METHODS

Design

This study used a cross-sectional, correlational designed to describe the impact of demographic (education, income, employment, marital status, and rurality), biological (menopausal symptoms), cognitive (perceptions of body image/size, mental health, and knowledge of healthy eating), and behavioral (food choices, preparation techniques, portion size, and eating habits) factors on the health (BMI, obesity-related chronic health conditions) of AAW living in rural South Carolina.

Settings

The recruitment settings were nine clinics and three churches in South Carolina's Orangeburg, Calhoun, and Bamberg counties. All sites were privately owned. Four clinics were owned by the Regional Medical Center (RMC) hospital, and five were physician owned. Of the three churches, one was in Calhoun, and two were in Orangeburg County. The South Carolina Budget & Control Board and South Carolina Office of Rural Health Population estimates for counties and incorporated places lists Bamberg and Calhoun Counties as very rural because they have less than 16,000 residents. The largest towns in these two counties had less than 4,000 residents each. Orangeburg County was considered a rural county because it had less than one million residents, and its largest town had less than 14,000 residents. Orangeburg and Bamberg Counties were designated as partial health professional shortage areas and Calhoun as a total health professional shortage area due to limited access to health care for most of its rural residents.

Of the 1,175,520 women, ages 18 to 54 years living in South Carolina in 2011, 362,600 were AA, 783,590 were EA, and 29,330 were of other races. In 2011, county statistics were: 2,520 AA and 1,180 EA women in Bamberg; 1,650 AA and 1,850 EA women in Calhoun; and 15,640 AA and 6,980 EA women in Orangeburg (D. Gerald., personal communication, January 14, 2013, Appendices C & D). Key personnel from each of the clinics report that they each saw more than 800 AAW meeting the age criteria annually. Each pastor from two large African American and one multi-ethnic church reported congregations of more than 500 AAW.

Sample

A sample of 204 AAW aged 18 to 64 years was recruited for the study and 200 completed both sets of surveys, four women were lost to follow-up after RMC decided not to give information for contacting subjects. The 200 women were divided into four groups, each group having 50 women: (1) rural and pre-menopausal, (2) rural and menopausal, (3) very rural and pre-menopausal, and (4) very rural and menopausal. Inclusion criteria were: English speaking AAW between the ages of 18 and 64 years who lived in Orangeburg, Calhoun, or Bamberg County and had access to a private telephone. Rurality was determined by the town and county of residence for each woman. Women who had experienced either surgical removal of her ovaries (surgical menopause) or MT symptoms (episodes of erratic menses), and vasomotor symptoms for at least the previous twelve months were classified as “menopausal.” Women who had regular menses during the last 12 months with no menopausal transition symptoms and very young women (≤ 25 years) reporting episodes of erratic menses, were classified as “pre-menopausal.” Women were not excluded if they were taking hormone

replacement therapy (HRT), oral or injectable contraceptives. African American women who were pregnant, experiencing an episode of acute (i.e., cardiac, central nervous system, respiratory, or metabolic) illness, or who reported a history of dementia or cognitive deficiency were excluded.

Power Analysis

Research Question 1. Assuming an equal number of participants per cell (i.e., 50 participants for each condition), and expected mean difference of 10% between groups (i.e., rural vs. very rural; pre-menopausal vs. menopausal), an expected variance of 15%, and an alpha of .05, power was .81 for the main effects and .99 for the interaction effect (Faul, Erdfelder, Buchner & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2005).

Research Question 2. Assuming a medium effect size ($f = .20$) with alpha at .05 and 3 groups for the BMI outcome, a sample of 200 participants provides a power of 92%. For obesity-related chronic health conditions with 5 groups, a medium effect size ($f = .20$) and alpha at .05, a sample of 200 participants provides a power of 82% (Faul et al, 2009; 2005).

Research Question 3. Power for this research question is based on the power analyses for RQ2. Adding 5 covariates to the ANOVAs in the previous question, power is 86% for the BMI and 82% for the obesity-related chronic health conditions (Faul et al, 2009; 2005).

Procedure

Institutional Review Board approval was obtained from Florida International University (FIU) and the RMC – a hospital serving Orangeburg, Bamberg, and Calhoun counties in South Carolina. . The PI trained the Research Assistants (RAs) in South

Carolina about study procedures, confidentiality, and human subject protections in research. Both the PI and RAs completed the required Collaborative Institutional Training Initiative (CITI) trainings prior to the start of the study. Information pertaining to participant's involvement in the study was delivered verbally and via written consent forms written at the fifth grade reading level (Appendices E, F, and G). Women (100 pre-menopausal and 100 menopausal) who met the study's inclusion and exclusion criteria were recruited from nine clinics and three churches over a 9 month period.

Women were recruited from 4 RMC clinics, 5 non-RMC clinics, and 3 churches serving Bamberg, Calhoun, and Orangeburg counties. The PI described the study to key personnel at the RMC clinics (Drs. Trojanoska, Braswell, Crickman, Hayden, and clinical site managers Becky Fairey and Diane Murphy), the non-RMC clinics (Drs. Singleton, Padgett, McAlhaney, Dr. Grabowski, and Stephens), and the three churches (Pastors Richardson, Anderson, and Davis; church outreach directors, and chairs of women's groups). Each facility agreed to provide their assistance in coordinating study interviews with the AAW's next clinic visit, church group or study group meetings and identified the most suitable days and times to use private space in their facilities for collecting data.

The PI and RA recruited AAW via face-to-face interaction during clinic visits and church group meetings and through distribution of handouts and posted flyers in each facility. Eligible AAW attending the clinics or churches, staff members, their family members, personal contacts, and friends who responded to posted flyers or handouts or who requested inclusion were given a brief description of the study, screened for inclusion and exclusion criteria, and invited to join the study. All prospective participants

were informed that the research study was conducted by a SC Nurse Practitioner as part of her PhD program at FIU.

Before initiating data collection, the PI or RA, again, briefly described the woman's part in the study, answered her questions, and asked her to sign the informed consent form. Participation in the study was described as the AAW responding to a series of questions about demographic, biological, cognitive, and behavioral factors and their health and having their height and weight measured. Each meeting with a participant began with the PI providing an overview of the process. Participants were told that there were no wrong or right answers for items on any of the questionnaires, and that they were free to withdraw at any time. Participants were given the choice of having the PI or RA read all the questions to them or to complete the surveys themselves. Completion of questionnaires and taking height and weight measurements took 1.5 hours for participants who requested completion in a single session, and approximately 2 hours for participants who required assistance with completion (1 to 1.5 hours in person and 30 to 60 minutes in a follow-up interview).

Data Collection

Data were collected in two phases. The first was a 60-minute face-to-face meeting; the second was a 60-minute telephone interview. All items for each instrument were read to participants and responses recorded by the PI or RA during the two-hour interview. For participants requesting to complete the questionnaires during the clinic visit or church meeting the PI or RA gave an overview and instructions for completing each survey.

The PI or RA measured and recorded the participant's height and weight for calculating BMI, and helped her to complete the demographic form, BIAO, Block Food Frequency, and Mental Health Inventory questionnaires. The PI or RA then scheduled a 60-minute phone follow-up interview for completing the remaining questionnaires to occur within seven days. Participants received a \$7 gift card for completing part one of the surveys.

During the telephone interview, the PI or RA briefly reviewed the study, and reminded the AAW that there were no wrong/right answers, that she was free to stop the interview and not participate in the study. The PI or RA slowly read all questions from the Eating Behaviors and Chronic Condition Questionnaire (EBCCQ), the Food Preparation Questionnaire, and Traditional Food Habits Questionnaires to the participant and recorded her answers. At the close of the phone interview, each participant was asked to verify her mailing address. An \$8 gift card was mailed to her at that address. Participants who completed both surveys during their initial interview received a \$15 gift card at that time.

Dependent Variables

Health

Health had two indicators: BMI and the number of obesity-related chronic health conditions. Body mass index was calculated from height and weight and categorized as: (a) morbidly obese ($\text{BMI} \geq 40 \text{ kg/m}^2$), (b) obese ($30 - 39.9 \text{ kg/m}^2$), and (c) non-obese ($\leq 29.9 \text{ kg/m}^2$). The Joint Commission Accredited Detecto scale measures weight at a sensitivity of 0.25-pound increments and has a height bar that extends to 84 inches (7 feet) (see Appendix H). It was used to measure weight up to 350 lbs. at each of the nine

clinics. At the three churches, the electronically balanced Moderno Pro scale was used to measure weight up to 330 lbs. This scale measures weight at a sensitivity of 0.25-pound increments and has a platform width and depth of 13 inches (see Appendix I).

Participants were weighed in one layer of clothing (light pants/shorts/skirt, shirt/blouse or dress) without their shoes. Participants self-reported their weight if they weighed more than 350 pounds and were classified as morbidly obese (Appendix J). The height extension bar on the Detecto scale, or a wooden measuring rod was used to measure participant's height while standing upright, shoulders squared and barefoot, on the base of the scale or floor, and with their back to the bar/rod (wall). In the clinic the bar was placed on the crown of the bare head and flattened against the scalp. A wooden ruler was used in the same manner in each church.

Number of obesity-related chronic health conditions was the second health indicator. Participants were asked to indicate whether they had any of the following conditions: diabetes, hypertension, hyperlipidemia, chest pain; heart, cardiovascular, kidney, or liver diseases; asthma, sleep apnea, gastroesophageal reflux (GERD), or cancer; depression, anxiety, or bipolar disorder; chronic pain, spinal cord injury, amputation, or mobility problems. Additionally, participants were asked to provide the year when they were diagnosed with the condition. The total number of conditions was used in analyses. The respondent was asked whether she was taking medications for each condition. Each medication was recorded. The respondent was asked whether she was admitted to the hospital in the past 12 months. The date, diagnosis, and length of stay for each hospitalization were recorded (CDC, & National Center for Health Statistics, 2010). Women were asked to list three other chronic conditions (not included

in the list) that they currently experienced. These conditions were included in the total count of chronic health conditions. Higher numbers of chronic health conditions indicated greater ill health. The total number of obesity-related chronic conditions was categorized as: (a) none, (b) 1 to 2, (c) 3 to 5, (d) 6 to 10, and (e) 11 to 19.

Independent Variables

Biological factor refers to the woman's stage of menopause (pre-menopausal or menopausal) based on the regularity of menstrual periods in the last 12 months, and their scores on the Menopausal Rating Scale (MRS). Respondents were assigned to one of the two categories. Women under 25 years of age with erratic menses and/or cessation of menses because of long term hormonal contraceptives were also classified as pre-menopausal.

The 11-item MRS (see Appendix K) was used to measure respondents' MT symptoms during the past 12 months. The MRS has three subscales of menopausal symptoms – somatic, psychological, and urogenital. Ratings for severity of symptoms and complaints for each subscale ranged from 0 “not present” to 4 “very severe.” The somatic subscale contains 4 items on hot flashes, heart discomfort, sleeping problems, and muscle and joint problems. The psychological subscale contains 4 items on depressive mood, irritability, anxiety, physical and mental exhaustion. The urogenital subscale contains 3 items on sexual and bladder problems, and vaginal dryness (Heinemann, 2004). Higher summative total and subscale scores indicate more severe menopausal symptoms. Respondents with a score of 12 or higher and who reported that they had erratic menstrual periods in the last 12 months were categorized into the Menopausal category. Respondents scoring 11 or less were assigned to the Pre-

menopausal category. In a study with 1440 women in the US, the total MRS had an acceptable Cronbach's alpha of .88 (Heinemann, 2004; Schneider et al., 2000).

Cronbach's alpha score in this study were: .85 for the Psychological, .74 for the Somatic, .57 for the urogenital subscales, and .88 for the total MRS scale.

Cognitive Factors

The three cognitive factors in the study were: (1) perceptions of body size/image, (2) perception of mental health, and (3) knowledge of healthy eating.

Perceptions of body size/image were measured using the BIAO scale (see Appendix L). This scale includes a set of 18 gender-neutral body figures that progressively increased from very thin to very obese. Respondents were asked to indicate which figure best represented their current body size (CBS), ideal body size/image (IBS), and reasonable body size or the one that they could maintain over time (RBS; Williamson et al., 2000). Body size dissatisfaction was indicated by the difference between current and ideal body size (CBS - IBS) and between current and reasonable body size (CBS - RBS). Concurrent validity of the CBS and IBS discrepancy scores and the CBS and RBS discrepancy scores was supported by positive correlations with two measures of body dissatisfaction (Williamson, et al., 2000). In previous research, inter-rater reliability was supported by correlations of .75 – .83 between participant ratings of their body sizes and observer ratings, and test–retest reliability ranged from .65 to .93 for a sample of EA and AA men and women (Williamson et al., 2000). Many women chose smaller body size images than was a representation of their actual weight or BMI.

Mental health was measured with the two dimensions of psychological distress and psychological well-being in the 39-item Mental Health Inventory (MHI, Appendix

M). Women were asked to rate 36 items on a 6-point rating scale from 1 – Always/All of the time to 6 – Never/None of the time, 2 items on a 6-point scale from 1 - extremely happy/extremely depressed to 6 – very unsatisfied/not depressed, and one item on a 5-point rating scale from 1 - No, not in everything to 5 – Yes. Thirty items were reverse-coded, and the item ratings were added so that higher scores indicate greater psychological distress and psychological well-being (Manne, & Schnoll, 2001). The possible score range was 24 to 142 for psychological distress and 14 to 84 for psychological wellbeing (Davies, Sherbourne, Peterson, & Ware, 1998). In multi-ethnic samples, Cronbach's alphas ranged from .93 to .94 for Psychological Distress and .89 to .96 for Psychological Well-being (Heubeck, & Neill, 2000; Veit & Ware, 1983; Youngblut, & Broton, 2008; Youngblut, Broton, & Kuluz, 2005). Heubeck and Neil (2000). Cronbach's alphas were .94 for psychological distress, and .86 for psychological well-being

Knowledge of healthy eating referred to the women's knowledge of current dietary recommendations and guidelines for types of healthy and unhealthy foods and numbers of daily servings. Knowledge of healthy eating was measured by 9 items (items 26 to 34 in Appendix N). Participants were asked to name 5 foods in each of 8 food groupings: (1) fruit, (2) vegetables, (3) grains, (4) dairy, (5) healthy proteins, (6) healthy oils, (7) healthy snacks, and (8) unhealthy snacks. Each correct food counted as one point for a total of up to 40 points. Respondents were asked to identify the recommended daily servings of fruit, vegetables, grains, dairy, and proteins. Each correct answer counted as one point. The score for knowledge of health eating equaled the number of correctly identified foods for each of the eight food groupings plus the number of correct answers

on the daily servings' questions. Possible scores ranged from 0 to 45. Higher scores indicated a greater knowledge of healthy eating.

Behavioral Factors

The four behavioral factors are: (1) food choice, (2) portion size, (3) eating habits, and (4) food preparation techniques.

Food choice, defined by the types and amounts of foods eaten, was measured with the total daily calorie intake and daily grams of protein, carbohydrates, and fat. Portion size was defined as A and B and was computed from 101 food items Block Food Frequency Questionnaire (BFFQ). Portion size A was the number of daily servings for meats, dairy, vegetables, fruits, and grains. Portion size B was defined as the number of servings consumed divided by the number of recommended servings for each of the food groups. A score less than 1.0 indicated fewer servings than recommended, and a score greater than 1.0 indicated more servings than recommended.

The BFFQ was used to estimate the usual and customary intake of 110 food items for food choice and portion size. Respondents were asked to indicate how often they eat a particular food item using an 9-point rating scale (1 – Never, 9 – Every day) and the sizes of the portions of each food they eat using pictures of three to four serving sizes (depending on the food item). Completed BFFQ forms were sent to Berkeley Nutrition Services for scoring and analysis. The report included the total daily calorie intake; grams of protein, carbohydrates, and fat; the number of servings of meats, dairy, vegetables, fruits, nuts/seeds, grains; and oils, sugars, and minerals consumed each day.

The BFFQ food list was developed from the National Health and Nutrition Examination Survey (NHANES, 1999–2002) dietary recall data and includes ethnic

foods appropriate for AA participants. The nutrient database was developed from the U.S. Department of Agriculture (USDA) Nutrient Database for Dietary Studies, version 1.0 (Block, Wakimoto, & Block, 1998).

Using NHANES II data from 1050 participants, Block et al. (1986) compared the self-administered BFFQ's single, small, medium and large portion size measures against a food diary that consisted of a median portion size to determine if three levels of portion size (small, medium large) quantify the foods consumed. Results indicated correlation coefficients of $r = .54$ to $.90$ for the single (portion size), and $r = .73$ to $.94$ for the three levels (small, medium, large) portion size for Vitamin A.

Reliability of the BFFQ has been tested in multi-ethnic samples that included AAW (Brooten et al., 2012; Boucher et al., 2007; El-Serag, Satia, & Rabeneck, 2005; Markland et al., 2009; Stevens et al., 1996; Van Dam et al., 2006). Stevens and associates (1996) examined the BFFQ by ethnicity, gender, age, and education over three years in a subsample of 418 men and women (140 AAs, 279 EAs) aged 45 to 64 years enrolled in the Atherosclerosis Risk in Communities (ARIC) study. Median reliability coefficients for race and gender were higher in EA men $r = .63$, and EA women $r = .48$, and lower in AA men $r = .50$ and AA women $r = .45$. Subjects aged 45 to 49 years and those with more than 12 years of education tended to have higher reliability coefficients than older and less educated participants. Adjustment for age and education did not substantially change the trends for AA participants. In a sample of 96 Canadian women, initially Boucher et al. (2007) administered the BFFQ in two unannounced 24-hour recalls (FFQ1), and over a five month period (FFQ2) to determine reliability and validity of the BFFQ. Findings indicated medium to high reliability of $r = .75$, ranging from $r = .57$

(percentage energy from protein) to $r = .90$ (percentage energy from alcohol) for macronutrients, and from $r = .65$ (iron) to $r = .88$ (vitamin C) for micronutrients from supplements and food (Boucher et al., 2007).

El-Serag and associates (2005) compared the symptoms reported for gastro-esophageal reflux over the previous 12 months with the role of diet in 371 (AA = 163) participants, mean age 44 years, using the BFFQ. Results indicated dose response (validity) for saturated fats and cholesterol. Higher BMI was correlated with total fats, $r = .21$, total saturated fats, $r = .21$, and cholesterol, $r = .23$.

Eating habits was defined by frequency of eating unhealthy foods at home and outside the home, and consumption of traditional AA foods. First, frequency of eating unhealthy foods at home was measured by two items (Appendix N). Respondents were asked to indicate the frequency with which they ate fried and deep fried foods at home on a 6-point Likert scale with 1 = never, 2 = less than once a week, 3 = 1-3 times a week, 4 = 4-6 times per week, 5 = daily, and 6 = 2 or more times a day. Second, frequency of eating outside the home was measured with five items (Appendix N). Respondents were asked to indicate how often they ate at five different types of restaurants on an 8-point rating scale ranging from 1 = never, 2 = once a month, 3 = 2 to 3 times per month, 4 = once a week, 5 = 1-3 times per week, 6 = 4 to 6 times per week, 7 = daily, to 8 = 2 or more times a day. Third, consumption of traditional AA foods was measured using the 12-item Traditional Food Habits Questionnaire (Appendix O). Respondents were asked to indicate how often they ate each food item on a 9-point Likert scale with 1 = never, 2 = few times per year, 3 = once a month, 4 = 2 to 3 times per month, 5 = once a week, 6 = 2 times per week, 7 = 3 to 4 times per week, 8 = 5 to 6 times per week, 9 = every day.

Responses to the 12 items were summed to arrive at an eating habits score (the highest possible score being 108); higher scores indicate more unhealthy eating habits.

Food preparation techniques were defined as the techniques and seasonings used during food preparation. This was measured using two questionnaires. In the first, the 17-item Food Preparation Technique Questionnaire (Appendix P), participants were asked to indicate which technique they use to prepare each of the 17 food items. Food preparation techniques ranged from 1 to 9, with 1 = don't eat, 2 = baked or broiled, 3 = boiled in water no salt, 4 = boiled in water with salt, 5 = baked with breading or mix, 6 = fried in a little oil/fat /butter, 7 = barbequed and sauced, 8 = deep fried and floured, 9 = deep fried and battered. The highest possible score was 153, with higher scores indicating greater use of unhealthy food preparation techniques. The second questionnaire (Appendix N) consists of six items where participants indicate the frequency with which they use certain seasonings. Each item was measured using a five-point Likert scale (1 – Never, 5 – Daily). Since higher scores indicated more unhealthy food preparation, the item measuring healthy cooking techniques (i.e., use of herbs) were reverse-scored. Thus, the highest possible score for the set of items is 26. In addition, respondents were asked to list the herbs they use in food preparation. Each herb (considered healthier alternative seasoning) was given a score of one; the total number of points from the herbs listed was deducted from the total score of the six Likert-type items (indicating unhealthy cooking techniques). One point was added if participant did not use herbs to season foods. The score from the second questionnaire was added to the score from the first questionnaire; the highest possible total score was 180, with higher scores indicating greater use of unhealthy food preparation techniques.

Demographic Variables

The demographic variables were rurality (i.e., living in a rural or very rural county), and SES (i.e., income, education levels, employment, and marital status). Rurality was coded as “rural” or “very rural” place of residence based on the respondent’s county of residence and coded; 1 - Orangeburg, 2- Bamberg, and 3 – Calhoun county (Appendix N). Residence in Bamberg or Calhoun County was categorized as “Very Rural.” Residence in Orangeburg county was categorized as “Rural” (per the definition of rurality from SCBCB -Population Estimates 1950 – 2010, Appendix A; RHR, Appendix B). Marital status was coded as: 0 – single, 2 – married, 3 – separated/divorced, and 4 – widowed. Also, participants were asked if they were living with a partner. Responses were coded as 0 – not living with a partner and 1 – living with a partner. Educational attainment and household income were measured using ordinal scales (Appendix N).

Due to low frequency on several categories, educational attainment was classified as: 1- some high school or less, 2 – high school, 3 – Technical/vocational, 4 – some college/associate, 5 - bachelor’s degree, 6 – post graduate. Employment income was coded as: 0 – none, 1- under \$10,000, 2 – \$10,000 to \$29,999, 3 – \$30,000 to \$59,999, and 4 - \$60,000 and above (Appendix N). The number of hours employed per week was coded as: 1 = less than 20 hours and 2 = 20 hours or more. Participants also were asked if they were receiving additional income (SSA, SSI, retirement, disability, and child support), coded as: 0 = no, 1 = yes.

Data Analysis

The data were coded and entered in the Statistical Package for the Social Sciences (SPSS v20. IBM Corp., Armonk, NY), which was used to generate descriptive statistics, test continuous variables for normality, and perform analyses for research questions 1 through 3. Significance level was set to $\alpha = 0.05$. Descriptive statistics were calculated. Means and standard deviations were reported for continuous variables, and frequency and percent for categorical variables. Normality of continuous variables was tested using the Shapiro-Wilk test, and homogeneity of variance was assessed using Levene's test. Internal consistency reliability of scales with multiple items was calculated.

Research Question 1: Are there main and interaction effects of menopausal status and rural status on cognitive factors, behavioral factors, and health outcomes?

Hypothesis 1: There are main and interaction effects of menopausal status and rural status on cognitive factors, behavioral factors, and health outcomes.

Two-way ANOVA was used to test the main and interaction effects of menopausal and rural status on cognitive factors (perceptions of body image/size, mental health, and knowledge of healthy eating), and behavioral factors (food choice, preparation, portion size, and eating habits) for health outcomes (BMI, number of obesity-related chronic health conditions).

The Chi-square test of independence was used to test main and interaction effects of menopausal and rural status on health outcomes BMI, and obesity-related chronic health conditions.

Research Question 2: Are health outcomes (BMI, number of obesity-related chronic health conditions) related to cognitive factors (perceptions of body image/size, mental health, and knowledge of healthy eating) and behavioral factors (food choice, preparation techniques, portion size, eating habits)?

Hypothesis 2: Health outcomes (BMI, number of obesity-related chronic health conditions) are related to cognitive factors (perceptions of body image/size, mental health, and knowledge of healthy eating) and behavioral factors (food choice, preparation techniques, portion size, eating habits).

One-way ANOVA was used to assess if the health outcomes BMI and number of obesity-related chronic health conditions were related to cognitive and behavioral factors. To determine which pairs of means between BMI categories differed significantly, Scheffe's post-hoc test was used when the group variances were equal and Tamhane's post-hoc test was used when group variances were not equal (significant Levene's test, $p < .05$).

Research Question 3: Do these relationships remain when socioeconomic factors (education, income, employment, and marital status) are controlled?

Hypothesis 3: Relationships obtained in RQ 2 will remain significant when socioeconomic factors (education, income, employment, and marital status) are controlled.

The Analysis of Covariance (ANCOVA) was used to test the relationships in Research Question 2 when socioeconomic factors (education, employment income, other income- including SSA, SSI, retirement, and child support, number of hours employed per week, and marital status) are controlled.

CHAPTER IV

RESULTS

The purpose of this cross-sectional study was to describe the impact of demographic (education, income, employment, marital status, and rurality), biological (menopausal symptoms), cognitive (perceptions of body image/size, mental health, and knowledge of healthy eating), and behavioral (food choices, preparation techniques, portion size, and eating habits) factors on the health (BMI, number of obesity-related chronic health conditions) of AAW living in rural South Carolina. The study's research questions were: 1) Are there main and interaction effects of menopausal status and rural status on cognitive factors, behavioral factors, and health outcomes?

2) Are health outcomes (BMI, obesity-related chronic health conditions) related to cognitive factors (perceptions of body image/size, mental health, and knowledge of healthy eating) and behavioral factors (food choice, preparation techniques, portion size, eating habits)? and 3) Do these relationships remain when socioeconomic factors (education, income, employment, and marital status) are controlled?

Descriptive Findings on Sample

A sample of 204 African American women (AAW) aged 18 to 64 years were recruited for the study and 200 completed both sets of surveys; 4 women were lost to follow-up. The 200 women were recruited into four groups, each having 50 women: (1) rural and pre-menopausal, (2) rural and menopausal, (3) very rural and pre-menopausal, and (4) very rural and menopausal from nine clinics (three in Bamberg, four in Orangeburg, two in Calhoun) and three churches (two in Orangeburg and one in Calhoun) .

Demographics of the study sample are summarized in Table 1 for rural and very rural status, and Table 2 for menopausal and premenopausal status. All women were African American and lived in rural South Carolina. The average age of the participants was 42.8 years (SD = 13.9), with a range of 19 to 64 years. The majority of women (91.5%) had completed high school with 71.5% having some education beyond high school. Most were not married (87%) and slightly more than half (53%) were not living with a partner. Annual employment income was \$10,000 or less for 42%; 50 (25%) obtained income from other sources, including child support, disability, social security, and retirement income. More than half (61.5 %) worked 20 hours a week or more. Rural women had significantly more education than very rural women (Table 1).

Premenopausal women were significantly different than menopausal women on three demographic variables. Premenopausal women had significantly higher educational levels and significantly more were single and worked greater than 20 hours per week. (Table 2).

Table 1.

Descriptive Statistics Comparing Rural and Very Rural Status

	<u>Overall</u>	<u>Rural</u>	<u>Very</u>	
Demographic Variables	n (%)	n (%)	<u>Rural</u> n (%)	X²
Education				12.1*
Some high school or less	17 (8.5)	8 (8.0)	9 (9.0)	
High school graduate	40 (20.0)	14 (14.0)	26 (26.0)	
Technical/vocational	16 (8.0)	5 (5.0)	11 (11.0)	
Some college/Associate degree	53 (26.5)	26 (26.0)	27 (27.0)	
Bachelor's degree	44 (22.0)	26 (26.0)	18 (18.0)	
Post-graduate degree	30 (15.0)	21 (21.0)	9 (9.0)	
Marital status				0.7
Single	87 (43.5)	46 (46.0)	41 (41.0)	
Married	63 (31.5)	31 (31.0)	32 (32.0)	
Separated/divorced	40 (20.0)	18 (18.0)	22 (22.0)	
Widowed	10 (5.0)	5 (5.0)	5 (5.0)	
Living with a partner				0.1
No	106 (53.0)	54 (54.0)	52 (52.0)	
Yes	94 (47.0)	46 (46.0)	48 (48.0)	
Employment income in the				4.2

last 12 months				
None and under \$10,000	84 (42.0)	41 (41.0)	43 (43.0)	
\$10,000 – 29,999	63 (31.5)	29 (29.0)	34 (34.0)	
\$30,000 – 59,999	38 (19.0)	23 (23.0)	15 (15.0)	
\$60,000 and above	13 (6.5)	7 (7.0)	6 (6.0)	
No response [^]	2 (1.0)	0 (0.0)	2 (2.0)	
Had other sources of income ^a				0.1
Yes	50 (25.0)	24 (24.0)	26 (26.0)	
No	150 (75.0)	76 (76.0)	74 (74.0)	
Number of hours employed per week				3.3
Less than 20 hours	74 (37.0)	31 (31.0)	43 (43.0)	
20 hours or more	123 (61.5)	68 (68.0)	55 (55.0)	
No response [^]	3 (1.5)	1 (1.0)	2 (2.0)	

[^] No response category was excluded from Chi-square analysis.

^aSSI, SSA, child support, retirement, or disability

*p<.05

Table 2

Descriptive Statistics Comparing Menopausal and Pre-menopausal Status

	<u>Menopausal</u>	<u>Pre-</u> <u>menopausal</u>	<u>X²</u>
Demographic Variables	n (%)	n (%)	
Education			14.1*
Some high school or less	14 (14.0)	3 (3.0)	
High school graduate	20 (20.0)	20 (20.0)	
Technical/vocational	9 (9.0)	7 (7.0)	
Some college/Associate degree	18 (18.0)	35 (35.0)	
Bachelor's degree	21 (21.0)	23 (23.0)	
Post-graduate degree	18 (18.0)	12 (12.0)	
Marital status			27.7**
Single	26 (26.0)	61 (61.0)	
Married	39 (39.0)	24 (24.0)	
Separated/divorced	26 (26.0)	14 (14.0)	
Widowed	9 (1.0)	1 (1.0)	
Living with a partner			2.9
No	47 (47.0)	59 (59.0)	
Yes	53 (53.0)	41 (41.0)	

Employment income in the last 12 months 8.9

None and under \$10,000	34 (34.0)	50 (50.0)
\$10,000 – 29,999	32 (32.0)	31 (31.0)
\$30,000 – 59,999	25 (25.0)	13 (13.0)
\$60,000 and above	7 (7.0)	6 (6.0)
No response [^]	2 (2.0)	0 (0.0)

Had other sources of income^a 8.6**

Yes	34 (34.0)	16 (16.0)
No	66 (66.0)	84 (84.0)

Number of hours employed per week 0.9

Less than 20 hours	40 (40.0)	34 (34.0)
20 hours or more	58 (58.0)	65 (65.0)
No response [^]	2 (2.0)	1 (1.0)

[^] No response category is excluded from Chi-square analysis.

^aSSI, SSA, child support, retirement, or disability

*p<.05

**p<.01

Descriptive Findings on Dependent Variable

Health has two indicators: BMI and the number of obesity-related chronic health conditions (Table 3). Most women (69.5%) were in the obese and morbidly obese categories.

Many of the AAW (81.5%) had at least one obesity-related chronic health condition; 60% had between 1 and 5. The most common conditions were: hypertension (45.5%), mobility problems (41.0%), cardiovascular conditions (27%), and psychological conditions (20.5%) included bipolar, depression and anxiety disorders. Two women reported suicidal tendencies while taking antidepressants and were advised to follow-up with their psychiatrist. Three quarters (74.8%) of the women with one or more chronic health conditions were taking an average of 2.3 (SD = 3.34) medications. Almost one third (31%) of the AAW had been hospitalized in the previous year (Table 3).

TABLE 3

Descriptive Statistics of BMI and the Number of Obesity-Related Chronic Health Conditions.

Outcome Variables	n (%)
Body Mass Index (BMI) categories	
Normal (BMI < 30 kg/m ²)	61 (30.5)
Obese (BMI: 30 to 39.9 kg/m ²)	87 (43.5)
Morbidly obese (BMI ≥ 40 kg/m ²)	52 (26.0)
Number of obesity-related chronic health conditions	163 (81.5)
None	37 (18.5)
1-2	49 (24.5)
3-5	71 (35.5)
6-10	28 (14.0)
11-19	15 (7.5)
Obesity-related chronic health conditions	
Hypertension	91 (45.5)
Mobility Problems	82 (41.0)
Cardiovascular	54 (27.0)
Chronic Chest Pain	17 (8.5)
Heart Disease	12 (6.0)
Circulation Problems	16 (8.0)
Cardiovascular Disease	5 (2.5)

Blood Clotting problems	4 (2.0)
Psychological Conditions	41 (20.5)
Diabetes	41 (20.5)
Asthma	33 (16.5)
GERD	30 (15.0)
Sleep Apnea	27 (13.5)
Hyperlipidemia	22 (11.0)
Renal/Hepatic failure	7 (3.5)
Chronic pain	23 (11.5)
Mobility Problem	82 (41.0)
Spinal cord Injury	7 (3.5)
Amputee	2 (1.0)
Other Health problems	23 (11.5)
Taking Medications	
Yes	122 (61.0)
No	75 (37.5)
No response	3 (1.5)
Hospitalized in previous year	
1-2 times	34 (17.0)
3-4 times	28 (14.0)
No response	11 (5.5)

Descriptive Findings on Independent Variables

The biological factor is the woman's stage of menopause (pre-menopausal and menopausal) based on the regularity of menstrual periods in the previous 12 months. In the pre-menopausal group, 20 (10%) women reported frequent periods, 17 (8.5%) reported spotting between periods, and 2 (1.0%) reported cessation of menses because of the use of injectable and cervical hormonal contraceptives (i.e., medroxyprogesterone acetate, etonogestrel/ethinyl estradiol vaginal), or medical conditions (e.g., uterine fibroids, endometriosis) that caused menstrual irregularities. The menopausal women's MRS scores ($M = 11.4$, $SD = 8.9$) were significantly higher than the MRS scores ($M = 6.6$, $SD = 5.5$) for the pre-menopausal women ($t = 4.9$, $p < .001$), as expected. Very rural women's MRS scores ($M = 8.0$, $SD = 7.6$) were higher than rural women's MRS ($M = 6.8$, $SD = 7.2$), but the difference was not significant ($t = -1.1$, $p = 0.27$).

Descriptive Findings on Cognitive Factors

The three cognitive factors in the study were: (1) perceptions of body size/image (BIAO), (2) perceptions of mental health (MHI) and (3) knowledge of healthy eating (Table 4). The means for the BIAO indicated that women perceived their current body size/image as bigger than both their reasonable and ideal body size. Body size dissatisfaction was indicated by the difference between current and ideal body size (CBS - IBS) and between current and reasonable body size (CBS - RBS). The mean for dissatisfaction with their current body size was lower than the mean for their current body size, indicating that women were not very dissatisfied with their body size.

On average, women rated their psychological well-being as higher than their psychological distress on the MHI (Appendix M). The mean for psychological well-

being was on the higher part of its range, and the mean for psychological distress was on the lower part of its range.

The Knowledge of Healthy Eating scale asked women to name 5 food items that belonged in each of the 8 food groupings (fruits, vegetables, grains, dairy, healthy proteins, healthy oils, healthy snacks, and unhealthy snacks), and to indicate the recommended daily servings for items in 5 food groupings: meat/protein (2-3), dairy (2-3), grains (6-11), vegetables (3-5), and fruits (2-4) (Table 5). Most women correctly named five fruits (87.5%) and five vegetables (80.5%). About half correctly named 4 or 5 dairy, healthy snacks, and unhealthy snacks. About 40% correctly named 4 or 5 grains and meat/healthy proteins. Only 28% could name 4 or 5 healthy oils. One out of five women could not correctly name any meat/healthy proteins, healthy oils, or healthy snacks. More than half knew the correct number of daily servings for fruits, vegetables, dairy, and meats/healthy proteins. However, few women knew the correct number of daily servings of grains.

TABLE 4.

Descriptive Statistics of Cognitive Factors

COGNITIVE FACTORS	n	Mean	SD
Body Image			
Current body image	199	8.5	3.4
Ideal body image	199	6.0	2.3
Reasonable body image	199	6.6	2.5
Dissatisfaction	199	3.0	3.4
Mental Health			
Psychological distress	187	40.3	15.5
Psychological well-being	191	45.2	8.9

Table 5.

Descriptive Statistics of Knowledge of Healthy Eating.

	Fruits	Vegetables	Grains	Dairy	Meat/Healthy Proteins	Healthy Oils	Healthy Snacks	Unhealthy Snacks
Number Correct (N = 200)								
5	175 (87.5%)	161 (80.5%)	53 (26.5%)	65 (32.5%)	66 (33%)	36 (18%)	87 (43.5%)	83 (41.5%)
4	6 (3%)	13 (6.5%)	28 (14%)	42 (21%)	22 (11%)	20 (10%)	19 (9.5%)	21 (10.5%)
3	3 (1.5%)	6 (3%)	26 (13%)	46 (23%)	23 (11.5%)	32 (16%)	25 (12.5%)	39 (19.5%)
2	0 (0%)	4 (2%)	39 (19.5%)	24 (12%)	31 (15.5%)	43 (21.5%)	20 (10%)	16 (8%)
1	0 (0%)	0 (0%)	24 (12%)	2 (1%)	15 (7.5%)	24 (12%)	8 (4%)	11 (5.5%)
0	16 (8%)	16 (8%)	30 (15%)	21 (10.5%)	43 (21.5%)	45 (22.5%)	41 (20.5%)	30 (15%)
Correct daily servings (N = 200)								
Yes	129 (64.5%)	102 (51%)	16 (8%)	109 (54.5%)	133 (66.5%)	NA	NA	NA
No	71 (35.5%)	98 (49%)	184 (92%)	91 (45.5%)	67 (33.5%)			

Descriptive Findings on Behavioral Factors

The four behavioral factors were: (1) food choice, (2) portion size, (3) eating habits, and (4) food preparation techniques. From the Block Food Frequency questionnaire (BFFQ, table 6), usual and customary daily intake of 110 food items provided estimates of total daily food energy (kcal) and total daily grams of protein consumed. The number of kcal varied from 144 to 10,246. Grams of carbohydrates consumed each day were three times greater than grams of protein and fat.

Portion sizes based on the pyramid group were calculated for fruits, vegetables, grains, meats/protein, and dairy. Number of daily servings for each pyramid group was divided by the number of recommended servings for age for each of the 200 women. The highest mean number of daily food pyramid servings was for total grains, followed by meats. The mean number of servings consumed was about 1 for fruits, vegetables, and dairy. The percentage of recommended daily servings shows a diet higher than recommended in meats and much lower than recommended in dairy foods.

The eating habits scale included items in the EBCCQ (see Table 6). High numbers of women cooked with salted meats, battered and fried vegetables and meats, used salt based spices (e.g. Seasoned salt, Lawry, Sazon, Adobe, - Not Sea Salts) and marinades (e.g. pepper, Worcestershire, steak sauce), and ate fried foods and deep fried foods (i.e., chicken, fish, shrimp, clams, or onion rings) at home each between 1 and 3 times a week (Table 7). Higher numbers of women ate at fast food and traditional restaurants between 1 and 3 times a month. More than half ($n = 115$, 57.5%) of the women used herbs (e.g. parsley, thyme, oregano, Italian, [mixed herbs]) in their cooking, most between 1 and 2 herbs.

Table 6.

Descriptive Statistics of Behavioral Factors

BEHAVIORAL FACTORS	n	Mean	SD
Food choices			
Protein, gms	200	70.7	53.3
Fat, gms	200	79.3	63.3
Carbohydrate, gms	200	245.5	195.7
Food energy, kcals	200	1960.7	1503.3
Portion size:			
Number of daily servings			
Fruits	200	1.2	1.1
Vegetables	200	1.3	1.1
Grains, total	200	5.0	4.3
Meat/Protein	200	4.5	3.9
Dairy	200	0.9	0.9
Percent of recommended daily serving size			
Fruits	200	67.8	56.3
Vegetables	200	93.2	79.8
Grains, total	200	74.6	64.8
Meat/protein	200	121.4	106.1
Dairy	200	27.0	26.9
Food preparations			
Traditional food preparation techniques	185	51.7	14.9
Eating Habits	191	34.3	7.8

Table 7

Descriptive Statistics of Eating Behaviors

Eating Behaviors	Never	< 1 time a week	1-3 times a week	4-6 times a week	Daily
Cook vegetables with: (n = 199)					
Smoked meats	52 (26.0)	85 (42.5)	48 (24.0)	9 (4.5)	5 (2.5)
Salted meats	62 (31.0)	78 (39.0)	42 (21.0)	11 (5.5)	6 (3.0)
Flour (bread/batter) meat, vegetables for frying (n = 199)	38 (19.0)	75 (37.5)	68 (34.0)	6 (3.0)	12 (6.0)
Use salt-based:					
Spices to season (n=198)	32 (16.0)	64 (32.0)	55 (27.5)	20 (10.0)	27 (13.5)
Sauces/marinades (n=199)	36 (18.0)	68 (34.0)	67 (33.5)	15 (7.5)	13 (6.5)
At Home, eat:					
Fried foods (n=200)	11 (5.5)	81 (40.5)	84 (42.0)	17 (8.5)	7 (3.5)
Deep fried foods (n=193)	2 (1.0)	20 (10.0)	93 (46.5)	69 (34.5)	9 (4.5)

Type of restaurant eat in/from	Never	Once a month	2-3 times a month	1-3 times a week	4-6 times a week	Daily	2 or more times a day
Country Kitchens (n=183)	4 (2.2%)	4 (2.2%)	42 (21%)	68 (34%)	40 (20%)	23 (11.5%)	2 (1%)
Fast food chain (n=198)	2 (1%)	1 (0.5%)	14 (7%)	98 (49%)	25 (12.5%)	49 (24.5%)	9 (4.5%)
Seafood (n=199)	3 (1.5%)	1 (0.5%)	43 (21.5%)	127 (63.5%)	14 (7%)	8 (4%)	3 (1.5%)
Barbeque (n=200)	0 (0%)	3 (1.5%)	58 (29%)	130 (65%)	5 (2.5%)	3 (1.5%)	1 (0.5%)
Ethnic (e.g., Chinese, Japanese, Mexican) (n=199)	29 (14.5%)	88 (44%)	56 (28%)	16 (8%)	7 (3.5%)	3 (1.5%)	0 (0%)

Research Question 1: Are there main and interaction effects of menopausal status and rural status on cognitive factors, behavioral factors, and health outcomes?

Hypothesis 1: There will be significant main and interaction effects of menopausal status and rural status on cognitive factors, behavioral factors, and health outcomes.

Cognitive Factors. Results indicated that a statistically significant interaction between menopausal and rural status for ideal body image and body image dissatisfaction. Menopausal status had a significant effect on body image dissatisfaction, but not knowledge of healthy eating scores. Menopausal women were more dissatisfied with their body image/size than premenopausal women. The main effect for rural status and the interaction between rural and menopausal status were not statistically significant for psychological distress, psychological wellbeing, and knowledge of healthy eating (Table 8).

Behavioral Factors. Rural status had a statistically significant main effect on portion size of vegetables and fruits, with rural women eating more of these than very rural women. However, the main and interaction effects were not statistically significant for: food choices, percent of recommended daily servings, traditional food preparation techniques, and eating habits (Table 9).

Table 8.

Two-way ANOVA: Cognitive and Behavioral Factors Grouped by Menopausal Status and Rural Status.

	Menopause Status		Rural Status		Two-Way ANOVA		
	Menopause	Pre Menopause	Rural	Very Rural	Menopause Status	Rural status	Interaction
	M (SD)	M (SD)	M (SD)	M (SD)	F	F	F
COGNITIVE FACTORS							
Current body size (CBS)	8.7 (3.7)	.2 (3.2)	8.2 (3.4)	8.7 (3.5)	1.0	1.0	1.3
Ideal body size (IBS)	5.8 (2.4)	6.3 (2.1)	5.8 (2.3)	6.3 (2.2)	2.0	2.9	7.1**
Reasonable body size (RBS)	6.4 (2.6)	6.8 (2.3)	6.4 (2.5)	6.8 (2.5)	1.5	1.2	1.6
Body size Dissatisfaction	4.1 (3.8)	1.9 (2.5)	3.3 (3.7)	2.7 (3.1)	26.7**	2.0	29.4**
Mental Health Psych. Distress	40.8 (15.9)	39.8 (39.8)	40.1 (17.0)	40.5 (13.9)	0.1	0.04	2.7
Psych. wellbeing	44.5 (8.9)	45.8 (8.9)	44.2 (9.7)	46.1 (8.0)	1.0	2.3	0.5

Knowledge of healthy eating	32.2 (8.2)	32.8 (7.1)	33.2 (7.7)	31.7 (7.7)	0.1	1.7	1.3
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Table 9.

Main and Interaction Effects of Menopausal and Rural Status on Behavioral Factors.

	Menopause		Rural		Two-Way		
	Status		Status		ANOVA		
	Menopause	Pre-Menopause	Rural	Very Rural	Menopause Status	Rural status	Interaction
	M (SD)	M (SD)	M (SD)	M (SD)	F	F	F
Food Choices							
Protein, gms	70.8 (49.7)	70.6 (57.0)	57.4 (67.2)	67.2 (49.0)	0.001	0.9	0.7
Fat, gms	77.8 (58.8)	80.7 (67.8)	63.8 (78.7)	78.7 (63.2)	0.1	0.01	0.4
Carbohydrate, gms	240.7 (194.6)	250.4 (197.6)	194.5 (235.9)	235.9 (197.3)	0.1	0.5	<.001

Food energy, kcal	1923 (1418)	1999 (1590)	2015 (1518)	1906 (14.94)	0.1	0.3	0.1
Portion size: Number of daily servings							
Fruits	1.2 (1.1)	1.1 (1.1)	1.4 (1.2)	1.0 (1.1)	0.4	3.9*	0.2
Vegetables	1.5 (1.1)	1.2 (1.1)	1.5 (1.3)	1.2 (0.9)	2.8	4.9*	0.03
Grains, total	4.7 (3.8)	5.3 (4.8)	5.1 (4.5)	4.9 (4.1)	0.9	0.1	0.3
Meat/Protein	4.5 (4.0)	4.5 (3.9)	4.7 (4.0)	4.3 (3.9)	0.01	0.5	0.9
Dairy	1.0 (0.9)	0.9 (0.8)	1.0 (0.9)	0.9 (0.8)	0.4	0.07	0.3
Portion size: Percent of recommended daily serving size							
Fruits	73.6 (56.9)	62.0 (55.5)	74.8 (57.8)	60.9 (54.2)	2.1	3.1	0.5
Vegetables	101.1 (75.5)	85.2 (83.5)	104.2 (93.7)	82.2 (61.5)	2.0	3.9	0.1
Grains, total	68.9 (53.6)	80.4 (74.2)	76.9 (70.1)	72.3 (59.3)	1.6	0.2	0.7
Meat/Protein	120.9	121.9	128.0	114.9			

	(102.8)	(109.9)	(118.4)	(92.4)	0.004	0.8	1.2
Dairy	28.2	25.7	28.4	25.5			
	(26.6)	(27.3)	(29.6)	(23.9)	0.4	0.6	0.2
Food	52.5	51.1	49.6	53.7			
Preparations	(16.1)	(13.9)	(14.9)	(14.8)	0.3	3.7	1.5
Eating Habits	33.5	34.9	33.7	34.8			
	(6.5)	(8.8)	(7.6)	(7.9)	2.6	2.0	1.5

Health Outcomes

Main and interaction effects of menopausal status and rural status on BMI categories were tested with chi-square test for association. Categories are used for BMI rather than actual scores because some of the women weighed more than the scale's upper limit. There was a statistically significant association between BMI category and menopausal status, but not rural status. Menopausal women were heavier than the pre-menopausal women (Table 10).

Four groups were created to represent the interaction effect - menopausal and rural, menopausal and very-rural, pre-menopausal and rural, and pre-menopause and very-rural status. The Chi-square test on the differences on BMI categories across the four interaction groups was not statistically significant.

Main and interaction effects of menopausal and rural status on the number of obesity-related chronic health conditions were tested with a two-way ANOVA. Menopausal status had a significant effect on number of obesity related chronic conditions. Menopausal women had more chronic health conditions than pre-menopausal women. The main effect for rural status and the interaction between rural and menopausal status were not statistically significant (Table 11).

Table 10.

Main and Interaction Effects of Menopausal and Rural Status on BMI Categories

	BMI Categories			X²
	Normal	Obese	Morbid	
	(N = 61)	(N = 87)	(N = 52)	
	n (%)	n (%)	n (%)	
Menopausal status				6.8*
Menopause	2	41	32	
	7 (44%)	(47%)	(62%)	
Pre-menopause	3	46	20	
	4 (56%)	(53%)	(38%)	
Rural status				2.7
	3	44	21	
Rural	5 (57%)	(51%)	(40%)	
	2	43	31	
Very rural	6 (43%)	(49%)	(60%)	
Rural x Menopausal status				3.3
	1	25	10	
Rural/menopause	5 (25%)	(29%)	(19%)	
	2	19	11	
Rural/pre-menopause	0 (33%)	(22%)	(21%)	

	1	16	22
Very rural/menopause	2 (19%)	(18%)	(42%)
Very rural/pre-	1	27	9
menopause	4 (23%)	(31%)	(18%)

Table 11.

Main and Interaction Effects: Number of Obesity-Related Chronic Health Conditions by Menopausal Status and Rural Status

Effects	Number Chronic Health Conditions M (SD)	F
Menopausal Status		47.9*
Menopause	2.2 (1.1)	
Pre-Menopause	1.2 (1.0)	
Rural Status		0.8
Rural	1.6 (1.2)	
Very Rural	1.6 (1.1)	
Interaction effect		2.9

*p < .001

Research Question 2: Are health outcomes (BMI, obesity-related chronic health conditions) related to cognitive factors (perceptions of body image/size, mental health, and knowledge of healthy eating) and behavioral factors (food choice, preparation techniques, portion size, eating habits)?

Hypothesis 2: Health outcomes (BMI, obesity-related chronic health conditions) will be related to cognitive factors (perceptions of body image/size, mental health, and knowledge of healthy eating) and behavioral factors (food choice, preparation techniques, portion size, eating habits).

Although correlational analyses were planned for this research question, actual BMI could not be calculated for the women who weighed more than the scale's limit. The BMI categories were used as the health outcome and the analyses changed to one-way ANOVAs with Scheffe tests for post hoc comparisons (Table 12). For cognitive factors, morbidly obese women rated their current, ideal, and realistic body sizes/images significantly higher than the normal and obese women. Similarly, obese women rated these variables as significantly higher than the normal women. Obese and morbidly obese women were significantly more dissatisfied with their body size/image than normal women. Differences in mental health and knowledge of healthy eating were not statistically significant.

Few behavioral factors differed significantly across BMI groups. Morbidly obese women ate significantly more servings of meat/protein per day than the obese women. Women in all three groups ate less than the number of recommended servings of grains per day; however, on average, morbidly obese women consumed a significantly higher proportion (91%) of the recommended servings of grain, closest to the recommended

number. Although group differences were not significant, women in all three groups exceeded the recommended servings of meat/protein but ate only 25-30% of the recommended number of servings of dairy products. Food preparation techniques used by normal and obese women were significantly healthier than those used by morbidly obese women. Differences by BMI group in the amount of protein, fats, carbohydrates and food energy consumed and eating habits were not statistically significant.

Table 12.

BMI: Cognitive and Behavioral Factors With and Without Covariates.

	BMI				Covariate
	Normal	Obese	Morbidly Obese		
				F	F
Cognitive Factors					
Current body size/image	5.3 (2.3) ^{ab}	8.6 (2.0) ^{ac}	11.8 (3.1) ^{bc}	101.7**	183.99**
Ideal body Size/image	4.5 (1.6) ^{ab}	5.8 (1.9) ^{ac}	8.1 (1.8) ^{bc}	55.0**	101.61**
Reasonable body Size/image	4.7 (1.8) ^{ab}	6.7 (2.1) ^{ac}	8.8 (1.9) ^{bc}	64.6**	104.41**
Body image/size dissatisfaction	1.3 (2.4)	3.6 (2.1)	3.8 (4.3)	11.8**	12.43**
Psychological Distress	39.3(14.9)	38.3(13.8)	45 (18.3)	3.0	1.18
Psychological Well-being	46.1 (9.1)	45.3 (9.2)	43.9 (8.2)	0.8	2.99
Knowledge of Healthy Eating	34.0 (7.6)	32.6 (7.7)	30.8 (7.5)	0.1	1.69
Behavioral Factors					
Food Choices					
Protein, gms	68.3(53.5)	63.6 (43.0)	85.4 (65.7)	2.9	0.82
Fats, gms	74.8(58.4)	72.2 (48.3)	96.3 (85.5)	2.6	1.11
Carbohydrates, gms	248 (200.1)	221 (140.8)	284 (257.5)	1.7	0.30
Food Energy, kcals	1924 (1483)	1774 (1128)	2315 (1973)	2.2	0.58
Portion size: Number of daily servings					
Fruits	1.2 (1.2)	1.2 (0.9)	1.3 (1.3)	0.1	0.09
Vegetables	1.4 (1.2)	1.3 (1.1)	1.3 (1.1)	0.4	0.002

Grains, total	5.0 (4.0)	4.4 (3.5)	6.1 (5.5)	2.6	0.53
Meat/Protein	4.2 (3.7)	4.0 (3.1) ^a	5.7 (5.1) ^a	3.5*	1.22
Dairy	0.8 (0.8)	0.9 (0.8)	1.1 (1.0)	1.7	1.38
Portion size: Percent of recommended daily serving size					
Fruits	70.5 (60.3)	68.2 (53.6)	64.0 (57.0)	0.2	0.02
Vegetables	97.9 (89.2)	91.8 (78.1)	89.7 (71.8)	0.2	0.22
Grains, total	77.6 (60.0)	63.0 (51.4)	90.6 (84.8)	3.1*	0.39
Meat/Protein	115 (106.8)	110 (95.3)	48 (119.3)	2.2	0.45
Dairy	24.5 (25.1)	25.5 (26.4)	32.2 (29.5)	1.4	1.23
Food Preparations	49.5 (14.8) ^a	50.2 (15.1) ^b	57 (13.7) ^{ab}	4.2*	1.75
Eating Habits	33.4 (7.6)	34.9 (8.9)	34.1 (5.7)	0.6	0.23

*p<.05

**p<.01

One-way ANOVAs were conducted to test the differences in cognitive and behavioral factors across categorized obesity- related chronic health conditions. Women's ratings of their current, ideal, and reasonable body size/image and dissatisfaction with body size/image were significantly higher for those with greater numbers of chronic health conditions. Women with greater numbers of obesity-related chronic conditions had significantly higher psychological distress and significantly lower psychological wellbeing. Behavioral factors were not significantly different across groups based on number of obesity-related chronic conditions (Table 13).

Table 13.

Obesity Related Chronic Health Conditions: Cognitive and Behavioral Factors With and Without Covariates.

	Chronic Health Conditions					F	Covariate
	None	1-2	3-5	6-10	11-19		F
Cognitive Factors							
Current body size/image	7.8 (3.2)	7.8 (3.1)	8.3 (2.8)	9.8 (3.9)	10.7 (4.9)	3.9*	11.99**
Ideal body Size/image	5.7 (2.2)	5.6 (2.3)	5.9 (2.1)	6.8 (2.4)	7.3 (2.4)	3.0*	10.71**
Reasonable body Size/image	6.2 (2.2)	6.3 (2.4)	6.5 (2.4)	7.5 (2.8)	7.7 (2.7)	2.2	6.96**
Body image/size dissatisfaction	1.9 (3.0)	2.2 (3.0)	3.0 (2.9)	5.1 (4.2)	4.0 (4.7)	5.0**	17.4**
Psychological Distress	36.4 (13.9)	36.2 (11.6)	40.2 (15.9)	47.7 (16.7)	49.4 (19.1)	4.2**	7.83**
Psychological Well-being	46.3 (9.6)	46.7 (8.5)	45.7 (8.7)	41.1 (9.0)	42.2 (7.5)	2.4*	10.61**
Knowledge of Healthy Eating	31.4 (7.5)	34.9 (7.1)	31.8 (7.2)	33.0 (9.1)	30.0 (8.8)	1.5	0.65

Behavioral Factors							
Food Choices							
Protein, gms	70.0 (58.7)	62.2 (49.1)	72.3 (56.8)	73.7 (46.2)	87.3 (49.9)	0.7	0.30
Fats, gms	76.0 (65.6)	71.5 (56.4)	81.6 (66.0)	85.7 (74.3)	89.2 (46.5)	0.4	0.04
Carbohydrates gms	236.2 (219.1)	221.6 (151.8)	249.3 (178.5)	279.5 (285.0)	265.6 (143.7)	0.5	0.08
Food Energy, kcals	1890 (1651)	1755 (1239)	2005 (1495)	2176 (1934)	2193 (1066)	0.5	0.001
Portion size: Number of daily servings							
Fruits	1.2 (1.4)	1.0 (0.9)	1.2 (1.1)	1.5 (1.4)	1.2 (0.9)	0.8	0.10
Vegetables	1.2 (1.0)	1.2 (1.1)	1.3 (1.0)	1.7 (1.3)	1.7 (1.5)	0.1	0.60
Grains, total	5.0 (4.4)	4.3 (3.2)	5.3 (4.7)	5.4 (5.2)	5.5 (3.2)	0.5	0.004
Meat/Protein	4.3 (3.8)	4.1 (4.5)	4.4 (3.9)	4.8 (2.9)	6.2 (4.4)	0.9	0.01
Dairy	0.9 (0.8)	0.8 (0.7)	1.0 (1.0)	0.9 (0.9)	0.7 (0.6)	0.8	3.13
Portion size: Percent of recommended daily serving size							
Fruits	73.2 (64.4)	58.7 (49.9)	65.8 (54.2)	86.7 (64.3)	58.6 (45.5)	1.3	0.38

Vegetables	87.4 (79.5)	84.2 (82.1)	91.2 (68.3)	111.7 (87.6)	111.1 (108.1)	0.8	0.15
Grains, total	74.5 (66.1)	62.7 (47.1)	79.3 (74.1)	79.8 (72.9)	81.8 49.2)	0.6	0.002
Meat/Protein	123.2 (123.5)	107.0 (95.9)	121.2 (114.5)	122.4 (68.7)	163.3 (110.0)	0.8	0.45
Dairy	27.1 (26.4)	23.0 (21.6)	31.5 (31.6)	26.0 (26.1)	19.9 (19.2)	1.1	3.53
Food Preparations	49.5 (11.3)	51.8 (14.1)	53.3 (17.1)	50.1 (13.5)	51.8 (17.4)	0.4	0.23
Eating Habits	34.7 (8.0)	33.3 (6.7)	34.1 (9.0)	35.8 (6.0)	33.8 (7.0)	0.5	0.34

* p<.05

**p<.01

Research Question 3: Do these relationships remain when socioeconomic factors (education, income, employment, and marital status) are controlled?

Hypothesis 3: These relationships will remain when socioeconomic factors (education, income, employment, and marital status) are controlled.

Body Mass Index

Controlling for education, income, employment, and marital status with one-way ANCOVAs differences in current, ideal, and reasonable body size/image, and body/image dissatisfaction by BMI groups remained significant (Tables 12). However, differences between BMI groups on behavioral factors were no longer statistically significant.

Obesity Related Chronic Health Conditions

Groups based on numbers of obesity-related chronic health conditions remained significantly different on current, ideal, and reasonable body size/image; body size/image dissatisfaction; and psychological distress and wellbeing when demographic covariates were controlled (Table 13). Differences between these groups on behavioral factors remained non-significant.

Summary

Results from data analyses in this cross-sectional study to describe the impact of demographic, biological, cognitive and behavioral factors on the health of AAW living in rural South Carolina found a statistically significant interaction between menopausal and rural status for ideal body size/image and body size/image dissatisfaction. Menopausal women also reported significantly greater body size/image dissatisfaction than pre-menopausal women. Rural women had a significantly greater intake of daily servings of fruits and vegetables than very rural women. Also, menopausal women had significantly more obesity-related chronic conditions than pre-menopausal women. More menopausal women were in the morbidly obese BMI group than pre-menopausal women.

Both BMI groups and groups based on the number of obesity-related chronic health conditions differed significantly on perceptions of body size/image and dissatisfaction with body size/image. These differences remained significant after controlling for demographic variables. The groups based on the number of obesity-related chronic health conditions, but not BMI groups, also were significantly different on psychological distress and wellbeing with and without controls for demographic variables. On behavioral factors, morbidly obese women ate significantly more servings of meat/protein than obese women. Their intake of grains also was significantly higher at 91% of recommended daily servings. The morbidly obese women reported greater use of unhealthy food preparation techniques. These differences across BMI groups were no longer significant when demographic variables were controlled. There were no

significant differences on behavioral factors between groups based on the numbers of obesity-related chronic conditions.

CHAPTER V

DISCUSSION

The past 20 years has seen a dramatic increase in obesity in the United States. More than 78.6 million (34.9%) of all U.S. adults are obese (Ogden, Carroll, Kit, Flegal, 2014) and the highest rates of obesity occur in the southeastern states (Dis, 2002; Kumanyika et al., 2008), where 1 in 10 African American women (AAW) is morbidly obese (Jackson, et al 2005; Walker-Sterling, 2005). In South Carolina (SC), obesity rates have stabilized at 31.6 percent in 2011 to 32.0 percent in 2014 (CDC, BRFSS, 2010; County Health Ranking & Road Maps, 2014). In contrast, in 2013 the obesity prevalence was 42.6 percent for AAs living in SC (CDC, BRFSS, 2013; Trust for America's Health, & The Robert Wood Johnson Foundation, 2014). These statistics suggest that the state's obesity rates are not a true reflection of obesity in AA.

A number of researchers have reported that health outcomes for AAW are influenced by demographic and sociocultural (i.e., cognitive, behavioral) factors that have an impact on their obesity and morbidity levels (Baltus, 2005; Fitzgibbon, 2008; James, 2004; Jefferson et al., 2010; Kumanyika et al. 2008 James, 2004; MMWR, 2009).

More than 40% of AAW live in rural areas of SC (SCDEHC, 2008; CDC – BRFSS, 2010). The purpose of this study was to describe the impact of demographic, cognitive, behavioral, and biological factors on health outcomes (BMI and obesity-related chronic health conditions) in pre-menopausal and menopausal AAW living in rural South Carolina. Additionally, the relationships of cognitive and behavioral factors with health outcomes were further examined when socioeconomic factors were controlled. The

significant findings of each research question as well as the strengths and limitations of the study will be discussed.

Discussion of the Findings

The sample consisted of 200 AAW who were recruited into one of four groups of 50 women: (1) rural and pre-menopausal, (2) rural and menopausal, (3) very rural and pre-menopausal, and (4) very rural and menopausal. The women ranged in age from 19 to 64 years. More of the premenopausal women were single, not living with a partner and had completed some post-high school education than the menopausal women. About 90% of the women had completed at least high school. Rural women had more education than very rural women. More than half the women worked 20 hours or more per week and earned between \$10,000 and \$29,999. More than half of the 50 (25%) women receiving income from other sources (i.e., SSI, SSA, disability) were menopausal.

Most women were obese or morbidly obese, with more menopausal women in the morbidly obese category. Although most women desired a smaller body size/image, many were not dissatisfied with their current body size/image. The majority of women had at least one obesity-related chronic health condition and 60 percent had between 1 and 5 conditions. The most common conditions were hypertension, mobility problems, cardiovascular conditions, psychological conditions, and diabetes. Although the levels of psychological wellbeing were high, many AAW reported psychological conditions (e.g., anxiety, depression and bipolar). Women with one or more chronic conditions were taking two or more daily medications, and a third of these women had been hospitalized in the previous year. Some premenopausal women reported frequent periods, spotting between periods and cessation of periods as a result of long term use of hormonal

contraceptives (e.g., medroxyprogesterone acetate, etonogestrel/ethinyl estradiol vaginal) or medical conditions (e.g., uterine fibroids, endometriosis) that caused menstrual irregularities.

The majority of women correctly named five fruits and vegetables, and knew the correct daily servings for meats and fruits. Half the women in the study knew the correct daily serving for vegetables and dairy, but few knew the correct daily serving for grains. These women consumed larger portions of grains and meats, and an average of one daily serving of fruits, vegetables and dairy. Their average daily dietary intake consisted of 1960 food energy (kilo-calories [kcal]), 71 grams of protein, 79 grams of fats, and 246 grams of carbohydrates. Gaston and associates (2011) reported that AAW consumed larger portions for food and more kcals than that recommended by the U.S. Food and Drug Administration (USFDA). The average kcal energy intake for women in this study was lower than found among previous studies of obese AAW (Dietz, 2001; Fitzgibbon et al., 2008) perhaps because 30% of the study's women were not obese. The percentages of recommended daily servings indicate diets higher in meats than recommended and much lower than recommended in dairy products. Consumption of vegetables was 93% of recommended, with fruits and grains at 68% and 75%, respectively.

Most women cooked with smoked or salted meats, battered and fried vegetables and meats, used salt based spices and marinades at least once a week and 58% used between 1 and 2 herbs, a healthier choice of seasonings. At home more than half of the women consumed fried and deep fried foods at least once a week. Additionally, most women reported eating at a fast food and a traditional restaurant at least once a week. These findings are contrary to those of Hargreaves et al. (2002) who reported that many

AAW's eating patterns were influenced by their health concerns. These results suggest a need for more research on nutritional intake, food preparation, and eating habits for rural AAW.

Research Question 1: Are there main and interaction effects of menopausal status and rural status on cognitive factors, behavioral factors, and health outcomes?

Similarities were found in all two factors, cognitive and health outcomes for menopausal women. For cognitive factors, there was a significant interaction between menopausal and rural status for ideal body image and for body image dissatisfaction. Menopausal women reported more body image dissatisfaction than premenopausal women. Perhaps this dissatisfaction contributes to women's reports of not feeling like a woman during menopause (Huffman, 2005). Also, the significant interaction effect of menopausal and rural status on ideal body size/image and body image dissatisfaction suggests that menopausal status and living in a very rural area may influence AAW's perceptions of body image. Although, effects and interaction between rural and menopausal status for psychological distress, psychological wellbeing, and knowledge of healthy eating. One fifth of the women did not correctly name any healthy, meats/proteins, oils, or snacks. Forty percent did not know the correct number of daily servings for fruits, vegetables, dairy, and meats/healthy proteins; and few knew the daily servings of grains. The deficits in their knowledge of healthy eating, suggests that this may be a factor influencing obesity levels rural AAW.

For behavioral factors, women living in very rural areas had significantly fewer portions of fruits and vegetables per day than women from less rural areas. Contrary to previous studies that reported low vegetable intake in AAW (Brooten et al, 2012;

Thompson et al., 2009), this finding indicates that rural women may have more access to fruits and vegetables than urban AAW. Regardless of menopausal and rural status, the diets of AAW in this study consisted of 4 to 5 times more daily servings of meat and grains than of fruits, vegetables, and dairy products. ; Food preparation practices and eating habits did not differ by menopausal status or rural status or the interaction of the two. Perhaps rural and very rural environments were not different enough to see effects of rurality on these two behavioral factors. Contrasting rural with urban may reveal the influence of rural living. Airhihenbuwa and associates (1995) suggested that traditional food preparation techniques stem from matriarchal practices established during slavery. Perhaps rural or very-rural communities are more resistant to change, allowing the practice of traditional food preparation techniques to remain vibrant.

For health outcomes, there was a significant difference in BMI category and number of obesity related chronic conditions by menopausal status, but not rural status. Menopausal women were heavier and had more chronic health conditions than pre-menopausal women. These findings support prior research on diseases and obesity in menopausal AAW (Beydoun et al., 2009; Go et al., 2013; Thompson et al., 2009). This study's results provide additional information on the influences of menopause on health outcomes.

Research Question 2: Are health outcomes (BMI, obesity-related chronic health conditions) related to cognitive factors (perceptions of body image/size, mental health, and knowledge of healthy eating) and behavioral factors (food choice, preparation techniques, portion size, eating habits)?

Research suggests that AAW readily accept the larger body size/image with large derrieres and thicker thighs, perhaps as a result of cultural influences, but they also are dissatisfied about being obese and being labeled as such (Beren, 2010; Parasecoli, 2007). In this rural study, there were significant differences in AAW's perceptions of current, ideal, reasonable body image and also body image dissatisfaction across BMI groups. Morbidly obese women on average chose bigger body sizes/images and were more dissatisfied about their own body size/image than both obese and normal-weight women. Similar differences were obtained comparing obese and normal-weight women on these same variables. Perhaps rural AAW are no longer accepting of their larger body size, and are dissatisfied with their body images because of sociocultural influences.

Behavioral factors that related to AAW's increased BMI were consumption of a greater number of servings of meat and grains, and using traditional food preparation techniques. These behaviors were practiced more among morbidly obese women than obese and normal-weight women. Traditional food preparation and cooking is high in fats, salts, meat, and well cooked vegetables seasoned with salt based spices. A number of researchers have reported that these diets are higher in saturated fats and meats and lower in grains (Dammann et al., 2009; Gary et al., 2004; Thompson et al., 2009). Morbidly obese women in this study consumed 90% of the recommended daily servings, but obese and normal-weight AAW consumed a significantly lower proportion of the recommended daily servings. Women in the three BMI groups reported similar habits with frequently eating in restaurants, especially fast food and more traditional family-friendly restaurants.

Obesity-related chronic health conditions were related to cognitive factors. Again, AAW with more chronic health conditions reported perceptions of bigger current, ideal, and reasonable body images and greater body image dissatisfaction. Research to date has focused on the influence of obesity on related chronic conditions (i.e., asthma, depression, diabetes, hypertension, sleep apnea, anxiety, CVD, and dyslipidemia) in urban AAW (Sower et al 2005, 2007; Budoff et al., 2006; Cohen, Soares, Vitonis, Otto, & Harlow, 2006). In contrast, this study's findings focus on AAW's perception of body images, mental health and knowledge of healthy eating as they relate to numbers of obesity-related chronic health conditions. This approach may be more relevant for AAW since perceptions of what constitutes health are influenced by ethnicity, region, cultural and religious beliefs (Bronner & Boyington, 2002; Gillan et al., 2011; Henderson & Ainsworth, 2000; McAllister et al., 2010).

African American women have been reported to suffer from psychological distress, depression, and anxiety (Bromberger et al., 2009; Jefferson et al., 2010; Kim et al., 2009; Palmer et al., 2003). Others have found greater psychological distress in obese and menopausal AAW (Garcia et al., 2007; Palmer et al., 2003; Pratt & Brody, 2008; Strickland, 2000). In this study, women with more chronic health conditions had higher psychological distress scores and lower psychological wellbeing scores. It is not clear from this study whether problems with mental health lead to more chronic conditions or whether more chronic conditions lead to more mental health problems.

Behavioral factor in this study were not related to numbers of obesity-related chronic health conditions. However, women with higher numbers of chronic conditions also had higher average intake of kcals and grams of proteins, fats, and carbohydrates.

Many AAW have considered a ‘good’ diet as the ability to have a full plate, eat meat, and not have to fill up on starches (James, 2004). Deitz (2001) also reported that many AAW described healthy eating as consuming three meals a day with foods from the four food groups (protein, fats, carbohydrates, and dairy). Acting on these beliefs likely is related to the increased rates of obesity and chronic health conditions prevalent among AAW in rural SC. Although women in this study consumed larger portions of vegetables, the food preparation practices are factors to be considered, given that vegetables are prepared with fatty meats. Although of concern, the much lower than recommended serving of dairy foods found in this study is consistent with previous findings (Dietz, 2001; Wilson, Musham & McLellan, 2004).

Research Question 3: Do these relationships remain when socioeconomic factors (education, income, employment, and marital status) are controlled?

Relationships between BMI and perceptions of body images and dissatisfaction with body size/image all remained significant despite controlling for socioeconomic factors. Effects of behavioral factors on BMI became non-significant when socioeconomic factors were controlled. Story’s framework (2008) suggests that micro-level individual (i.e., cognitive) factors influence health status. These results support the findings of Kumanyika et al. (2008) that obesity occurs across all income levels. Although more research is needed to fully understand the relationships between perceptions of

The relationships between numbers of obesity-related chronic conditions and perceptions of body images remained significant after socioeconomic variables were controlled. Most women in this study were single, divorced, separated and widowed,

making it more likely that they also had lower annual incomes. The relationship between numbers of obesity related chronic conditions and psychological distress remained significant when covariates were added to the analysis. These findings are consistent with research studies that found relationships between increased psychological distress and obesity, chronic disease, low income, and single status (Eicher-Miller et al., 2009; Glazer et al., 2002). However, far less understood was the significant relationship between psychological well-being and numbers of obesity related chronic conditions. Again it is not clear whether psychological well-being helps to prevent chronic health conditions or whether women with fewer chronic health conditions experience greater psychological wellbeing. Perhaps women living in rural communities experience a more cohesive and extensive family support network (Cutrona, Russell, Hessling, Brown, & Murry, 2000), enhancing women's psychological well-being. Also, psychological well-being may have resulted from the alleviation of symptoms experienced by women with chronic conditions. More research is needed to better understand these findings.

Significance

Findings from this study contribute to current understanding of the relationships between individual demographic, cognitive, behavioral, and biological factors that influence the health (BMI and obesity-related chronic health conditions) of menopausal and premenopausal AAW residing in non-metropolitan rural and very rural environments. Findings in this study provide valuable information about the impact of AAW's perceptions of body image, knowledge of healthy eating, and mental health on obesity and other health outcomes. This is the first study to focus on these relationships in rural and very rural menopausal and premenopausal AAW. The results of this study

improve understanding of the differences between rural and very rural menopausal and premenopausal AAW. In addition, the findings may help health care providers, dietitians, and others involved in obesity management to create interventions to improve health outcomes for rural and very-rural menopausal and premenopausal AAW.

Limitations of the Study

There were several limitations to this study. Some premenopausal women were taking long term hormonal contraceptives and were experiencing menopausal symptoms. These symptoms were also reported by women ages 19 to 29 years who were morbidly obese. Symptoms alone were not sufficient to establish menopausal status. Because of this, the MRS data were not used in the analyses of the research questions. The lack of significant differences in food choices, especially kcals, raise concerns that the obese and morbidly obese women may have under-reported their dietary intake. Some women weighed more than the scales' upper limits, so a valid BMI value could not be calculated for these morbidly obese women. This prevented the planned regression analyses with BMI as the dependent variable.

Implications of the Study for Nursing

The findings from this research have implications for education and nursing practice. The results from the study of the effects of menopausal and rural status on health outcomes, and their relationships to cognitive and behavioral factors in rural and very-rural AAW provide pertinent information necessary for addressing obesity related health problems in this high risk group of women. It also provides information for nursing practice on AAW's perception of body images as it relates to eating behaviors

that influence health outcomes. Additionally, nurses can address AAW's deficits in the knowledge of healthy eating. Interactive strategies that increase AAW's understanding of recommended serving sizes and portions for foods may influence their daily food intake and improve health outcomes. This new knowledge may help nurses to function more effectively in diverse health care systems regarding obesity and its related chronic health conditions.

Implication of the Study for Research

Findings from this research have several implications for future research. More research is needed on obesity and body image in rural and very rural menopausal and premenopausal AAW, especially with women who are not seeking services at a health care institution. Methods of obtaining more precise information about diet with less opportunity for under-reporting are needed. Symptoms of menopause need to be separated from the physical effects of obesity. Perhaps measurement of hormonal levels may prove useful in this regard. Interventions are needed that use social media to educate AAW about nutrition and portion sizes and to provide support for women as they work to modify their diets.

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APPENDICES

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APPENDIX A

South Carolina's Percentage of Population Urban 1950-2010

Appendix A

Percent of County Population Urban: 1950-2010

County	1950	1960	1970	1980	1990	2000*	2010
Abbeville	24.0%	37.3%	26.2%	26.2%	25.1%	23.4%	21.4%
Aiken	33.5%	36.6%	44.9%	60.6%	59.5%	60.9%	63.0%
Allendale	0.0%	27.4%	37.4%	41.1%	37.6%	59.0%	31.7%
Anderson	44.7%	54.4%	40.9%	51.9%	48.6%	58.3%	62.1%
Bamberg	32.9%	38.7%	43.7%	44.7%	45.0%	45.7%	45.5%
Barnwell	0.0%	41.3%	40.9%	58.3%	54.4%	14.9%	17.5%
Beaufort	18.8%	14.3%	50.2%	60.5%	67.3%	71.4%	80.4%
Berkeley	0.0%	16.0%	45.8%	58.7%	65.1%	66.0%	71.1%
Calhoun	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Charleston	73.0%	73.5%	81.8%	87.5%	88.0%	86.3%	89.1%
Cherokee	35.5%	43.2%	46.2%	42.8%	36.9%	38.6%	40.0%
Chester	32.0%	32.2%	32.8%	31.2%	22.2%	32.7%	28.2%
Chesterfield	13.3%	15.3%	16.7%	21.9%	21.2%	27.4%	26.2%
Clarendon	8.6%	13.3%	15.7%	17.3%	15.6%	14.7%	14.3%
Colleton	16.3%	19.6%	22.7%	19.5%	16.0%	26.2%	24.4%
Darlington	24.5%	24.8%	28.1%	31.8%	33.0%	45.4%	42.2%
Dillon	16.7%	20.2%	20.8%	22.7%	23.5%	34.3%	30.5%
Dorchester	14.6%	14.9%	11.9%	58.1%	67.4%	73.0%	80.5%
Edgefield	15.2%	18.3%	33.8%	30.4%	26.6%	21.2%	26.7%
Fairfield	28.5%	16.8%	17.1%	14.1%	15.6%	25.4%	21.7%
Florence	34.7%	36.5%	36.0%	55.6%	52.5%	58.0%	61.5%
Georgetown	43.2%	43.7%	39.6%	31.0%	34.3%	54.7%	58.5%
Greenville	59.9%	63.7%	70.0%	78.9%	76.6%	83.0%	87.4%
Greenwood	49.4%	49.2%	42.4%	43.8%	34.9%	56.8%	60.3%
Hampton	0.0%	0.0%	17.9%	17.3%	16.5%	35.7%	21.5%
Horry	15.7%	24.0%	29.4%	34.7%	59.4%	60.4%	69.6%
Jasper	0.0%	0.0%	0.0%	0.0%	0.0%	17.5%	33.3%
Kershaw	21.6%	20.4%	24.6%	26.7%	22.7%	37.9%	42.3%
Lancaster	30.9%	36.2%	34.5%	22.8%	21.2%	38.6%	50.1%
Laurens	33.7%	36.8%	38.3%	38.3%	31.7%	34.3%	35.8%
Lee	13.3%	16.4%	18.6%	18.1%	19.3%	18.7%	28.1%
Lexington	29.5%	44.8%	53.1%	57.2%	59.3%	66.3%	74.7%
McCormick	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Marion	35.5%	41.9%	44.4%	40.3%	40.0%	39.7%	39.3%
Marlboro	24.6%	24.4%	36.8%	36.2%	41.0%	52.8%	45.0%
Newberry	33.2%	37.0%	31.5%	31.6%	31.8%	33.1%	32.2%
Oconee	17.3%	21.5%	30.0%	29.9%	25.4%	29.4%	35.1%
Orangeburg	22.3%	20.2%	19.0%	33.8%	29.8%	33.1%	36.2%
Pickens	15.8%	23.8%	38.2%	37.0%	38.7%	58.3%	64.2%
Richland	77.6%	69.4%	84.7%	87.1%	84.6%	87.2%	90.9%
Saluda	1.4%	2.0%	2.5%	19.6%	19.5%	18.7%	19.5%
Spartanburg	34.6%	36.1%	37.5%	55.7%	52.2%	64.7%	72.6%
Sumter	45.1%	40.2%	47.5%	51.8%	59.1%	62.1%	68.0%
Union	31.0%	34.0%	36.9%	34.2%	32.4%	35.7%	34.6%
Williamsburg	8.4%	9.5%	10.0%	11.1%	10.5%	15.1%	18.1%
York	49.1%	52.0%	55.1%	59.2%	56.7%	64.3%	77.1%
South Carolina	36.7%	41.2%	47.6%	54.1%	54.6%	60.5%	66.3%

*In 2000, the U.S. Bureau of the Census changed the urban classification.

Source: U.S. Bureau of the Census, Census of Population and Housing, 1950-2010

APPENDIX B.

The South Carolina Office of Rural Health (SCORH) - Rural Health Report – 2005

Appendix B

South Carolina Rural Health Report

Legend Of Urban, Rural, and Very Rural Definitions

The following definition of urban, rural, and very rural is based on the size of the largest town in that county.

URBAN	RURAL	VERY RURAL
Counties with largest town 25,000 or greater.	Counties with largest town less than 25,000	Counties with largest town less than 10,000
<ul style="list-style-type: none"> • Aiken • Anderson • Beaufort • Berkeley • Charleston • Dorchester • Florence • Greenville • Horry • Lexington* • Pickens* • Richland • Spartanburg • Sumter • York 	<ul style="list-style-type: none"> • Abbeville • Allendale • Bamberg • Barnwell • Calhoun • Cherokee • Chester • Chesterfield • Clarendon • Colleton • Darlington • Dillon • Edgefield • Fairfield • Georgetown • Greenwood • Hampton • Jasper • Kershaw • Lancaster • Laurens • Lee • Marion • Marlboro • McCormick • Newberry • Oconee • Orangeburg • Saluda • Union 	<ul style="list-style-type: none"> • Abbeville • Allendale • Bamberg • Barnwell • Calhoun • Chester • Chesterfield • Clarendon • Colleton • Darlington • Dillon • Edgefield • Fairfield • Hampton • Jasper • Kershaw • Lancaster • Lee • Marion • McCormick • Oconee • Saluda • Williamsburg

*Lexington and Pickens counties are considered urban since they are bedroom communities to major metropolitan areas.

URBAN AND RURAL COUNTIES BASED ON SIZE OF LARGEST TOWN

KEY URBAN RURAL VERY RURAL

SOURCE: S.C. B & C BD, OFFICE OF RESEARCH & STATISTICS
CNTY LINES

South Carolina's Rural Population

South Carolina is still a largely rural state; thus, issues of health care must consider the impact of policy decisions on rural areas and rural residents. Rural areas have a larger proportion of African American residents and thus, the issue of racial disparities in health and healthcare are directly related to improving health in rural areas. The following information is based on the official population estimates of the Bureau of the Census for the year 1999 (which are derived from the 1990 Census):

RURAL SOUTH CAROLINA:

APPENDIX C.
SCAN data percentage women living in South Carolina - 2011

Population Statistics for All Female Residents of South Carolina 2011				
Sex: Female				
Age: 18 to 19, 20 to 24, 25 to 29, 30 to 34, 35 to 39, 40 to 44, 45 to 49, 50 to 54				
	Race			
	White	Black	Other	All Races
Year	Number	Number	Number	Number
2011	783,590	362,600	29,330	1,175,520
Footnote	Population numbers may not sum to total due to rounding.			

APPENDIX D
SCAN data percentage women living in Orangeburg, Calhoun and
Bamberg Counties of South Carolina – 2011

SCAN - data percentages ALL Female Residents in 3 Counties in South Carolina 2011								
Population Statistics for Residents of Multiple Regions								
Year(s): 2011								
Sex: Female								
Age: 18 to 19, 20 to 24, 25 to 29, 30 to 34, 35 to 39, 40 to 44, 45 to 49, 50 to 54								
	County							
	Bamberg		Calhoun		Orangeburg		Selection Total	
Race	Number	Percent	Number	Percent	Number	Percent	Number	Percent
White	1,180	31.6	1,850	52.4	6,980	30.3	10,010	33.1
Black/AA	2,520	67.4	1,650	46.7	15,640	68.0	19,810	65.4
Other	50	1.3	30	0.8	390	1.7	470	1.6
All Races	3,740	100.0	3,530	100.0	23,010	100.0	30,280	100.0
Footnote	Population numbers may not sum to total due to rounding.							

SCAN - data percentages Black/AAW living in South Carolina 2011				
Population Statistics for Residents of Multiple Regions				
Race: Black/African American				
Sex: Female				
Age: 18 to 19, 20 to 24, 25 to 29, 30 to 34, 35 to 39, 40 to 44, 45 to 49, 50 to 54				
	County			
	Bamberg	Calhoun	Orangeburg	Selection Total
Year	Number	Number	Number	Number
2011	2,520	1,650	15,640	19,810
Footnote	Population numbers may not sum to total due to rounding.			

APPENDIX E
Consent Form for Participation - Original

FIU IRB Approval:	11/19/2013
FIU IRB Expiration:	11/19/2014
FIU IRB Number:	IRB-13-0508

ADULT CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Sociocultural Influences, Menopausal Status, Healthy Eating Behaviors, and Obesity in Rural African American Women

You are being asked to be in a research study held at _____ (Name of Site). The person in charge of this study is: Colleen Kilgore, RN, MSN, MPH, FNP-C. She is the Principal Investigator (PI) of this study. The Sponsors of the study are Florida International University (FIU) and The Regional Medical Center (RMC).

PURPOSE OF THE STUDY

The purpose of this study is to learn more about cooking practices, eating habits, diets, body size and image, and the physical and mental health of African American women living in Bamberg, Calhoun and Orangeburg counties in South Carolina.

NUMBER OF STUDY PARTICIPANTS

If you decide to be in this study, you will be one of about 200 African American women between the ages of 18 and 64: 100 women with menopause symptoms and 100 women with regular periods.

DURATION OF THE STUDY

This study will take about 2 hours of your time to answer questions on two sets of surveys; one hour at your doctor's office and one hour by phone. The PI or Research Assistant (RA) will read these questions to you. Your height and weight will be measured in the doctor's office.

PROCEDURES

If you agree to be in the study, we will ask you to do the following things:

1. sign this form to show that you agree (consent) to be in the study;
2. answer some questions about what kinds of foods you eat, how you cook them, and where you eat them, your periods and whether you have certain symptoms, and your health;
3. answer some questions about yourself (age, education, whether you are married, number of children);
4. have your height and weight measured in the doctor's office;
5. give us your mailing address and the address where you live.

FIU IRB Approval:	11/19/2013
FIU IRB Expiration:	11/19/2014
FIU IRB Number:	IRB-13-0508

Before you begin answering questions, Ms. Kilgore, or Ms. Fredericks will go over the process. Ms. Kilgore or Ms. Fredericks will ask you questions, write your answers, and then say each answer to make sure they have it right.

RISKS AND/OR DISCOMFORTS

There is no foreseeable (expected) risk or discomfort to you for being in this study. You are volunteering to be in this study. If you don't want to answer a question, you may skip it, or stop the interview at any time. If you are not sure about a question, please ask us to explain it to you.

BENEFITS

There is no foreseeable benefit to you for being in this study. We expect that the study will help nurses, doctors and other health care workers to provide better care for African American women living in rural areas.

ALTERNATIVES

There are no known alternatives available to you other than not taking part in this study.

CONFIDENTIALITY

The PI will give a study ID number to each woman in the study. This study ID number, not your name, will be used to keep all of your information together.

The records of this study will be kept private and will be protected to the fullest extent provided by law. No personally identifiable information will be shared with any parties/entities not stated in this document.

In any sort of report we might publish, the information from this study will be presented as a group and without names. No one will be able to identify you or the answers you give us. The findings will be shared in the same way with the RMC and Florida International University.

Research records will be stored securely in a locked file cabinet. Only the research team will have access to the records. However, your records may be reviewed for audit purposes by the University, RMC, or other authorized agents who must follow these same procedures of confidentiality.

COMPENSATION & COSTS

You will get a \$15 gift certificate to a local store (\$7 after one set of surveys and \$8 after the second set of surveys) as a "Thank you!" for being in the study. There is no cost to you for being in the study.

RIGHT TO DECLINE OR WITHDRAW

Your participation in this study is voluntary. You are free to participate in the study or withdraw your consent at any time during the study. Your withdrawal or lack of participation will not affect any benefits to which you are otherwise entitled.

FIU IRB Approval:	11/19/2013
FIU IRB Expiration:	11/19/2014
FIU IRB Number:	IRB-13-0508

Ms. Kilgore, the study's principal investigator, has the right to remove you without your consent if she feels it is in the best interest. If you withdraw or are withdrawn from the study, the data you gave to the study before you withdrew may be used along with the other data collected as part of the study.

RESEARCHER CONTACT INFORMATION

If you have questions about the purpose of the study, what we are asking you to do, what we will do with the information you give, or anything else about this research study, you may contact Colleen Kilgore, RN, Nurse Practitioner at 803 290 9525 or ckilg001@fiu.edu.

IRB CONTACT INFORMATION

If you would like to talk with someone about your rights of being in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT

I have read the information in this consent form and agree to be in this study. I have had a chance to ask any questions I have about this study, and they have been answered for me. I understand that I will get a copy of this form after I read and sign it.

Signature of Participant

Date

Printed Name of Participant

Signature of Person Obtaining Consent

Date

APPENDIX F
Consent Form for Participation – Revised

FIU IRB Approval:	2/7/2014
FIU IRB Expiration:	11/19/2014
FIU IRB Number:	IRB-13-0508

ADULT CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Sociocultural Influences, Menopausal Status, Healthy Eating Behaviors, and Obesity in Rural African American Women

You are being asked to be in a research study held at _____ (Name of Site). The person in charge of this study is: Colleen Kilgore, RN, MSN, MPH, FNP-C. She is the Principal Investigator (PI) of this study. The Sponsors of the study are Florida International University (FIU) and The Regional Medical Center (RMC).

PURPOSE OF THE STUDY

The purpose of this study is to learn more about cooking practices, eating habits, diets, body size and image, and the physical and mental health of African American women living in Bamberg, Calhoun and Orangeburg counties in South Carolina.

NUMBER OF STUDY PARTICIPANTS

If you decide to be in this study, you will be one of about 200 African American women between the ages of 18 and 64: 100 women with menopause symptoms and 100 women with regular periods.

DURATION OF THE STUDY

This study will take about 2 hours of your time to answer questions on two sets of surveys; one hour at your doctor's office and one hour by phone. The PI or Research Assistant (RA) will read these questions to you. Your height and weight will be measured in the doctor's office.

PROCEDURES

If you agree to be in the study, we will ask you to do the following things:

1. sign this form to show that you agree (consent) to be in the study;
2. answer some questions about what kinds of foods you eat, how you cook them, and where you eat them, your periods and whether you have certain symptoms, and your health;
3. answer some questions about yourself (age, education, whether you are married, number of children);
4. have your height and weight measured in the doctor's office;
5. give us your mailing address and the address where you live.

FIU IRB Approval:	2/7/2014
FIU IRB Expiration:	11/19/2014
FIU IRB Number:	IRB-13-0508

Before you begin answering questions, Ms. Kilgore, or Ms. Fredericks will go over the process. Ms. Kilgore or Ms. Fredericks will ask you questions, write your answers, and then say each answer to make sure they have it right.

RISKS AND/OR DISCOMFORTS

There is no foreseeable (expected) risk or discomfort to you for being in this study. You are volunteering to be in this study. If you don't want to answer a question, you may skip it, or stop the interview at any time. If you are not sure about a question, please ask us to explain it to you.

BENEFITS

There is no foreseeable benefit to you for being in this study. We expect that the study will help nurses, doctors and other health care workers to provide better care for African American women living in rural areas.

ALTERNATIVES

There are no known alternatives available to you other than not taking part in this study.

CONFIDENTIALITY

The PI will give a study ID number to each woman in the study. This study ID number, not your name, will be used to keep all of your information together.

The records of this study will be kept private and will be protected to the fullest extent provided by law. No personally identifiable information will be shared with any parties/entities not stated in this document.

In any sort of report we might publish, the information from this study will be presented as a group and without names. No one will be able to identify you or the answers you give us. The findings will be shared in the same way with the RMC and Florida International University.

Research records will be stored securely in a locked file cabinet. Only the research team will have access to the records. However, your records may be reviewed for audit purposes by the University, RMC, or other authorized agents who must follow these same procedures of confidentiality.

COMPENSATION & COSTS

You will get a \$15 gift certificate to a local store (\$7 after one set of surveys and \$8 after the second set of surveys) as a "Thank you!" for being in the study. There is no cost to you for being in the study.

FIU IRB Approval:	2/7/2014
FIU IRB Expiration:	11/19/2014
FIU IRB Number:	IRB-13-0508

RIGHT TO DECLINE OR WITHDRAW

Your participation in this study is voluntary. You are free to participate in the study or withdraw your consent at any time during the study. Your withdrawal or lack of participation will not affect any benefits to which you are otherwise entitled.

Ms. Kilgore, the study's principal investigator, has the right to remove you without your consent if she feels it is in the best interest. If you withdraw or are withdrawn from the study, the data you gave to the study before you withdrew may be used along with the other data collected as part of the study.

RESEARCHER CONTACT INFORMATION

If you have questions about the purpose of the study, what we are asking you to do, what we will do with the information you give, or anything else about this research study, you may contact Colleen Kilgore, RN, Nurse Practitioner at 803 290 9525 or ckilg001@fiu.edu.

IRB CONTACT INFORMATION

If you would like to talk with someone about your rights of being in this research study or about ethical issues with this research study, you may contact the FIU Office of Research Integrity by phone at 305-348-2494 or by email at ori@fiu.edu.

PARTICIPANT AGREEMENT

I have read the information in this consent form and agree to be in this study. I have had a chance to ask any questions I have about this study, and they have been answered for me. I understand that I will get a copy of this form after I read and sign it.

Signature of Participant

Date

Printed Name of Participant

Signature of Person Obtaining Consent

Date

APPENDIX G
Consent Form for Participation – Church and

FIU IRB Approval:	4/21/2014
FIU IRB Expiration:	11/19/2014
FIU IRB Number:	IRB-13-0508

ADULT CONSENT TO PARTICIPATE IN A RESEARCH STUDY

Sociocultural Influences, Menopausal Status, Healthy Eating Behaviors, and Obesity in Rural African American Women

You are being asked to be in a research study held at _____ (Name of Site). The person in charge of this study is: Colleen Kilgore, RN, MSN, MPH, FNP-C. She is the Principal Investigator (PI) of this study. The Sponsor of the study is Florida International University (FIU).

PURPOSE OF THE STUDY

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NUMBER OF STUDY PARTICIPANTS

If you decide to be in this study, you will be one of about 200 African American women between the ages of 18 and 64: 100 women with menopause symptoms and 100 women with regular periods.

DURATION OF THE STUDY

This study will take about 2 hours of your time to answer questions on two sets of surveys; one hour at your doctor's office or church, and one hour by phone. The PI or Research Assistant (RA) will read these questions to you. Your height and weight will be measured in the doctor's office, or church. If you choose to read and complete the surveys yourself it will take about 1 hour and 30 minutes.

PROCEDURES

If you agree to be in the study, we will ask you to do the following things:

1. sign this form to show that you agree (consent) to be in the study;
2. answer some questions about what kinds of foods you eat, how you cook them, and where you eat them, your periods and whether you have certain symptoms, and your health;
3. answer some questions about yourself (age, education, whether you are married, number of children);
4. have your height and weight measured in the doctor or church office;
5. give us your mailing address and the address where you live.

FIU IRB Approval:	4/21/2014
FIU IRB Expiration:	11/19/2014
FIU IRB Number:	IRB-13-0508

Before you begin answering questions, Ms. Kilgore, or Ms. Fredericks will go over the process. Ms. Kilgore or Ms. Fredericks will ask you questions, write your answers, and then say each answer to make sure they have it right.

RISKS AND/OR DISCOMFORTS

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CONFIDENTIALITY

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The records of this study will be kept private and will be protected to the fullest extent provided by law. No personally identifiable information will be shared with any parties/entities not stated in this document.

In any sort of report we might publish, the information from this study will be presented as a group and without names. No one will be able to identify you or the answers you give us. The findings will be shared in the same way with _____ (Name of Pastor/Doctor) and Florida International University.

Research records will be stored securely in a locked file cabinet. Only the research team will have access to the records. However, your records may be reviewed for audit purposes by the University or other authorized agents who must follow these same procedures of confidentiality.

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FIU IRB Approval:	4/21/2014
FIU IRB Expiration:	11/19/2014
FIU IRB Number:	IRB-13-0508

you gave to the study before you withdrew may be used along with the other data collected as part of the study.

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Signature of Participant

Date

Printed Name of Participant

Signature of Person Obtaining Consent

Date

APPENDIX H
Detecto Scale – DW – 160M

SPECIFICATIONS

Capacity 160 kg / 350 lb.

Readability 100 g / 0.2 lb.

Platform Size 375 mm x 275 mm /14.8" x 10.8"

Overall dimension

530 mm x 275 mm x 1485 mm / 20.9" x 10.8" x 58.5"

Height measurement Up to 210 cm / 84"

Division of height measurement 0.1 cm / 1/8"

Gross weight 18 kg / 40 lb

APPENDIX I
Moderno Pro Scale

Key features

Max. weight: 150kg/330lb

Weight Graduation: 0.1kg/0.2lb

Weight deviation: + 1 %

Graduation of body ratio display and water ratio: 0.1%

Recommended operating temperature: 20 ° C + 15 ° C

Programmable memory-stores setting of up to 10 people

Key features

Max. weight: 150kg/330lb

Weight Graduation: 0.1kg/0.2lb

Weight deviation: + 1 %

Graduation of body ratio display and water ratio: 0.1%

Recommended operating temperature: 20 ° C + 15 ° C

Programmable memory-stores setting of up to 10 people

III) Operation**1. Battery**

1) Battery insertion.

The battery compartment is on the back of the scale. This scale will include 4XAA batteries in the individual box.

2) Please take out the batteries from the compartment when the scale is not in use for a long period of time.

2. Weighing operation

1) Select kg/lb units by the slide switch on the bottom of the scale when the scale is off.

2) Place the scale on a firm, flat surface to achieve best accuracy. You can get your weight by the following two ways:

a. Turn the scale on with your foot by lightly tapping the scale, the display will show “8888” and then “0.0” kg or lb after

several seconds. Step on the scale, stand perfectly still and the scale will measure your weight.

b. Directly step on the scale, the display will show “8888” then it will show “0.0”kg or lb, step off the scale slightly and

your weight will be shown. The scale will turn off automatically after 10 seconds.

APPENDIX J
Body Mass Index Chart

Body Mass Index Table

	Normal										Overweight										Obese										Extreme Obesity																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Source: Adapted from Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report.

Appendix K
11-Items Menopausal Rating Scale (MRS)

Menopause Rating Scale (MRS)

Which of the following symptoms apply to you at this time?

(X ONE Box For EACH Symptom) For Symptoms That Do Not Apply, Please Mark "None".

Symptoms:	none	mild	moderate	severe	extremely severe
	-----	-----	-----	-----	-----
Score =	0	1	2	3	4
1. Hot flashes, sweating (episodes of sweating)	☐	☐	☐	☐	☐
2. Heart discomfort (unusual awareness of heart beat, heart skipping, heart racing, tightness)	☐	☐	☐	☐	☐
3. Sleep problems (difficulty in falling asleep, difficulty in sleeping through the night, waking up early)	☐	☐	☐	☐	☐
4. Depressive mood (feeling down, sad, on the verge of tears, lack of drive, mood swings)	☐	☐	☐	☐	☐
5. Irritability (feeling nervous, inner tension, feeling aggressive)	☐	☐	☐	☐	☐
6. Anxiety (inner restlessness, feeling panicky)	☐	☐	☐	☐	☐
7. Physical and mental exhaustion (general decrease in performance, impaired memory, decrease in concentration, forgetfulness)	☐	☐	☐	☐	☐
8. Sexual problems (change in sexual desire, in sexual activity and satisfaction)	☐	☐	☐	☐	☐
9. Bladder problems (difficulty in urinating, increased need to urinate, bladder incontinence)	☐	☐	☐	☐	☐
10. Dryness of vagina (sensation of dryness or burning in the vagina, difficulty with sexual intercourse)	☐	☐	☐	☐	☐
11. Joint and muscular discomfort (pain in the joints, rheumatoid complaints)	☐	☐	☐	☐	☐

APPENDIX L
Body Image Assessment for Obesity (BIA0) Scale

APPENDIX M

39-Items Mental Health Inventory

MENTAL HEALTH INVENTORY

A. How happy, satisfied or please has your personal life been in the last month?

1. Extremely happy, I couldn't be more satisfied or pleased.
2. Very happy the majority part of my time.
3. Generally satisfied and/or pleased.
4. At times, very satisfied and/or very happy.
5. Generally unhappy and/or unsatisfied.
6. Very unsatisfied, unhappy the majority of the time.

B. How often have you felt that you have persons that support you in these past month?

1. Always
2. Very often
3. Often enough
4. Sometimes
5. Hardly never
6. Never

C. How often have you felt depression has interfered with what you usually do in the past month?

1. Always
2. Very often
3. Often enough
4. Sometimes
5. Hardly never
6. Never

D. How often did you have difficulty thinking or solving problems in the last month; for example, making plans, making decisions and learning new things?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Part of the time.
5. A small part of the time.
6. None of the time.

E. Generally, how much time have you enjoyed the things you do in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Part of the time.
5. A small part of the time.
6. None of the time.

F. Have you had a reason to question if you are losing your mind, or losing control of your actions, what you say, think, feel or your memory in the last month?

1. No, not in everything.
2. Maybe a little.
3. Yes, but not enough to be worried or concerned.
4. Yes and I have a little worried.
5. Yes and I am very worried.

G. How much of your time on a daily basis has been filled with things that interest you in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

H. How much of the time have you felt loved and desired in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

I. How much of the time have you been a very nervous person in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

J. How much of the time have you had difficulty doing activities that involved thinking and concentration in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

K. How much of the time have you felt depressed in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

L. How much of the time have you felt tense or anxious?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

M. What part of the time have you felt firmly in control of your conduct, thoughts, emotions and feelings in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

N. How much of the time have you felt confused and have thought of various things at the same time in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

O. How much of the time have you felt that you have nothing to look forward to in the future in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

P. How much of the time have you felt calm and peaceful in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

Q. How much of the time have you felt emotionally stable in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

R. How much of the time have you felt downhearted and/or blue in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

S. How much of the time have you felt like crying in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

T. How much of the time have you felt isolated in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

U. How much of the time have you felt that others would be better off if you were dead in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

V. How much of the time have you forgotten things, for example something recent, where you place items and appointments in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

W. How much of the time have you felt that your intimate relationships, to love and be loved, are complete and fulfilling in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

X. How much of the time have you felt nervous or with your nerves on edge in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

Y. How much of the time have you felt that living is a true adventure in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

Z. How much of the time have you felt downhearted, depressed and nothing can motivate you in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

AA. How much of the time have you thought about taking your life in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

BB. How much of the time have you felt anxious, nervous, or impatient in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

CC. How much of the time have you been in a bad mood or sad over things in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

DD. How much of the time have you been furious, irritated over things in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

EE. How much of the time have you had problems focusing your attention in activities for long periods of time in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

FF. How much of the time have you been anxious or worried in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

GG. How much of the time have you been happy in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.
- 7.

HH. How much of the time have you had difficulties calming down in the last month?

1. Always
2. Very Often
3. Often Enough
4. Sometimes
5. Hardly never
6. Never

II. How much of the time have you felt depressed in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

JJ. How much of the time have you felt happy and good hearted in the last month?

1. All the time.
2. Almost all the time.
2. A good part of the time.
3. Some of the time.
4. A little part of the time.
5. None of the time.

KK. How much of the time have you felt very depressed (the worst you have ever felt) in the last month?

1. Extremely depressed
2. Very depressed
3. A little depressed
4. Somewhat depressed
5. A little depressed
6. Not depressed

LL. How much of the time did you react slowly to things you may have done or said in the last month?

1. All the time.
2. Almost all the time.
3. A good part of the time.
4. Some of the time.
5. A little part of the time.
6. None of the time.

MM. How much of the time have you felt distant from other in the last month?

1. Always
2. Very often
3. Often enough
4. Sometimes
5. Hardly never
6. Never

APPENDIX N

40-Items Eating Behaviors & Chronic Condition Questionnaire

Eating Behavior & Chronic Condition Questionnaire

Date _____

Demographics

Please circle the number next to your answer or write your answer on the line.

1. What CITY do you live in: (1a) _____
What COUNTY do you live in: (1b) _____
2. What is your current age in years? _____
3. _____ Which best describes your marital status right now?
 1. Married
 2. Single, living with a partner (never married)
 3. Divorced, living with a partner
 4. Widowed, living with a partner
 5. Separated, living with a partner
 6. Single, living alone (never married)
 7. Divorced, living alone
 8. Widowed, living alone
 9. Separated, living alone
4. _____ What is your highest level of education completed?
 1. Less than 7th grade
 2. Junior High School
 3. Some High School
 4. High School Graduate
 5. Technical/Vocational Program
 6. Some College
 7. Associate Degree
 8. Bachelor's Degree
 9. Master's Degree
 10. Doctoral Degree
 11. Other (Please specify _____)

Eating Behavior & Chronic Condition Questionnaire

5. _____ Are you employed **right now**? 1. Yes 0. No

6. _____ How many hours per week are you employed **right now**? _____

7. _____ How long have you been in your current position? Years _____
Months _____

If not employed: How long have you been **unemployed**? Years _____
Months _____

Eating Behavior & Chronic Condition Questionnaire

Date _____

Some questions about your health - Mark All That Apply:

8. Do you have any of the following conditions?

_____ Diabetes	1 Yes	0 No	Year diagnosed: _____
_____ High Blood Pressure	1 Yes	0 No	Year diagnosed: _____
_____ Hyperlipidemia	1 Yes	0 No	Year diagnosed: _____
_____ Chest Pain (Angina)	1 Yes	0 No	Year diagnosed: _____
_____ Heart Disease	1 Yes	0 No	Year diagnosed: _____
_____ Pace makes	1 Yes	0 No	
_____ Stents	1 Yes	0 No	
_____ Heart failure	1 Yes	0 No	
_____ CABG	1 Yes	0 No	
_____ Valve problem			
_____ Regurgitation	1 Yes	0 No	
_____ Stenosis	1 Yes	0 No	
_____ Cardiovascular Disease	1 Yes	0 No	Year diagnosed: _____
_____ Clotting	1 Yes	0 No	
_____ Poor Circulation - Leg		1 Yes	0 No
_____ Asthma	1 Yes	0 No	Year diagnosed: _____
_____ Sleep Apnea	1 Yes	0 No	Year diagnosed: _____
_____ Kidney Disease	1 Yes	0 No	Year diagnosed: _____
_____ Liver Disease	1 Yes	0 No	Year diagnosed: _____
_____ GERD (Reflux)	1 Yes	0 No	Year diagnosed: _____
_____ Cancer	1 Yes	0 No	Year diagnosed: _____
_____ Depression	1 Yes	0 No	Year diagnosed: _____
_____ Anxiety Disorder	1 Yes	0 No	Year diagnosed: _____
_____ Bipolar Disorder	1 Yes	0 No	Year diagnosed: _____
_____ Chronic pain	1 Yes	0 No	Year diagnosed: _____

Eating Behavior & Chronic Condition Questionnaire

_____ Back Pain	1 Yes	0 No	
_____ Hip Pain	1 Yes	0 No	
_____ Leg Pain	1 Yes	0 No	
_____ Shoulder Pain	1 Yes	0 No	
_____ Spinal Cord Injury	1 Yes	0 No	Year diagnosed: _____
_____ Amputation	1 Yes	0 No	Year diagnosed: _____
_____ Mobility Problem	1 Yes	0 No	Year diagnosed: _____
_____ Walking	1 Yes	0 No	
_____ Standing	1 Yes	0 No	
_____ Performing Daily Hygiene (i.e., bathing, washing feet)			

9. List **any other disease/condition** you have?

Other 1 _____	Year diagnosed: _____
Other 2 _____	Year diagnosed: _____
Other 3 _____	Year diagnosed: _____

10. _____ Are you currently taking any medicine? 1 Yes 2 No

If so, please list the medications you are taking by name:

11. _____ Have you been a patient in the hospital in the past year? 1 Yes 2 No

_____ If yes, how many times were you hospitalized in the past year?

Eating Behavior & Chronic Condition Questionnaire

Date _____

Some Questions about Eating Behaviors

Preparation Methods

12. How often do you cook vegetables with smoked meats (e.g. neck bones, turkey)?
- _____ never
_____ less than once a week
_____ 1-3 times per week
_____ 4-6 times per week
_____ daily
13. How often do you cook vegetables with salted meats (e.g. fatback, bacon)?
- _____ never
_____ less than once a week
_____ 1-3 times per week
_____ 4-6 times per week
_____ daily
14. How often do you flour (breaded or battered) meat or vegetables for frying at home?
- _____ never
_____ less than once a week
_____ 1-3 times per week
_____ 4-6 times per week
_____ daily
15. How often do you use salt-based spices to season your food (e.g. Season salts, Lawry, Sazon, Adobe, - **Not Sea-Salts**)
- _____ never
_____ Less than once a week

Eating Behavior & Chronic Condition Questionnaire

- ☐ 1-3 times per week
- ☐ 4-6 times per week
- ☐ daily

16. How often do you use salt-based sauces/marinades to season your food (e.g. pepper, Worcestershire, steak Sauce)

- ☐ never
- ☐ Less than once a week
- ☐ 1-3 times per week
- ☐ 4-6 times per week
- ☐ daily

17. Do you use herbs to season your food (e.g. parsley, thyme, oregano, Italian, [mixed herbs])?

- ☐ Yes
- ☐ No

18. List the herbs you used? _____

Eating Habits

19. How often do you eat fried foods at home?

- ☐ never
- ☐ less than once a week
- ☐ 1-3 times per week
- ☐ 4-6 times per week
- ☐ daily
- ☐ 2 or more times a day

Eating Behavior & Chronic Condition Questionnaire

20. How often do you eat deep fried foods (i.e., chicken, fish, shrimp, clams, or onion rings) at home?

☐ never	☐ 1-3 times per week
☐ less than once a week	☐ 4-6 times per week
	☐ daily
	☐ 2 or more times a day

21. How often do you **eat in/from Country Kitchens/restaurants?**

☐ never	☐ once a Week
☐ once a Month	☐ 1-3 times per Week
☐ 2-3 times a Month	☐ 4-6 times per Week
	☐ daily
	☐ 2 or more times a day

22. How often do you **eat in/from Major Chain (i.e., McDonald, Pizza, Kentucky, Chicken restaurants?**

☐ never	☐ once a Week
☐ once a Month	☐ 1-3 times per Week
☐ 2-3 times a Month	☐ 4-6 times per Week
	☐ daily
	☐ 2 or more times a day

23. How often do you **eat in/from Seafood/ Fish Kitchen/restaurants?**

☐ never	☐ once a Week
☐ once a Month	☐ 1-3 times per Week
☐ 2-3 times a Month	☐ 4-6 times per Week
	☐ daily
	☐ 2 or more times a day

Eating Behavior & Chronic Condition Questionnaire

24. How often do you eat in/from Barbeque restaurants?

☐ never	☐ once a Week
☐ once a Month	☐ 1-3 times per Week
☐ 2-3 times a Month	☐ 4-6 times per Week
	☐ daily
	☐ 2 or more times a day

25. How often do you eat in/from Ethnic (i.e., Chinese, Japanese, Mexican) restaurants?

☐ never	☐ once a Week
☐ once a Month	☐ 1-3 times per Week
☐ 2-3 times a Month	☐ 4-6 times per Week
	☐ daily
	☐ 2 or more times a day

Eating Behavior & Chronic Condition Questionnaire

Knowledge of Healthy Foods

26. Name **five Fruits**

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

37. Name **five Vegetables**

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

28. Name **five Grains**

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

29. Name **five Healthy Proteins**

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

30. Name **five Dairy foods**

(1) _____

(2) _____

(3) _____

(4) _____

(5) _____

Eating Behavior & Chronic Condition Questionnaire

31. Name **five Healthy Oils**

(1) _____	(2) _____
(3) _____	(4) _____
(5) _____	

32. Name **five Healthy Snacks**

(1) _____	(2) _____
(3) _____	(4) _____
(5) _____	

33. Name five **Unhealthy** Snacks

(1) _____	(2) _____
(3) _____	(4) _____
(5) _____	

34. What are the recommended daily servings for each of the following food groups ?

(1) Meat Protein	_____	Servings
(2) Dairy	_____	Servings
(3) Grains	_____	Servings
(4) Vegetables	_____	Servings
(5) Fruits	_____	Servings

Eating Behavior & Chronic Condition Questionnaire

At End of Session

35. _____ What was your income from your employment for the last 12 months?

1 - Under \$ 3,000	11 - \$50,000 to \$59,999
2 - \$ 3,000 to \$ 4,999	12 - \$60,000 to \$69,999
3 - \$ 5,000 to \$ 6,999	13 - \$70,000 to \$79,999
4 - \$ 7,000 to \$ 9,999	14 - \$80,000 to \$89,999
5 - \$10,000 to \$14,999	15 - \$90,000 to \$99,999
6 - \$15,000 to \$19,999	16 - \$100,000 to \$109,999
7 - \$20,000 to \$24,999	17 - \$110,000 to \$119,999
8 - \$25,000 to \$29,999	18 - \$120,000 to \$129,999
9 - \$30,000 to \$39,000	19 - \$130,000 or more
10 - \$40,000 to \$49,000	

36. _____ Family income for last 12 months from all sources?

1. Child Support \$ _____
2. SSI \$ _____
3. SSA \$ _____
4. Retirement \$ _____
5. Disability \$ _____

Eating Behavior & Chronic Condition Questionnaire

Date _____

After BIAO

37. How do you describe your body type (shape/build)?

Some questions about your Menstrual Cycle (Period)

38. When was your last period?

Date _____

39. Have you experienced bleeding (spotting) between periods?

_____ Yes

_____ No

40. Have your period recently become more frequent or (more prolong) last longer?

_____ Yes

_____ No

APPENDIX O
12-Items Traditional Food Habit Questionnaire

Traditional Food Habits Questionnaire

#

How Often Do You Eat The Following Foods?

MARK ONLY ONE ANSWER FOR EACH QUESTION

	Items	Never	A Few Times per Year	Once per Month	2-3 Times per Month	Once per Week	2 Times per Week	3-4 Times per week	5-6 Times per Week	Every day
1	Pork belly									
2	Liver pudding									
3	Organ (i.e., Chitlins, Tripe, Hog Mawr)									
4	Souse									
5	Ham hock									
6	Jerky (meats)									
7	Chicken feet									
8	Duck									
9	Rabbit									
10	Raccoons									
11	Alli'gator tail									
12	Frog legs									

APPENDIX P
17-Items Food Preparation Techniques Questionnaire

Food Preparation Technique

#

How are the followings foods you eat MOST OFTEN PREPARED?

MARK ONLY ONE ANSWER FOR EACH QUESTION

		Don't Eat	Baked or Broiled	Boiled in water No- Salt	Boiled in water with Salt	Baked with Breeding or Mix (e.g. shake & Bake)	Fried in a little oil fat or butter	Barbequed & Sauced	Deep Fried & Floured	Deep Fried & Battered
1	Tripe									
2	Pork									
3	Souse									
4	Hog jowls									
5	Hog Mawr									
6	Fat back									
7	Chitlins									
8	Pig feet									
9	Liver Pudd'in									
10	Oxtails									
11	Deer /Venison									
12	Chicken									
13	Chicken feet									
14	Duck									
15	Turkey									
16	Beef									
17	Ribs									

APPENDIX Q
Contact Information Sheet

Rural African American Women Study

Contact Information Sheet

Participant's Full Name _____

Participant's Address

Contact Information:

Primary Phone Number _____ [Home] / _____ [Cell/Other]

Secondary Numbers:

Name & number _____

Name & number _____

Name & number _____

Email Addresses _____ @ _____ .com / net / org /

_____ @ _____ .com / net / org /

_____ @ _____ .com / net / org /

APPENDIX R
Poster – Regional Medical Centers

*Live in Bamberg, Calhoun, or Orangeburg Counties

*Patient of the Regional Medical Centers Clinics in Bamberg, Calhoun or Orangeburg Counties

WANTED

African American Women 18 to 64 years old

For a research study about cooking practices, eating habits, diet, body size and image, and health of African American women living in rural South Carolina.

Where: This clinic

What do you have to do?

- Answer questions on 2 surveys:
 - 1 hour during an office visit
 - 1 hour by telephone
- Have your height & weight measured in the clinic

Heading the study:

Colleen Kilgore, RN, Family Nurse Practitioner
who lives in Orangeburg

After the second survey, you will get a \$15 gift certificate by mail as our way of saying,
"Thank You!"

For more information, contact:
Colleen Kilgore at 803 290 9525 or ckilg001@fiu.edu

Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu
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APPENDIX S
Poster – Church

Women living in
Bamberg,
Calhoun
or
Orangeburg
Counties

WANTED

African American Women 18 to 64 years old

For a research study about cooking practices, eating habits, diet, body size and image, and health of African American women living in rural South Carolina.

Where: This church

- What do you have to do?
 - Answer questions on 2 surveys:
 - 1 hour during an office visit at the church
 - 1 hour by telephone
- Have your height & weight measured at the church

Heading the study:

Colleen Kilgore, RN, Family Nurse Practitioner
who lives in Orangeburg

After the second survey, you will get a \$15 gift certificate by mail as our way of saying,
“Thank You!”

For more information, contact:

Colleen Kilgore at 803 290 9525 or ckilg001@fiu.edu

Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu	Colleen Kilgore 803 290 9525 ckilg001@fiu.edu
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APPENDIX T
Poster – Clinic

Women living in
Bamberg,
Calhoun
or
Orangeburg
Counties

WANTED

African American Women 18 to 64 years old

For a research study about cooking practices, eating habits, diet, body size and image, and health of African American women living in rural South Carolina.

Where: This clinic

- What do you have to do?
 - Answer questions on 2 surveys:
 - 1 hour during an office visit in the clinic
 - 1 hour by telephone
- Have your height & weight measured in the clinic

Heading the study:
Colleen Kilgore, RN, Family Nurse Practitioner
who lives in Orangeburg

After the second survey, you will get a \$15 gift certificate by mail as our way of saying,
“Thank You!”

For more information, contact:
Colleen Kilgore at 803 290 9525 or ckilg001@fiu.edu

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APPENDIX U
Handout- Clinic

Research Volunteers Needed

Who: African American Women 18 to 64 years old

Volunteers who live in Bamberg, Calhoun or Orangeburg Counties of South Carolina are needed for a health study of cooking practices, eating habits, body image, menopause and chronic diseases

What: Answer questions on 2 surveys & have your height & weight measured

Where: This Clinic

When: At your convenience

Compensation: \$15 gift certificate

Interested:

For more information about the study call **Colleen Kilgore, RN, Family Nurse Practitioner** at

803 290 9525 or ckilg001@fiu.edu

APPENDIX V
Handout- Church

Research Volunteers Needed

Who: African American Women 18 to 64 years old

Volunteers who live in Bamberg, Calhoun or Orangeburg Counties of South Carolina are needed for a health study of cooking practices, eating habits, body image, menopause and chronic diseases

What: Answer questions on 2 surveys & have your height & weight measured

Where: This Church

When: At your convenience

Compensation: \$15 gift certificate

Interested:

For more information about the study call **Colleen Kilgore, RN, Family Nurse Practitioner at**

803 290 9525 or ckilg001@fiu.edu

APPENDIX W
Client Information Sheet – NutritionQuest – for Block Food
Frequency Questionnaire

NutritionQuest
www.NutritionQuest.com

CLIENT INFORMATION SHEET

Investigator / Project Information

Date: November 11th 2013

PI: Colleen Kilgore, PhD Candidate/ Chair: JoAnne Youngblut, Professor
Name (and title) of Principal Investigator / Program Director

SOCIOCULTURAL INFLUENCES, MENOPAUSAL STATUS, HEALTHY EATING
BEHAVIORS, AND OBESITY IN RURAL AFRICAN AMERICAN WOMEN
Project / Program Title

Institution or Organization Name / Department:

Nicole Wertheim College of Nursing & Health Science: Florida International University

Address: Modesto A. Maidique Campus - AHC 3, 11200 SW 8th Street, Miami, FL 33199

Phone: Chair (305) 348 7749

PI cell: 803 290 9525 / hme 803 531 3579

Fax: 803 531 3578 Email: Ckilg001@gmail.com

Using which Block questionnaire(s)? 2005-Block Food Frequency Questionnaire

Anticipated # of study subjects: 200 # questionnaires per subject: 1

Expected study start date: December 2013 Expected study end date: May, 2014 -
for data collection

Accounting / Billing Information/ & Shipping Address

Accounting Office Contact: Colleen Kilgore

Address: 4693 Columbia Road, Orangeburg, SC. 29118

Phone: 803 290 9525 Fax: 803 531 3579 Email: ckilg001@gmail.com

RETURN VIA EMAIL TO kkline@nutritionquest.com or VIA FAX TO (510) 704-8996

APPENDIX X
Orangeburg Primary Preventative & Occupational Medicine
Letter of Consent

**Orangeburg Primary,
Preventive and Occupational Medicine**

1620 Broughton Street
P.O. Box 2549
Orangeburg, SC 29116

Gregory Singleton, M.D.
Medical Director

(803) 531-6030
Fax (803) 531-6056

February 24, 2014

Colleen Kilgore
4693 Columbia Road
Orangeburg, SC 29118

Dear Mrs. Kilgore:

Thank you for meeting with us on February 17, 2014, to discuss your study and its requirements. We are pleased to inform you that after review of the following documents:

- Study Protocol
- Informed consent
- Verbatim interview
- Introduction to study in the clinic
- Study tools
- Clinic poster
- Draft of clinic handout

We look forward to you and/or Ms. Frederick's soliciting patients in our waiting room, using an appointed room/area to conduct data collection and recording patient's height and weight.

Please contact our office at 803-531-6030 with any questions. Thank you.

APPENDIX Y
Cornerstone Committee's Church Letters of Consent

February 16, 2014

To Whom It May Concern:

This letter verifies that the Colleen Kilgore has secured two rooms for data collection for obesity study at Cornerstone Community Church.

If you have any further questions, please give me a call at the number below.

For the Glory of God,

Dianna Murphy
Outreach Director

Colleen Kilgore
4693 Columbia Road
Orangeburg, SC. 29118

Dear Mrs. Kilgore:

Thank you for meeting with us on February 17, 2014, to discuss your study and its requirements. We are pleased to inform you that we have reviewed the following documents:

- Study Protocol
- Informed consent
- Verbatim interview
- Introduction to study in the facility
- Study tools
- Draft of Church handouts.

We look forward to you and/or Ms. Fredericks meeting with African American women in the congregation to collect data, including women's height, and weight during normal church opening hours (Monday thru Thursday) during the day or evening.

For further assistance, please contact me at 803 539 3952 ext. 102, or Ken@mycornerstone.me.

Sincerely,

Ken Feryus
Community Pastor

APPENDIX Z
Dr. Danette Mc Alhaney's Letter of Consent

F. MARION DWIGHT, M.D., P.A.

450 NORTH STREET, P.O. BOX 120

BAMBERG, SC 29003

803-245-5168

FAX: 803-245-6275

F. Marion Dwight, M.D., FAAFP

Diplomate, American Board of Family Practice

Danette F. McAlhaney, M.D.

Diplomate, American Board of Family Practice

James T. Blackwell, PA-C

February 10, 2104

Colleen Kilgore

4693 Columbia Road

Orangeburg, S.C. 29118

Dear Mrs. Kilgore:

Thank you for meeting with us on February 10, 2014 to discuss your study and its requirements. We are pleased to inform you that after review of the following documents:

Study protocol

Informed consent

Verbatim interview

Introduction to study in the clinic

Study tools

Clinic Poster

We look forward to you and or Ms. Fredericks (a) soliciting patients in our waiting room, (b) using an appointed room to conduct data collection and recording patients' height and weight.

Please contact our clinic manager Mrs. Trayce Shanks at 803-245-5168 extension 111, who will be pleased to assist you further.

Sincerely,

Danette F. McAlhaney, M.D.

Diplomat: American Board of Family Practice

APPENDIX AA
Padgett Medical Centers' Letter of Consent

PADGETT MEDICAL CENTERS

526 NORTH STREET

P.O. BOX 524

BAMBERG, SC 29003

(803)245-2433

February 26, 2014

Colleen Kilgore
4693 Columbia Road
Orangeburg, SC 29118

Dear Mrs. Kilgore:

Thank you for meeting with us on February 10, 2014, to discuss your study and its requirements. We are pleased to inform you that after review of the following documents:

- . Study Protocol
- . Informed consent
- . Verbatim interview
- . Introduction to study in the clinic
- . Study tools
- . Clinic Poster

We look forward to you and/or Ms. Fredericks soliciting patients in our waiting room, using appointed room/area to conduct data collection, and recording patient's height and weight.

Please contact our clinic manager Ms. Janice Rutland at 803-245-2433, who will be pleased to assist you further.

Sincerely,

R. Dale Padgett, M.D., P.A.
Medical Doctor

Caroline @ R Padgett -

APPENDIX BB
Family Health Center's (St. Matthews) Letter of Consent

Family Health Centers, Inc.
3310 Magnolia Street / Post Office Box 1806
Orangeburg, South Carolina 29115-1466
Phone (803) 531-6900
Fax (803) 531-6907
www.myfhc.org

February 28, 2014

Denmark
1241 Solomon Blatt Blvd
Denmark, SC 29042
(803) 793-4282
(803) 793-6346 - Fax

Howard Middle School
1255 Belleville Road
Orangeburg, SC 29115
(803) 533-6534
(803) 535-1606 - Fax

Norfield
7061 Norway Road
Neeses, SC 29107
(803) 263-4086
(803) 263-4097 - Fax

St. George
401 Ridge Street
St. George, SC 29477
(843) 563-5315
(843) 563-8229 - Fax

St. Matthews
558 Chestnut Street
St. Matthews, SC 29135
(803) 874-2006
(803) 874-1998 - Fax

Vance
10278 Old #6 Highway
Vance, SC 29163
(803) 492-3031
(803) 492-9156 - Fax

Colleen Kilgore
4693 Columbia Road
Orangeburg, SC. 29118

Dear Mrs. Kilgore:

Thank you for meeting with Dr. Stephens on February 19, 2014 to discuss your study and its requirements. We are pleased to inform you that after review of the following documents:

- Study Protocol
- Informed consent
- Verbatim interview
- Introduction to study in the clinic
- Study tools
- Clinic Poster
- Draft of clinic handout

We look forward to you and/or Ms. Fredericks conducting data collection and recording female patient's height and weight, their family members, and/or clinic staff in our facility. Please contact our St. Matthews nurse manager, Ms. Annie Charley at (803) 874-2006 who will be happy to assist you further.

Sincerely,

Mr. Leon A. Brunson, Sr.
Chief Operating Officer

APPENDIX CC
Regional Medical Centers' IRB-Letter of Consent

October 15, 2013

Colleen Kilgore
4693 Columbia Road
Orangeburg, SC 29118
ckilg001@gmail.com

Dear Mrs. Kilgore:

Thank you for your presentation of the Research Protocol Application titled: "Sociocultural Influences, Menopausal Status, Healthy Eating Behaviors, and Obesity in Rural African American Women" to the Institutional Review Board (IRB) of The Regional Medical Center of Orangeburg and Calhoun Counties on October 9, 2013. Included in the items reviewed were the following:

- Protocol Summary dated 9/16/2013
- Actual Protocol
- Investigator's Brochure
- Informed Consent
- Investigator Conflict of Interest and Financial Disclosure Statement
- CITI Course Curriculum Completion Report for PI, Mrs. Kilgore
- Multiple attachments and questionnaires

The IRB approved participation in this study.

The IRB approval # is 1013. The RMC IRB official approval date for the study is October 9, 2013 with expiration date of October 9, 2014.

Sincerely,

R. D. Smoak, M.D.
Chairman, Institutional Review Board
The Regional Medical Center of Orangeburg and Calhoun Counties

APPENDIX DD
New Mount Zion Baptist Church Letter of Consent

NEW MT. ZION BAPTIST CHURCH

OF ORANGEBURG, INC.

P.O. Box 651

Orangenburg, South Carolina 29116-0651

New Mount Zion Baptist Church
1785 Amelia Street
Orangenburg, SC 29115

March 17, 2014

Mrs. Colleen Kilgore
4693 Columbia Road
Orangenburg, SC. 29118

Dear Mrs. Kilgore:

Thank you for meeting with us on March 10, 2014, to discuss your study and its requirements. We are pleased to inform you that after reviewing the following documents:

- Study Protocol
- Informed Consent
- Phone Interviews
- Church face-to-face introduction to study
- Study Tools
- Church Poster
- Church Handouts

We look forward to you and/ or Ms. Fredericks soliciting patients, meeting with our women's groups, presenting your study, and soliciting and collecting data. All of which will be done in the appointed areas of the church.

Please contact our Director of Women's Ministries, Min. Judy M. Brown, at email jmbrown_m75@yahoo.com, or telephone her at 803-664-0425, and she will be pleased to assist you further.

Sincerely,

Reverend Jerome Anderson
Pastor of NMZ Baptist Church

APPENDIX EE
Mount Carmel Baptist Church Letter of Consent

Mount Carmel Baptist Church

*Post Office Box 454, Bellville Road
Saint Matthews, South Carolina 29135*

Sam Richardson, Pastor

Church Phone : (803) 655-5883
Home Phone : (803) 534-2063

March 16, 2014

Colleen Kilgore
4693 Columbia Road
Orangeburg, SC. 29118

Dear Mrs. Kilgore:

Thank you for meeting with us on March 4, 2014, to discuss your study and its requirements. We are pleased to inform you that after review of the following documents:

- Study Protocol
- Informed consent
- Phone Interviews
- Church; face-to-face Introduction to study
- Study tools
- Church Poster
- Church Handouts

We look forward to you and or Ms. Fredericks soliciting patients, meeting with our women's groups, for presenting your study, soliciting and collect data (recording patients' height and weight and completing surveys) in the appointed room/areas of the church.

Please contact our Chairperson of Health Ministries Mrs. Marilyn Amaker at 803-874-2843, or Mrs. Ruby Keller @ preciousrlk202@ Aol.com or phone# 803-655-5060, who will be please to assist you further.

Sincerely,

Ruby Keller
Co-chairperson of Health Ministries

"...whosoever loves God must also love his brother..." 1 John 4:21

VITA

COLLEEN KILGORE

Born, Kingston, Jamaica

1989-1991	Associate of Science in Nursing Excelsior College Albany, NY
1991-1997	Operating Room Nurse, & Night Supervisor Emory Hospital Atlanta, Georgia
1995-1996	RN-MSN., Family Nurse Practitioner
1996-1997	MPH., International Health & Infectious Disease Emory University Atlanta, Georgia
1997-1998	HIV & Infectious Disease Clinic Ponce DeLeon Center Grady Memorial Hospital Atlanta, Georgia
1998-2005	Director of Nursing & Quality Services, Nurse
1999- 2004	Site Investigator (University of Florida School of Medicine, Cooper-Dehoff, R. A., Hewkin, A. C., Kupfer, S. R. & Pepine, C. J. International Verapamil SR/Trandolapril Study (INVEST)
2000-2001	Recipient, American Cancer Society's Best Chance Network (BCN) Small Grant to increase Mammogram- Screening Services to Midlife Women, Family Health Centers, Inc
Practitioner	Family Health Centers Orangeburg, South Carolina
2005-2007	Associate Professor of Nursing South Carolina State University Orangeburg, South Carolina
2005 - Present	Family Nurse Practitioner- Part-time

	Orangeburg Primary, Preventive & Occupational
Medicine	Orangeburg, South Carolina
2009-2014	PhD, Nursing Research Florida International University Miami, Florida
2011 – Present	Family Nurse Practitioner- Part-time Claflin University Student Health Center Orangeburg, South Carolina
2012	National Institute of Health scholar - Mary Frances Picciano Dietary Supplement Research Practicum at NIH, June 4-7

PUBLICATIONS AND PRESENTATIONS

- 2013 - Manuscript # UDST-2013-050 – June 2013 entitled "*Losing a Grandchild: The Mourning Experience of Grandparents*" for Journal of Death Studies (Reviewer)
- 2013 - South Carolina Nurses Association (SCNA) – Nurse Practitioner' Annual Conference, fall, 2013, "*Obesity: Sociocultural Influences in Rural African American Women*" Columbia, South Carolina (Presenter)
- 2014 - Claflin University, March 20th, "*50 Shades of Grey – Navigating Relationships, Pressures & Heartbreaks*" Sponsored by Office of Counseling/American Diabetic Association, Claflin University, Orangeburg, SC (Presenter)
- 2014 - Manuscript # JAGS-0232-ETHNO-Feb-14 entitled "*Perspectives of older African American women on a community based weight loss program: Qualitative findings from SWITCH*" for Journal of the American Geriatrics Society. (Reviewer)
- Kulwicki, A., Kilgore, C., Ballout, S., Farraj, M., Hammad, A., & Hymes, R. (2012). *Intimate Partner Violence, Depression, and Barriers to Service in Arab American Women*. The Journal of Transcultural Nursing. - Accepted
- Youngblut, J. M., Brooten, D., Blais, K., Kilgore, C., & Seagrave, L. (2012). *Gender, Race/Ethnicity, and Childcare: Differences in Grandparent Health & Functioning after a Grandchild's Death*. - Submitted