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African American (AA) females are at a high risk for poverty and poor health status. A nutrition needs assessment was conducted with a convenience sample (N=100) of AA female caretakers of children ≤ 12 years recruited from Guilford County, NC's Special Supplemental Nutrition Program for Women, Infant, and Children (WIC). Survey components included socioeconomic and demographic characteristics, chronic disease state, nutrition knowledge, dietary intake, food security, and Food Stamp and WIC participation. Body Mass Index was calculated from measured heights and weights.

The sample consists primarily of AA women aged 30 years, living in low-income households (average \$1400 \pm 819 per month) with 4 household members. Eighty-four percent and 87% had or were currently receiving Food Stamps and WIC, respectively. Fifty-seven percent of households were food secure, 26% food insecure without hunger, 16% food insecure with moderate hunger and 1.1% food insecure with severe hunger. Health status among this group is poor with 75% of respondents being overweight/obese. Bivariate analyses revealed no association between household food security and respondent obesity.

High levels of food security suggest government assistance program participation may offset food insecurity in this population. However, overweight/obesity is higher than the national levels. Despite food security status, low income AA females still present with high rates of obesity, suggesting interventions should focus on nutrition knowledge.

FACTORS ASSOCIATED WITH DIETARY INTAKE OF LOW INCOME,
AFRICAN AMERICAN FEMALE CARETAKERS

by

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CHAPTER I

INTRODUCTION

Previous Research

Socioeconomic status (SES) in the United States predicts the likelihood of an individual's ability to access health care and live a healthy lifestyle which includes physical and mental health, diet, perceived health, and food security; all of which are inter-related and related to morbidity and mortality (Schoenborn, Adams, & Barnes, 2002; Tang, Chen, & Krewski, 2003; Krebs-Smith, Cook, Subar, Cleveland, & Friday, 1995; Bruce, Takeuchi, & Leaf, 1991; Townsend, Peerson, Love, Achterber, & Murphy, 2001). Particularly the African American population is of interest because research has found that African Americans, especially those living in the South, have a higher prevalence of low socioeconomic status. African American females are even more susceptible to poverty and low SES. Based on data from the 2000 Census, 45% of African American households in the United States are headed by a female (The African American Healthy Marriage Initiative, 2006). In North Carolina alone, 42% of African American households were headed by females and of those, 35% were living in poverty (North Carolina Minority Health Facts, 2005). Low-income populations and ethnic minorities are more likely to perceive themselves to have poor health (Farmer & Ferraro, 2005), lack nutrition knowledge if at a lower education level (Roe, Strong, Whiteside, Neil, & Mant, 1994), and be food insecure (US DHHS, 2000); particularly African American

females, are more likely to have poorer mental (Oakley, Song, & DeBose-McQuirter, 2005) and physical health (Flegal, Carroll, Ogden, & Johnson, 2002; Drewnowski & Spector, 2004; Auslander, Haire-Joshua, Houston, Rhee, & Williams, 2002), be physically inactive (Tudor Locke et al., 2001), consume nutritionally inadequate diets (Robinson & Hunter, 1999; Hargreaves, Schlundt, & Buchowski, 2002; Nies, Buffington, Hepworth, & Cowan, 1999).

Research on low-income populations, in general, indicates that almost half self-report having depression or had been clinically diagnosed with depression (Bazargan, Bazargan-Hejzi, & Baker, 2005). African American females have the highest rates of low-grade depression, which is due to stresses this population faces (Riolo, Nguyen, Greden, & King, 2005; Dunn & Hayes, 2000; and Winkleby & Cubbin, 2003). Thus, SES influences mental health status, such that low-income populations are more likely to have poor mental health.

Depression and stress, characteristics of low-income populations, affect physical health as well. The stressors that low-income populations experience force these populations to concentrate on their economic state and safety, rather than focusing on physical activity and healthy eating (Bell, Adair, & Popkin, 2003). This may partly explain why African Americans are expected to die 6 to 7 years earlier than non-Hispanic whites (Anderson, 2001). Some of the poor health outcomes associated with these populations, leading to lower life expectancies, include compromised cardiovascular health, hypertension, obesity, and diabetes. The American Heart Association in 2003 reported that cardiovascular disease is two to four times more prevalent in African

Americans than among Caucasians (Brown, 2004), with African Americans having the highest rates of hypertension than Caucasians (Bell, Adair, & Popkin, 2003). African American females have the highest body mass index of any ethnicity and gender group with 69% of their population being either overweight or obese (Surgeon General, 2001). Not only is obesity of concern for low-income African American females, but this population also has higher rates of diabetes as compared with non-Hispanic whites (Auslander, Haire-Joshua, Houston, Rhee, & Williams, 2002).

Poverty also influences how an individual perceives his/her own health status. Self-rated health of an individual is an actual measure of one's physical and mental health status. Food scarce populations, due to poverty, are more likely to report poor health (Stuff et al., 2004). More specifically, African Americans are more likely to rate their health negatively than Caucasians (Farmer & Ferraro, 2005; Farmer, Ferraro, & Wybraniec, 1997; Resnicow et al., 2000). Thus, individuals living in poverty are more likely to rate their health as poor.

The physical and mental health of African Americans is not only influenced by stress and poverty, but physical activity and diet play a role as well. Poorer physical and mental health may elucidate why the rates for obesity among African American, especially females, are high. African Americans overall are less physically active than other ethnicities by participating in more sedentary activities (US DHHS, 2000); African American females take the fewest number of steps a day among a sample of 109 adults (Tudor-Locke et al., 2001). The African American high fat, high calorie diet may also be the cause for poorer physical and mental health due to a greater consumption of fast food

(US DHHS, 2000; Bowman, Gortmaker, Ebbeling, Pereira, & Ludwig, 2004) and lower intakes of fruits and vegetables (Serdula et al., 1995).

This poor diet may be influenced by two factors – food insecurity and a lack of nutrition knowledge. Food insecurity, the “limited or uncertain availability of nutritionally adequate and safe foods,” is another stressor of this population and is prevalent among low-income populations (Nord, Andrews, & Carlson, 2002). Specifically, the African American population is more likely to be food insecure compared to Asian Americans, American Indians, or Caucasians (US DHHS, 2000).

Nutrition knowledge also influences dietary behavior. Previous research has found that greater nutrition knowledge is associated with healthier food intakes and lower fast food intakes (Tepper, Choi, & Nayaga, 1997). However, research has yet to examine low-income populations, especially African American females. Overall research has shown that African American females’ physical and mental health are influenced by the stresses of their environment, their diet, physical activity, food security, and possibly their nutrition knowledge.

How do these factors affect the African American family, especially since almost half of North Carolinian African American households are headed by African American females, who are also more likely to be low income? Research has shown that the dietary behavior of the mother can influence their child’s food intake. Mothers with lower education were more likely to have lower intakes of fruits and vegetables and higher intakes of sweets and soft drinks. Their children consumed similar foods. Researchers also saw a positive correlation between the mothers’ food consumption and their

children's food consumption (Vereecken, Keukelier, & Maes, 2004). Like all mothers, African American mothers can influence their child's food intake, possibly perpetuating poor dietary behavior and physical inactivity in their children, ultimately leading to poor lifelong physical and mental health.

Statement of the Problem

The relationships between mental, physical, and self-rated health as well as diet, physical activity, food security, and nutrition knowledge have been studied regarding low socioeconomic status populations. While almost half of African American females head their households, little research has concentrated on African American female caretakers and their children. Research in the urban areas of North Carolina is particularly important; more African Americans live in the South and southern African Americans are more likely to experience poverty. Specifically the African American population has increased by 18 percent since 1990 in North Carolina, thus African Americans comprise more than 21 percent of North Carolina's total population (North Carolina Minority Health Facts, 2005). Reflecting national statistics, the life expectancy of African Americans in North Carolina is 70 years of age, while for non-Hispanic whites it is 76 years. African Americans in Guilford and Mecklenburg County, North Carolina, comprise almost 30% of the population residing in these counties, the highest percentages of African Americans living in urban areas in the state.

Stark differences exist among North Carolinian African Americans regarding physical and mental health, physical activity, and access to health care as compared to

non-Hispanic White North Carolinians. Almost 13% of North Carolinian African Americans suffer from diabetes, almost twice that of non-Hispanic whites, and 38.6 % are clinically diagnosed with hypertension, as compared to 26.6 % of non-Hispanic whites. Among the African American population in North Carolina, 67.9 % did not attain recommended levels of physical activity as compared to 59% of non-Hispanic whites. Consumption of less than 5 servings of fruits and vegetables was 81.2% of African Americas while non-Hispanic whites, 74.8% of non-Hispanic whites did not meet the recommendation. African Americans in North Carolina are more likely to be obese; 37.2% of African American North Carolinians were obese while only 20.9% of non-Hispanic whites were obese. African American North Carolinians were more likely to not have health insurance (19 % vs 13.4 % of non-Hispanic whites), could not see a doctor due to the cost (20.6% vs. 12.4% of non-Hispanic whites, and were more likely to not have personal doctor (17.9 % vs. 16.4%). African American North Carolinians were more likely (25.1%) to rate their health as fair or poor as compared with non-Hispanic Whites (17.5%) and more likely to be disabled either physically or mentally (29.7% vs. 24.9% of non-Hispanic whites) (North Carolina Minority Health Facts, 2005).

Purpose of the Study and Research Questions

Guilford County was chosen to examine African American female caretakers and their children in an urban setting in order to answer the following research questions:

1. Is food insecurity associated with obesity?
2. Is food insecurity associated with a lower self-rated health?
3. Are food stamp recipients food insecure?
4. Is nutrition knowledge associated with obesity?
5. Is education level associated with food knowledge?
6. Is nutrition knowledge associated with dietary intake?
7. Is caretaker nutrition knowledge associated with child's food intake?

Limitations

The limitations of this research included that the population was a convenience sample, as the participants were recruited from Guilford County, North Carolina's Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Other participants were recruited through referrals from those who had participated, suggesting they may be from similar socioeconomic statuses and may have been influenced by similar economic factors. When recruiting participants, they were only notified that they would receive incentive to participate if they committed to participating. This eliminated individuals who possibly would only participate for the incentive. Other limitations included the difficulty in defining a household and determining income. If multiple families were living in one household, identification of the specific household and its

income was attempted. Food frequencies are limited in that they assess average intake rather than actual intake. This study may have been strengthened with another dietary intake measure. However, the food frequencies were reviewed with the participants, addressing questions and clarifying food frequencies.

CHAPTER II

LITERATURE REVIEW

Factors Associated with Poor Diet and Health Outcomes among Low SES Groups

Low SES influences mental and physical health, self-rated health, diets, nutrition knowledge, and food security. These effects can be attributed to variations in health care costs, health insurance coverage, the proximity to and availability of providers, food costs and low education levels. As described below, mental and physical health status is compromised in individuals of low SES when utilization of health care is low, the availability of health care is diminished, and financial constraints are present.

Mental Health

Research examining SES indicates a positive correlation between low SES and poor mental health (Bruce, Takeuchi, & Leaf, 1991). The majority of cases of poor mental health among low SES individuals are primarily caused by chronic stress, which has been hypothesized to be due to difficulties in finding employment, adequate housing, and budgeting for food costs (Dunn & Hayes, 2000; Winkleby & Cubbin, 2003). Often this stress can lead to depression and other complications. A study by Bazargan, Bazargan-Hejazi, & Baker (2005) recruited Hispanic and African American participants (n = 287) from urban public housing communities in Los Angeles, California. Researchers found that 48% of participants self-reported they had depression or were diagnosed by a physician with depression. One out of three participants who reported

being depressed also reported a physician had never diagnosed them with depression, but among those who were diagnosed, only 40% reported that they were being medicated (Bazargan, Bazargan-Hejazi, & Baker 2005). Another study found that men and women who were economically disadvantaged were at a greater risk of developing major depression disorder (Murphy et al., 1991). Thus, previous research indicates that depression is associated with low SES (Murphy et al., 1991; Inaba et al., 2005) and that SES influences mental health.

Physical Health

Mental health status of low SES populations can also influence their physical health. The stress induced among this population is so great that it can define their health status and ultimately lead to poor “health behaviors” related to diet, alcohol intake, smoking, and physical activity (Otten, Teutsch, Williamson, & Marks, 1990). Those of low SES are forced to focus on immediate priorities such as economic concerns and safety issues. For example, households with the lowest incomes spend a higher proportion of their income on shelter than does the average U. S. household (Rose, Basiotis, & Klein, 1995). Therefore, financial resources are allocated to these immediate priorities while long-term priorities such as healthy eating and physical activity are ignored (Bell, Adair, & Popkin, 2003). Previous research found that the highest obesity rates were associated with the lowest incomes (Schoenborn, Adams, & Barnes, 2002). Diabetes is another health complication. Canadian researchers reported that a higher prevalence of diabetes was associated with low income (Tang, Chen, & Krewski, 2003). Both mental and physical health impact each other and are associated with low SES.

Self-Rated Health

While actual disease state and mental health status are important aspects of overall health especially in low SES populations, self-rated health should also be taken into account. Self-rated health “reflects a complex process of internalized reckoning that takes into account both disease and exposure experiences and knowledge of disease causes and consequences” (Okosun, Choi, Matamoros, & Denver, 2001; Shadbolt, 1997). Previous research has shown that self-rated health is actually a measure of physical and mental health status and is associated with health service utilization and overall mortality (Miilunpalo, Vuori, Oja, Pasanen, & Uroponen, 1997; Wolinsky & Johnson, 1992). Fiscella & Franks (2000) found that the effect of low income was mediated not only by physical health and mental health, specifically depressive symptoms, but also by self-rated health. Thus, poorer physical health and greater depressive symptoms lead to a poorer self-rated health (Fiscella & Franks, 2000). Perceived health status can influence health decisions related to dietary, physical, and mental health; however, the role of self-rated health specifically in low SES populations has not been examined, to our knowledge.

Dietary Behavior

Mental and physical health disparities and self-rated health may also influence diet patterns, further compromising physical and mental health. Using data from the 1994- 1996 Continuing Survey of Food Intake by Individuals (CSFII), Krebs-Smith & Kantor (2001) found that only 28% of Americans met the Food Guide Pyramid recommendations for fruit consumption (> 2 servings a day) and only 49% met the

recommendation for vegetable consumption (> 3 servings a day) (Krebs-Smith & Kantor, 2001), but for low SES individuals, these intakes are even lower. According to the data from 1989-1991 Continuing Survey of Food Intakes by Individuals, Krebs-Smith, Cook, Subar, Cleveland, & Friday (1995) found 21.3 % of adults with less than \$10,000 annual income consumed at least 5 servings of fruits and vegetables per day based on a 3-day dietary intake. Specifically, 63% of adults with a yearly income less than \$10,000 consumed less than one serving of fruit per day and 14.1% consumed less than one vegetable per day. As reported by the United States Department of Health and Human Services in *Healthy People 2010*, only 23% and 42% of low SES individuals met the recommendations for daily fruit and vegetable consumption, respectively, based on data from The Continuing Survey of Food Intakes by Individuals (CSFII) 1994–96 (US DHHS, 2000). Most recent research has focused only on fruit and vegetable intake among low SES populations. Earlier studies from the United States Department of Health, Education, and Welfare, along with the Centers for Disease Control and National Center for Health Statistics, 1968 – 1972, showed that individuals from low socioeconomic status households were more likely to exhibit nutritional deficiencies or have diets low in various nutrients such as riboflavin, niacin, vitamin A, iodine, and calcium (US DHEW, 1974). Based on data from CSFII 1994–96, *Healthy People 2010* (2000) report found that only 39% of adults with a yearly income of less than \$10,000 met the calcium recommendations. Turrell, Hewitt, Patterson, & Oldenburg (2003) of Australia examined the association of SES with food purchasing. The primary food shoppers of 1003 households were interviewed concerning the type and frequency of

food purchased at the grocery store. Researchers concluded that those of lower SES were more likely to purchase foods that were high in fat, salt, sugar and low in fiber. Fruit and vegetable purchases were also limited among the low-income households (Turrell, Hewitt, Patterson, & Oldenburg, 2003). Research suggests that fruit and vegetable intake among low SES individuals is lower than the general United States, even though most Americans do not meet national recommendations. Other research on low-income populations found that low-income women were more likely to skip meals, which was positively correlated with obesity (Jeffery & French, 1996).

Nutrition Knowledge

Nutrition knowledge and food attitudes influence diet and dietary behaviors. Therefore, by increasing one's nutrition knowledge, attitudes should change, thus effecting food choices. However, few studies have found associations between knowledge and behavior. Those who have found associations have reported conflicting results (Tepper, Choi, & Nayga, 1997; Shepard & Stockley, 1987; Stafleu, Van Staveren, De Graaf, Burema, Hautvast, 1996). Shepard & Stockely (1987) and Sapp (1991) both found that the effect of nutrition knowledge on behavior is weaker and less direct than predicted. Some studies indicate that the controversy surrounding some of these early studies is a result of a lack of confirmation in the reliability of the tests measuring nutrition knowledge (Axelson & Bringberg, 1992; Towler & Shepard, 1990).

Tepper, Choi, & Nayga (1997) found an association between nutrition knowledge and dietary behavior. Male Army National Guard reservists (n= 137; 19 to 56 years of age) were recruited; their diet was assessed and their food knowledge was tested.

Researchers found that those with higher nutritional knowledge were more likely to consume 'healthy' foods and less likely to consume fast foods (Tepper, Choi, & Nayga, 1997).

A study from England also assessed nutrition knowledge and food intake. Five hundred subjects (mean age 50.5 years) participated in the study. Nutrition knowledge was assessed using the "Nutrition Knowledge Questionnaire" which was designed for content validity and tested among the general United Kingdom population (n=391) and among dietetic and computer science students at a university (n=168) (Parmenter & Wardle, 1999). This questionnaire is composed of the following components: (i) recommendations for healthy eating (11 items, e.g. how many servings of fruits one should consume); (ii) knowledge about nutrient content of different foods (69 items, e.g. is this food high in sugar); (iii) every day food choices (10 items, e.g. if a person wanted to reduce their fat intake, what would be the best choice); and (iv) links between diet and disease (20 items, e.g. what major health problems are associated with low fiber intake). Information regarding participants' education was gathered along with a food frequency questionnaire using the Dietary Instrument for Nutrition Education. The scores are weighted by the frequency of consumption using four categories ranging from "less than once a week" to "six times or more" (Roe, Strong, Whiteside, Neil, & Mant, 1994). Nutrition knowledge was higher in women, higher educated individuals, and those of middle age. Nutrition knowledge was also significantly correlated with intake of vegetables, fruit, and fat. Those with the highest nutrition knowledge category were 25 times more likely than those in the lowest nutrition knowledge category to consume a

healthy diet. Researchers concluded that differences in nutrition knowledge, based on SES, explained some of the differences in food consumption (Wardle, Parmenter, & Waller, 2000).

Another study examined the nutrition knowledge and dietary behavior of a low income population and found different results. Low and middle-income pregnant women (n=109) were recruited from childbirth education classes and free prenatal clinics in the Midwest United States (subjects were not recruited from Special Supplemental Food Program for Women, Infants, and Children). Nutrition knowledge was assessed using the Food Guide Pyramid by identifying the required daily servings of each food group. Researchers found that most women, independent of income, had inadequate nutrition knowledge. Eighty-five percent of participants stated that they were familiar with the Food Guide Pyramid and were able to identify the correct number of servings for one or more food groups. However, only 10% of participants were able to correctly identify the number of servings in each food group. The low-income women were more likely to identify the correct number of fruit, vegetable, meat, and milk servings. Not only did these women exhibit greater nutrition knowledge, but these women had higher intakes of milk, meat, and bread than the middle-income participants (Fowles, 2002). Therefore, the low-income women in this population had better knowledge and closer attainment of dietary recommendations. However, because the low-income women were recruited from a free prenatal clinic, these women may have received nutrition education as compared to the middle-income women who were recruited from a childbirth education class.

Further studies are needed to adequately assess nutrition knowledge of diverse populations and its impact on nutrition behaviors.

Food Security

Not all individuals of low SES are food insecure, but low-income households are more likely to experience food insecurity than other households according to data from the USDA's 1989-1991 Continuing Survey of Food Intakes by Individuals (Rose, 1999). Food insecurity, as defined by the American Institute for Nutrition, is the "limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways" (Nord, Andrews, & Carlson, 2002, pg. 2). Food insecurity also includes worrying that food will run out. Four types of food security classifications exist, which are: Food Secure (FS) – Having enough of the types of foods you want; Food Insecure without hunger (FIWH) – Worried about not having enough foods or not having enough of the foods you want; Food Insecure with moderate hunger (FIMH) – Hunger among adults but not among children; Food Insecure with severe hunger (FISH) – Hunger among children and more severe hunger among adults (Nord, Andrews, & Carlson, 2002).

Previous research has focused on household food insecurity as it relates to health, self-rated health, and diet. Body weight is one aspect of physical health that is influenced by food insecurity. Adams, Grummer-Strawn, & Chavez (2003), found that food insecurity may lead to increased body weight in women, but it is the degree of the food insecurity which directly determines weight gain. Mild food insecurity is associated with weight gain, while severe food insecurity is associated with weight loss (Sarlio-

Lahteenkorva & Lahelma, 2001). Using data from the 1994-1996 CSFII, this relationship of food insecurity and obesity was explored (Townsend, Peerson, Love, Achterber, & Murphy, 2001). The study examined only low-income women and found that among the lowest income, almost 60% reported being overweight. Of those who reported mild food insecurity, 41% were overweight, compared with 34% of women classified as food secure. Over 52% of females in the moderately food insecure category were overweight (Townsend, Peerson, Love, Achterber, & Murphy, 2001). Another study examining data from the 1988-94 National Health and Nutrition Examination Survey found that women in food insecure households were 58% overweight as compared to women of food secure households which were 47% overweight (Basiotis & Lino, 2002). Obesity is not the only health outcome associated with food insecurity. Other research has found correlations between food insecurity and blood glucose concentrations. Nelson, Cunningham, Andersen, Harrison, & Gelberg (2001) showed that food insecurity leads to hypoglycemia in diabetics. However, this association has not been fully explored.

One study encompasses all aspects of health status. Stuff et al. (2004) utilized secondary data analysis to examine physical, mental, and self-rated health of food insecure populations. Participants (n=1488) were living in the rural Lower Mississippi Delta. Researchers found an association between reported health status and food security. Those who were food insecure were more likely to report their health (mental and physical) as poor or fair as compared with the food secure. Therefore, food insecurity was significantly associated with poor or fair self-reported health and measures of mental health such as depression and other mental disorders (Stuff et al., 2004).

Another study by Siefert, Heflin, Corcoran, & Williams (2001) specifically researched women living in food insecure households and measured mental and physical health via the Short Form Health Survey. Researchers randomly selected 724 Michigan women who were receiving welfare. Researchers found that food insecurity was associated with poor or fair self-reported health and physical limitations. Compared to food secure individuals; women who reported difficulty acquiring food were more depressed and had poorer quality of life and lower physical performance (Siefert, Heflin, Corcoran, & Williams, 2001).

The research that has been conducted on health – mental, physical, and self-rated, has concluded that health is compromised in food insecure populations. However, more research is needed to fully grasp how each aspect of health, collectively and independently, is affected by food insecurity.

Food Security and Diet

While mental, physical, and self-rated health are altered due to food insecurity, the diet of food insecure individuals is also altered. The progression of food insecurity begins with food anxiety or worrying that one's household will not have enough food. Then the household's actual quality of the food diminishes. Lastly, the quantity of food is reduced in severely food insecure populations (Sarlio-Lahteenkorva & Lahelma, 2001). Healthy foods often cost more so food insecure individuals attempt to offset these food costs by selecting less expensive foods (Basiotis, 1992; Kendall, Olsen & Frongillo, 1996), and this can lead to disordered eating, as healthy foods are then replaced with more energy dense foods and meals are skipped. These energy dense foods lead to an

overall increase in total energy intake (Dietz, 1995). Skipping meals can also lead to disordered eating as household food supplies decline due to the decrease in household funds (Dietz 1995). As dietary energy increases, the overall quality of food is compromised (Bowman, Lino, Gerrior, & Basiotis, 1998). In order to measure diet quality, the Health Eating Index was developed to assess the type and quantity of foods people eat, their compliance with specific dietary recommendations, and variety in their diets. Women in food insecure households had lower Healthy Eating Index scores. The average HEI for food insufficient households was 58.8 as compared to food sufficient households which scored a 64.7 (Bowman, Lino, Gerrior, & Basiotis, 1998). Previous studies found that diets consumed by low-income households receiving vouchers from the Special Supplemental Nutrition Program for Women, Infants, and Children, provide cheap, concentrated energy from fat, sugar, cereals, potatoes, and meat products with very little intake of fruits, vegetables, and whole grains (Quan, Salomon, Nitzke, & Reicks, 2000), possibly further influencing an individual's health. Rose and Oliveira (1997) analyzed the nutrient intake of food insecure women (n=3774) from the 1989 – 1991 CSFII. Participants represented all 48 contiguous states and the District of Columbia. Researchers found that mean intakes of the food insecure women were below two-thirds of the recommended daily allowances for energy, calcium, iron, vitamin E, magnesium, and zinc, and had low intakes of protein, vitamin A, C, and B-6 (Rose & Oliveria, 1997). Therefore, several research reports illustrate that the diet of food insecure populations is compromised.

Specifically, the African American population in the United States is plagued by low socioeconomic status. African American families are more likely to experience poverty at all ages (Johnson, 1994), and are more likely to have low socioeconomic status (Harris, Edlund, Larson, 2005), especially those who live in the South (McKinnon, 2003).

African American Health Status

The African American adult population in the United States is at particularly high risk for poor health outcomes due to poor mental health (Riolo, Nguyen, Greden, & King, 2005) and poorer quality of physical health (Hughes & Thomas, 1998), lack of physical activity (Crespo, Smit, Andersen, Carter-Pokras, & Ainsworth, 2000), lower utilization of health care services (Mutchler & Burr, 1991), perceived health status (Farmer, Ferro, Wybraniec, 1997), and poor dietary intake (Robinson & Hunter, 2001).

Mental Health

Mental health influences mortality and morbidity. Although African Americans in one study reported lower rates of at least one mental health symptom compared to non-Hispanic whites, the African American participants were also less likely to use health care. The African Americans who did report mental health disorders were half as likely to use health care as compared to non-Hispanic whites (US DHHS, 2001). Riolo, Nguyen, Greden, & King (2005) examined depression across ethnicities based on National Health and Nutrition Examination Survey (NHANES) III data and found that African Americans have lower rates of reported depression but higher rates of dysthymic disorder or chronic low-grade depression. This low-grade depression may be due to chronic stress that

African Americans face. Mental health status is highly associated with chronic stress. Some hypothesized stressors of this minority population include crime, exposure to environmental hazards or social injustices, work stress, anxiety, and depression (Ellen & Turner, 1997; Saegert & Winkel, 1998; Riolo, Nguyen, Greden, & King, 2005).

Physical Health

Physical health also influences mortality and morbidity. African Americans can expect to have 8 fewer years of good health and expect to die 6 to 7 years earlier than non-Hispanic white Americans (Anderson, 2001). Morbidity and mortality rates are directly related to physical health status. Unhealthy trends in African American's physical health status exist, especially as related to heart disease, diabetes, and weight management. According to the American Heart Association in 2003, cardiovascular disease was two to four times more prevalent among African Americans than non-Hispanic White Americans (Brown, 2004). African Americans at every age suffer greater cardiovascular mortality and morbidity (Geronimus, Bound, Waidmann, Hillemeier, Burns, 1996). Specifically, heart disease mortality rates were 29% higher among African Americans as compared to non-Hispanic whites; and for strokes, mortality rates were 40% higher for African Americans (Chronic Disease Prevention, 2005). Not only do African Americans have higher rates of sudden cardiac death, but they also have lower survival rates after an attack and have a worse prognosis (Becker, Gates, & Newsome, 1993).

The high incidence of cardiovascular disease in African Americans is attributed to the increased prevalence of hypertension, specifically high systolic blood pressure (Diaz,

Mainous, Koopman, Carek, & Geesey, 2005). The prevalence for hypertension among African Americans is 40.5%, as compared to non-Hispanic Whites, whose prevalence is 27.5% (Glover, Greenlund, Ayala, & Croft, 2005). One study found that even if no SES disparities existed between African Americans and non-Hispanic Whites, and education and income were equal, the prevalence of hypertension in African Americans (8.3%) would be almost twice that of non-Hispanic whites (4.7%) (Bell, Adair, & Popkin, 2003). This hypertension develops at a younger age in African Americans, and African Americans are more likely to have had elevated blood pressure much longer before it is diagnosed or treated. Townsend, Fulgoni, Stern, Adu-Afarwuah, & McCarron (2005) performed secondary data analysis on NHANES III and NHANES IV to compare prevalence of hypertension with nutrient intake across all ethnicities. Researchers found correlations between low mineral intakes such as calcium and potassium which was most pronounced in individuals with only systolic hypertension. However, sodium intake was also lower in the systolic hypertensive group (Townsend, Fulgoni, Stern, Adu-Afarwuah, & McCarron, 2005), suggesting that poor nutrient intake may lead to hypertension.

African Americans are also at high risk for the onset of other diet-related chronic diseases such as diabetes and obesity. Diabetes mortality rates of African Americans are 135% higher than the rates of non-Hispanic whites (Chronic Disease Prevention, 2005). Eye disease, kidney failure, and lower extremity amputations are just some of the diabetes related complications that African Americans experience. These diabetic complications are experienced by African Americans at higher rates than non-Hispanic whites (National Diabetes Information Clearinghouse, 1998).

Along with higher risks for developing cardiovascular diseases and diabetes, obesity rates among African Americans are elevated. Specifically, African American females have the highest rates of both obesity and overweight as compared to Non-Hispanic whites and Mexican American, including both males and females (Flegal, Carroll, Ogden, & Johnson, 2002).

Not only is the prevalence of these physical and mental diseases and conditions higher for African Americans, but these diseases and conditions also develop earlier, are more severe, and are more likely to be fatal at an early age (Kelley-Moore & Ferraro, 2004; Ferraro & Farmer, 1996). Because African Americans often begin with a poorer health status and continue to suffer these serious illnesses with little improvement and without health care, they often end up in poorer health than non-Hispanic white adults (Kelley-Moore & Ferraro, 2004; Ferraro & Farmer, 1996). Brown (2004) concluded that financial constraints of African Americans were associated with more self-reported illnesses and increased psychological stress. These financial limitations may explain why 23% of African Americans do not have health insurance (Ni & Cohen, 2000). The utilization of health care services among minorities is lower even though they present with more health care problems (US DHHS, 2000). Even after adjusting for SES, minorities still are less likely to use health care services (US DHHS, 2000). Without financial stability or health insurance, mental and physical health among this group is adversely affected.

Physical Activity

African Americans not only are less likely to use health care services, they are also less physically active. Physical activity can impact both aspects of health – mental and physical. African Americans are less physically active than non-Hispanic whites. Both African American males and females are more likely to have sedentary lifestyles than non-Hispanic whites (Crespo, Smit, Andersen, Carter-Pokras, & Ainsworth, 2000). Rates of physical inactivity are highest among African Americans; fifty-two percent of African Americans did not participate in leisure time physical activity as compared to 35% non-Hispanic whites who did not participate in leisure time physical activity (Health People 2010, 2000).

Self-Rated Health

Self-rated health is an indication of mental and physical health. Overall, African Americans are more likely to rate their health negatively (Farmer & Ferraro, 2005; Farmer, Ferraro, & Wybraniec, 1997; Resnicow et al., 2000). However, one study assessing self-reported weight status found that African Americans had a greater body satisfaction and were least likely to overestimate their weight (Miller et al., 2000). However, unlike weight, Stuff et al.(2004) found that food insecure African Americans were more likely to report poor health when compared to food secure African Americans or non-Hispanic white individuals. Therefore, studies indicated that African Americans, especially those who are food insecure, rate their health as poor.

Dietary Behavior

All facets of health influence diet as diet affects health. Previous research has identified characteristics of the African American diet. Some studies have shown an association between low SES African Americans and unhealthy diets (Diaz, Mainous, Koopman, Carek, & Geesey, 2005; Kumanyika 1993). Diaz, Mainous, Koopman, Carek, & Geesey (2005) analyzed data from NHANES III and found that African Americans were significantly heavier, and had higher cholesterol intakes and lower fiber and potassium intakes than non-Hispanic whites or Hispanics. African Americans with BMIs classified as severely obese also reported lower caloric intake than other ethnicities with the same BMI category (Diaz, Mainous, Koopman, Carek, & Geesey, 2005).

Other studies have found that while daily intake of fruits and vegetables among all ethnicities is low, African Americans' intake was much lower (Serdula et al., 1995). African Americans as a population consume higher amounts of fat and calories as compared to non-Hispanic whites (US DHHS, 2000). Higher fat and caloric intake may be due to higher fast-food intakes. Secondary data analysis of CSFII 1994-1996 revealed African Americans (31%) reported eating out more than non-Hispanic whites or Hispanics. African Americans living in the south were also more likely to consume fast food than other regions of the United States (Bowman & Vinyard, 2004). Previous research has found that chicken, barbeque ribs, sweet potato pie, collard greens, and flavored fruit drinks are favorites of the African American diet, and frying is more popular than baking or boiling (Kittler & Sucher, 1998). While African Americans consume less healthy diets, they also lag behind other ethnicities in modifying their diets

and keeping their activity levels in line with national standards (US DHHS, 2000). Thus, a number of studies have reported that diets of African Americans do not meet national recommendations.

Food Security

Diet quality is also related to food security. Food insecurity rates may be more prevalent among African American households. According to CSFII 1994-1996 data, 76% of African American adults are food secure as compared with 90% of non-Hispanic whites (US DHHS, 2000).

Furness, Simon, Wold, & Asarian-Anderson (2004) recruited low-income households (n= 1051) in Los Angeles County, California. Across ethnicities, researchers found that food insecurity was highest among African Americans (32.8%) as compared with Latinos (28.4%), non-Hispanic whites (17.3%), and Asian/Pacific Islanders (10.9%) (Furness, Simon, Wold, & Asarian-Anderson, 2004). Therefore, research suggests that African Americans, especially in low-income populations, are more likely to be food insecure. However, research has yet to examine the influence that food security has on dietary intake among such individuals.

Nutrition Knowledge

Not only does food security influence diet, previous research has also shown a positive correlation between nutrition knowledge and higher intakes of nutritionally adequate foods. However, no studies were found to directly measure nutrition knowledge of African Americans.

Based on previous studies, African American morbidity and mortality rates are related to their physical and mental health, physical activity, access to health care, self-rated health, diet, and food security.

African American Females

African American women are a unique population, with their own distinctive characteristics relating to physical and mental health disparities, physical activity, self-rated health, dietary behavior, and nutrition knowledge. In North Carolina, according to the North Carolina Minority Health Facts (2005), African American female-headed households comprised 42% of households compared to non-Hispanic households where 8% are headed by females. Of the African American female-headed households, 35% lived in poverty (North Carolina Minority Health Facts, 2005). Therefore, this population of African American females is important to examine regarding their physical health, physical activity, mental health, dietary behavior, and nutrition knowledge.

Physical Health

One of two aspects related to African American females' health is their weight and BMI. Based on NHANES III data, the Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity (2001) noted that 69% of African American females are overweight or obese, compared with 58% of African American men. Specifically, almost 50% of African American females are classified as obese while 15% are classified as extremely obese or having a BMI > than 40 kg/m² according to NHANES 1999-2000, (Flegal, Carrol, Ogden, & Johnson, 2002). African American

women also had the highest percent body fat as compared to other men and women in a biracial population (Tudor-Locke et al., 2001). Another study found that these higher obesity rates were associated with low income and low education (Drewnowski & Specter, 2004). Due to the high prevalence of obesity in African American women, this population may be more susceptible to obesity related co-morbidities such as diabetes, hypertension, and stroke.

The other aspect of African American females' health that may increase mortality is diabetes. Diabetes rates for African American females are 11.8% higher than non-Hispanic white females (Auslander, Haire-Joshua, Houston, Rhee, & Williams, 2002) and they are twice as likely to have diabetic retinopathy (National Diabetes Information Clearinghouse, 1998). Thus, African American females present with higher rates of obesity and diabetes.

Physical Activity

Lack of physical activity may explain why obesity and diabetes rates are higher among African Americans females. Tudor-Locke et al. (2001) found that African American women took the fewest number of steps per day among a male and female, multiple ethnicity population. Another study found that African American females scored the lowest on physical activity when compared to African American men (Johnson, 2005).

Mental Health

Research also suggests that African American women may not only have a greater prevalence for chronic disease but may be more likely to have poorer mental health.

African American women of low income are more vulnerable to depression and less likely to seek treatment (Oakely, Song, & DeBose-McQuirter, 2005). Few studies have examined the relationship between African American female caretakers and mental health status.

Dietary Behavior

Nutrition is a contributing factor to African American women's overall health status. Characteristics of African American females' diets include excessive consumption of high fat foods, sodium, calories, and cholesterol, and diets lacking in fruit and vegetables, and high fiber foods (Robinson & Hunter, 2001; Nies, Buffington, Cowan, & Hepworth, 1999; Hargreaves, Schlundt, & Buchowiski, 2002). African American women, when compared to obese and non-obese African American and Caucasian women, reported implementing fewer nutritional behaviors such as eating from the four food groups and reducing high cholesterol foods (Nies, Buffington, Cowan, & Hepworth, 1999). Similar to the entire African American population, the diets of African American females do not meet national recommendations.

Child Dietary Behavior

While almost half of African American females, as previously stated, are the head of the African American households, the majority of research fails to identify if participants were caretakers of children. Previous research has shown that caretakers can influence their child's eating behaviors not only through modeling behavior but also through providing the food to be consumed. Vereecken, Keukelier, & Maes (2004) recruited children from Belgium kindergartens and parents (n=658) filled out

questionnaires related to food frequency, parenting practice, and level of maternal education. Lower maternal education was correlated with lower intakes of fruits and vegetables and higher intakes of soft drinks and sweets. Maternal consumption was positively associated with child dietary consumption especially regarding fruit and vegetable intake (Vereecken, Keukelier, & Maes, 2004). Therefore, female caretakers can influence their child's diet not just through accessibility of foods but also through modeling dietary behaviors. However, no research to date has examined African American caretaker's dietary influence on their child's dietary intake.

Nutrition Knowledge

While the previous study correlated caretaker consumption with child's consumption related to caretaker's education, no research has examined the nutrition knowledge of the caretaker correlated with the caretaker or the child's food consumption.

African American females are at risk for obesity, diabetes, depression, reduced physical activity and poor diet. Previous research does not address African American females' SES related to health, diet, nutrition knowledge, or food insecurity.

Conclusion

Research has established that low SES influences each aspect of health: physical, mental, self-rated health, diet, and food security. All aspects of health and food insecurity influence each other. Little research has assessed nutrition knowledge related to dietary behavior, especially in low SES populations.

Health status – chronic disease state and food consumption – of African American females is widely researched, but a lack of research exists related to comparing low SES

with health or food insecurity. Most of the research that has been conducted on African American females does not specify economic status or whether these women are caretakers of children.

Due to the gaps and limitations in previous research, female African American caretakers in Guilford County, North Carolina, were chosen for further research. North Carolina health statistics on African Americans are similar to national statistics and African Americans comprise of 30% of Guildford County residents (North Carolina Minority Health Facts, 2005).

CHAPTER III

MANUSCRIPT

To be submitted to the Journal of the American Dietetic Association

Abstract

Objectives: To assess the nutritional needs of low-income African American female caretakers

Methods: A convenience sample of African American female caretakers (N=100) of children ≤ 12 years of age was recruited from Guilford County, North Carolina's Special Supplemental Nutrition Program for Women, Infants, and Children (WIC).

Socioeconomic and demographics, level of food security, food consumption, nutrition knowledge, and measured heights and weights were collected.

Statistical Analysis: SPSS for Windows 13.0 was used to analyze the data. Data analysis included bivariate analysis to identify associations between variables. Chi square analysis was used for categorical variables and student's t tests for continuous variables.

Results: Caretakers who have good/excellent dietary adherence to Food Guide Pyramid recommendations are more likely to take care of children who have good/excellent dietary intake ($p=.06$). Caretaker nutrition knowledge was significantly associated with child's likelihood to meet Food Guide Pyramid recommendations ($p=0.016$)

Conclusions: Among this sample of African American female caretakers, caretaker nutrition knowledge and dietary adherence play a significant role in their child's dietary adherence to Food Guide Pyramid food group recommendations.

Introduction

Based on data from the 2000 Census, 45% of African American households in the United States are headed by a female (The African American Healthy Marriage Initiative, 2006). Research has shown that a mother's dietary behavior can influence their child's food intake such that if a mother's dietary intake is healthy the child's will also be healthy (Vereecken, Keukelier, Maes, 2004). Low income African American mothers, and their low level of education, can influence their child's food intake, possibly perpetuating poor dietary behavior and physical inactivity in their children, ultimately leading to poor lifelong physical health.

Nutrition knowledge and food attitudes influence diet and dietary behaviors; thus by increasing nutrition knowledge, attitudes about nutrition improve, leading to healthier food choices. Few studies have found associations between knowledge and behavior, and those that have found associations, have had conflicting results (Tepper, Choi, & Nayga, 1997; Shepard & Stockley, 1987; Stafleu, Van Staveren, De Graaf, Burema, & Hautvast, 1996). However, the reliability of the tests was never confirmed in the studies which found no association between nutrition knowledge and behavior (Axelson & Brinberg, 1992; Towler & Shepard, 1990; Shepard & Stockely 1987 and Sapp 1991). Results from other studies found that individuals with higher nutrition knowledge were more likely to

consume 'healthy' foods and less likely to consume fast foods (Tepper, Choi, & Nayga, 1997, Parmenter & Wardle, 1999). Therefore, previous research has shown a positive correlation between nutrition knowledge and higher intakes of nutritionally adequate foods. However, few if any studies were found to directly measure nutrition knowledge of African Americans.

While almost half of African American females, as previously stated, are the head of the African American households, the majority of research fails to identify if participants were caretakers of children. Caretakers can influence their child's eating behaviors. Previous research suggests lower maternal education is correlated to lower intakes of fruits and vegetables and higher intakes of soft drinks and sweets. Maternal consumption is positively associated with child's consumption especially regarding fruit and vegetable intake (Vereecken, Keukelier, & Maes, 2004). Therefore, female caretakers can influence their child's diet not just through accessibility of foods but also through modeling dietary behaviors.

African American females are at risk for obesity, diabetes, depression, reduced physical activity and poor diet. Previous research does not address African American females' SES related to health, diet, nutrition knowledge, or the impact of their dietary behaviors on their children.

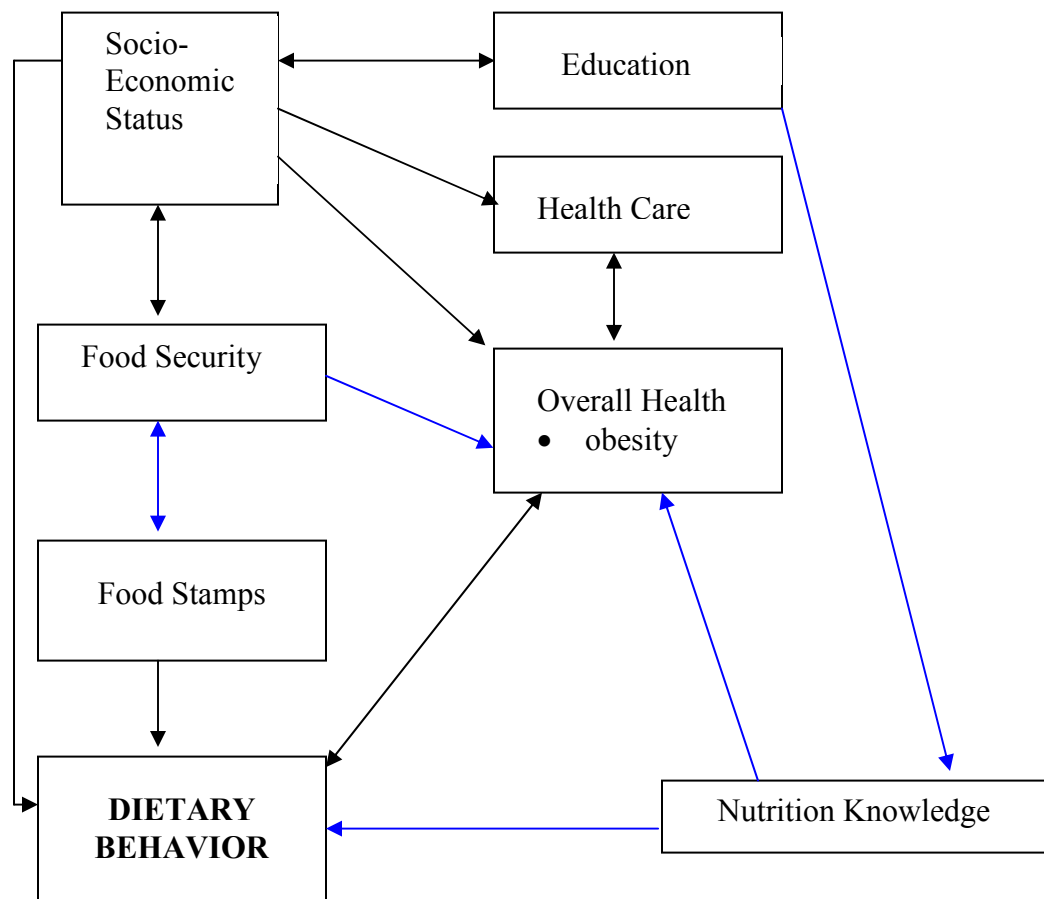
Research Questions

Based on the gaps in published research, the purpose of this study was to examine the relationship between low-income African American female caretakers and obesity, self-rated health, and food stamp participation. Nutrition knowledge was also measured among this population in order to examine the association of nutrition knowledge with obesity, education level, dietary adherence, and the dietary adherence of the child.

Conceptual Framework

The following conceptual framework, which served to drive this research project, depicts the relationships between diet, SES, food stamps; food security; overall health such as physical, mental, and self-rated health; and nutrition knowledge.

Figure 1: Factors that influence dietary intake of African American female caretakers*



Methods and Materials

A convenience sample of African American female caretakers (N=100) of children ≤ 12 years of age was recruited from Guilford County, North Carolina's Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) for an exploratory study. Referrals for friends and family of the participants were also taken. Recruitment and interviewing occurred between February 2005 and June 2005. Potential participants were approached by the interviewer in the WIC waiting room and given a brief overview of the study. If a referral was given from family or friends, the potential participant was either telephoned or approached at their home. If the individual committed to participating, they were informed that they would receive a \$20 gift card to a grocery store upon completion of the interview.

Requirements for participation included residing in Guilford County, being a primary caretaker of a child 12 years or under, being the primary meal preparer, and living in a house without much food. Based on their participation in WIC, all participants were considered low income. All aspects of the study were approved by the University of North Carolina at Greensboro's Institutional Review Board prior to data collection. Participants signed a consent form to participate. They were informed that they had the right to refuse to participate, to refuse answering any questions, and could withdraw their consent to participate at any time. Interviews consisted of a 45-90 minute questionnaire which also included the collection of anthropometric measurements (height and weight), using standard measurement methods. The questionnaire included questions about the

primary caretaker and the oldest child 12 years or under and included the following components:

Demographics

The demographics obtained from this population included the caretaker's age, education, access to transportation, current employment of the caretaker or the head of the household, and the number of individuals in the household. Dietary behaviors was also measured such as number of times a week respondent ate out, if household had at least 3 fresh fruits or vegetables weekly, and self-efficacy and attitudes regarding healthy foods and diets. These topics were addressed in order to determine the household's access to food.

Health

Chronic disease state of the child and caretakers was assessed based on history of diagnosed diabetes, hypertension, asthma, tuberculosis, lead poisoning, or anemia. Participants could also state other diseases that they were currently suffering or had suffered from in the past.

Nutrition

A food frequency questionnaire including foods typically associated with the African American population was administered (Kittler & Sucher, 1998). The food frequency questionnaire was conducted for the caretakers as well as the child. Food frequency data was transformed into daily intake. For example, weekly consumption was divided by 7, monthly by 30 and yearly by 365.

Other aspects of the interview included history of eating out, if a household has three or more different types of fresh fruits and vegetables each week, confidence in “healthy” meal preparation, and self-reported physical activity. Information regarding participants’ utilization of government assistance such as Social Security, WIC, Work First, and Food Stamps was collected.

Nutrition knowledge was measured using two criteria. Food Guide Pyramid questions addressed the recommended serving sizes of each of the 5 food groups. One point for each food group was given if the participant was able to correctly name the number of recommended servings, for a total of 5 points. No points were given if the participant did not identify the correct number of servings of each food group. Nutrition knowledge was also measured by asking a series of 20 questions on nutrient content such as saturated fat, calcium, or iron of basic foods. For example, which of the following foods is high in calcium? A) Bananas B) Beef C) Milk D) Tortillas. For each question that was answered correctly one point was given, no points were given for wrong answers. A total of 20 points was possible.

Dietary Adherence

A modified Healthy Eating Index (Bowman, Lino, Gerrior, & Basiotis, 1998) was developed in order to determine dietary adherence to guidelines based on the Food Guide Pyramid daily recommended intakes for the respondent and child. The Healthy Eating Index factors other healthy eating behaviors such as saturated fat intake and variety of food intake. Since this information was not obtained in this study, only the Food Guide Pyramid adherence was used. Utilizing the frequencies and recommended daily intakes,

scores were proportioned with 10, 7.5, 5, and 2.5 points based on adherence of intake. For example, if a participant only ate on average 1.5 servings of vegetables, then the participant only received 5 points, since an intake of 1.5 vegetables is half of what is recommended by the Food Guide Pyramid. For children, dietary adherence was based on gender and age. For example if an 11-year-old female consumed 2.2 servings of dairy servings she would receive 7.5 points. Fruit intake included fruit and 100 % fruit juice. Vegetable intake included starchy vegetables, leafy greens, and other vegetables such as lettuce and tomatoes. Dairy intake included milk, cheese, and yogurt. Meat intake included non-fried meats and fish, legumes, and eggs. Grain intake included bread, cereals, tortillas, and snack foods. A “sparingly foods” group quantified the daily intake of the following foods: fried foods, sweets and desserts, soft drinks, artificial drinks; however these foods were not included in the Dietary Adherence Score since no recommendations for the sparingly food group exist, making it difficult to delineate scores for this food group. With five food groups, each with a maximum of ten points, a maximum of fifty total points was possible. Twenty children under the age of 2 were excluded from the dietary adherence measure because there are no Food Guide Pyramid recommendations or HEI scores for children under 2 years of age.

Food Security

Household food insecurity was measured using the 18 item USDA Food Security/Hunger Core Module (Nord, Andrews, Carlson, 2002).

Anthropometrics

Body Mass Index for respondents was calculated from measured heights and weights. Two caretakers were excluded because their pre-pregnancy weights were not obtained.

Data Analysis

All data were entered into SPSS for Windows 13.0 by the interviewer and checked periodically for accuracy of entry. Data analysis included descriptive analysis and bivariate analysis to identify associations between variables. Chi square and ANOVA analyses were used for categorical and continuous variables, respectively. A p value < 0.1 was used to denote statistical significance since this research was exploratory.

Table 1: Variable Definitions

Variable Type	Variable Name	Variable Definition
Dependent	Dietary Intake/Adherence	Child FFQ
		Caretaker FFQ
Independent	Obesity	BMI > 30 kg/m ²
	Education	< 8 th Grade < High School Graduate/ GED High School Graduate/ GED Post High School Graduate
	Food Stamps	Receipt: Yes or No
	SES *	WIC Participation: Yes or No
	Nutrition Knowledge	Food Guide Pyramid Questionnaire Nutrient Knowledge

* Qualifications for North Carolina WIC: Having a family income less than 185% of the U.S. Poverty Income Guidelines. A person receiving Medicaid, Work First Families Assistance (TANF), or Food Stamps automatically meets the income eligibility requirement. <http://www.nutritionnc.com/wic/index.htm>

Results

Demographics

The demographic characteristics of the sample of 95 participants are provided in Table 2. Five of the participants were excluded from the data analysis because their income was too high, which was determined by their ineligibility to receive WIC. Participants were primarily low income, low educated African American female caretakers. Most participants identified themselves as the head of the household and were primarily homemakers.

Table 2: Participant Demographic Characteristics (N=95)

Variable	Mean ± SD
Age*	28.72 ± 8.98 years old
Income (n=85**)	\$1398 ± 819 per month
Family Size	4.05 ± 1.45

Variables	%
Gender	100% Female
Racial Identity	61.1 % African American 32.6 % Black 6.3 % Refused to Answer
Head of Household	87.4 % Respondent Head of Household
WIC Participation	
Respondent	87.4 % yes
Child	97.9 % yes
Food Stamp Participation	68.4% Currently 15.8% Yes, but not currently
Education	2.1 % Eighth Grade or less 22.1 % Some High School 38.9 % High School Graduate or GED 15.8 % Trade/Technical Training 16.8 % Some College 2.1% College Graduate 2.1 % Post Graduate
Employment Status	21.1 % Employed Full Time 13.7 % Employed Part Time 49.9 % Full Time Homemaker/caretaker 8.4 % Student (not working) 1.1 % Unemployed 5.3 % Disabled due to poor health 1.1 % Retired

* Based on reported birthdate.

** Only 85 respondents knew/disclosed their income.

Participant/Household Characteristics

The majority of this population made frequent visits to the grocery store and had ready access to transportation. (Table 3)

Table 3: Participant/Household Characteristics (N=95)

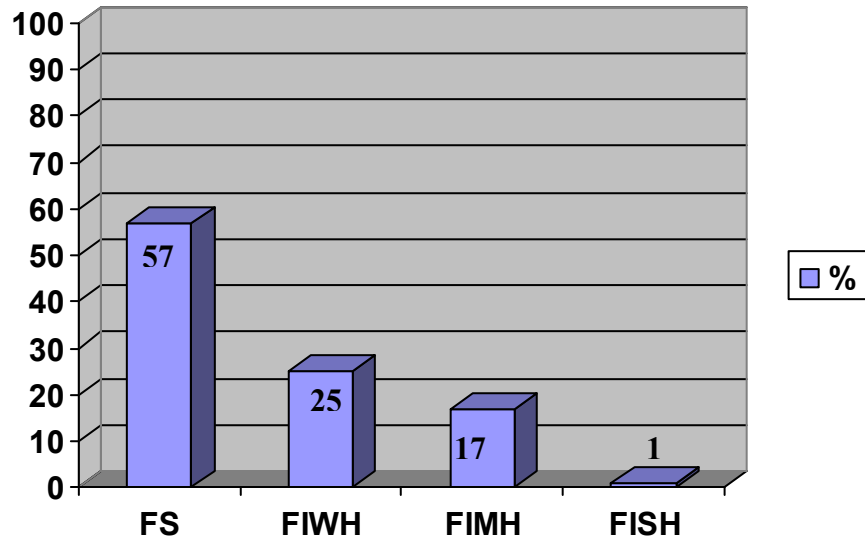
Variables	Mean ± SD
Frequency of Grocery Store Visits	2.12 ± 1.38 times a week

Variables	%
Ability to Drive a Car	89.5 %
Access to Transportation	68.4 % Whenever they want 21 % Most of the time
How many times a week participant leaves the house	16.8 % 1-3 times a week 15.8 % 4-7 times a week 67.4 % > 7 times a week
Grocery Store	63.2 % Food Lion 17.9 % Walmart

Food Security

Using the USDA Food Security/Hunger Core Module (Graph 1), the majority of this population was food secure (n=54).

Graph 1: Household Food Security Status (N=95)



FS – Food Secure
FIWH – Food Secure without hunger
FIMH – Food Secure with moderate hunger
FISH – Food Secure with severe hunger

Health Profile

The majority of participants rated their health (Table 4) as good or fair and that they were somewhat active or were active. Most participants had Medicaid.

Table 4: Participant Health Profile (N=95)

Variables	%
Self-Rated Health	5.3 % Poor 30.5 % Fair 48.4 % Good 15.8 % Excellent
Physical Activity	13.7 % Not Active 43.2 % Somewhat Active 23 % Active 18 % Very Active
Health Insurance	76.8 %
Health Insurance Type (n= 73*)	58.9 % Medicaid

* only 73 respondents had health insurance

Chronic Disease

This population of caretakers presented with high rates of reported hypertension (32.2%), anemia (42.1%), diabetes (13.7%), and asthma (17.9%).

Dietary Behavior

The majority of households reported having at least three different types of fresh fruits and fresh vegetables available for consumption each week in the house (Table 5). Both respondent and child ate out approximately 3 times in the week prior to the interview.

Table 5: Reported Household Dietary Behaviors (N=95)

Behavior	%
Have 3 Different Types of Fresh Fruit each week	70.5 % Yes
Have 3 Different Types of Fresh Vegetables each week	68.4 % Yes

Behavior	Mean ± SD
Frequency of Respondent Eating Out in past week	3.20 ± 3.43
Frequency of Child Eating Out in past week	2.76 ± 2.86

Attitude

Participants described their diet (Table 6) as average with half reporting that it is difficult to eat a healthy diet. The majority of participants had positive attitudes about nutrition.

Table 6: Participant Attitudes Towards Eating (N=95)

Participant Eating Attitudes	%
Describe Personal Diet	1.1 % Very Healthy 17.9 % Healthy 57.9 % Average 21.1 % Unhealthy 2.1 % Very Unhealthy
Difficult to Eat a Healthy Diet	49.5 % Yes
Important to eat fiber	74.7 %
Important to have low fat intake	80.0 %
Important to eat healthy	98.9 %
Important to eat a diet low in sweets/desserts	89.5 %
Healthy food choices will help keep one healthy	90.5 %

Self Efficacy

When assessing self-efficacy (Table 7), the majority of participants stated that they were very confident in their ability to choose and prepare healthy foods.

Table 7: Participant Self Efficacy Regarding Healthy Foods (N=95)

Self Efficacy	%
Choosing healthy foods at grocery store	65.3 % Very 32.6 % Somewhat 2.1 % Not Confident
Preparing healthy foods	56.8 % Very 40 % Somewhat 2.1 % Not Confident 1.1 % Not Sure
Selecting healthy snacks	76.8 % Very 22.1 % Somewhat 1.1 % Not Confident

Food Knowledge

Participants' food knowledge was measured by assessing the Food Guide Pyramid food group recommendations and a 20-item nutrient knowledge questionnaire. The average score of the Food Guide Pyramid showed that participants scored 2.94 ± 1.08 out of 5 on the food group intake recommendations. Participants scored on average 10.59 ± 3.63 on the 20 nutrient knowledge scale.

Body Mass Index

Based on measured heights and weights (Table 8), over three-fourths of African American female caretakers were overweight or obese.

Table 8: Participant Body Mass Index (N=93)*

BMI **	%
Underweight (<18.5 kg/m ²)	1.1 %
Normal Weight (18.5 – 24.9 kg/m ²)	23.7 %
Overweight (25 – 29.9 kg/m ²)	18.3 %
Mild Obese (30 – 34.9 kg/m ²)	20.4 %
Moderate Obese (35 – 39.9 kg/m ²)	17.2 %
Severe Obese (> 40 kg/m ²)	19.4%

*non-pregnant or postpartum participants

** BMI Classifications were based on the WHO International BMI Classifications.

http://www.who.int/bmi/index.jsp?introPage=intro_3.html

Dietary Adherence

Neither the caretakers nor the children met Food Guide Pyramid recommendations (Table 9). Children’s reported fruit consumption was the only recommendation met. Over half of children met their daily recommended servings for fruit. Twenty children were eliminated since they were less than 2 years of age; Food Guide Pyramid Recommendations are not given for children under 2 years of age.

Table 9: Meeting Food Guide Pyramid Recommendations

Food Group	% of caretakers who met recommendations n=95	% of children who met recommendations n=75
Vegetable	4.2%	8 %
Fruit	20%	56 %
Meat	11.6%	18.7 %
Dairy	15.8%	36 %
Grains	2.1%	28 %

Caretakers' Daily Food Group Intakes

Caretaker daily intake of each food group was averaged (Table 10). Due to the varying recommendations for children, average intake was not calculated.

Table 10: Caretakers' Average Daily Food Group Intakes (N=95)

Food Group	Minimum	Maximum	Mean	SD
Dairy	0	7.57	1.53	1.44
Fruit	0	6.00	1.43	1.64
Grain	.10	17.57	2.53	2.32
Meat	.14	6.00	1.63	1.22
Vegetable	.13	7.65	1.41	1.21
Sparingly	.10	24.37	3.66	3.98

Results of Research Questions

1. Is food insecurity associated with obesity?

After controlling for age, education, and food stamp participation, no statistically significant association between food security and BMI was found.

2. Is food insecurity associated with a lower self-rated health?

While not statistically significant Chi Square analysis indicated that those who were food secure were more likely to rate their health as good/excellent as compared to food insecure (Table 11).

Table 11: Food Security and Self-Rated Health (N=95)

	Food Secure (n/%)	Food Insecure (n/%)	Total
Poor/Fair Health	17 50.0%	17 50.0%	34 100.0%
Good/Excellent Health	37 60.7%	24 39.3%	61 100.0%

3. Are food stamp recipients food insecure?

Chi Square analysis showed that there was a significant difference between food security level and food stamp usage ($p=.008$). Food insecure individuals were more likely to be currently receiving food stamps (Table 12). Thus, in this population it seems as though food stamps do not necessarily off set food insecurity.

Table 12: Food Security and Food Stamps (N=95)

	Currently Receiving Food Stamps (n/%)	Not Currently Receiving Food Stamps (n/%)	Total
Food Secure	31 57.4%	23 42.6%	54 100%
Food Insecure	34 82.9%	7 17.1%	41 100%

4. Is nutrition knowledge associated with obesity?

Chi Square analysis revealed no significant differences between BMI and total caretaker nutrition knowledge.

5. Is education level associated with nutrition knowledge?

Food Guide Pyramid Knowledge

Chi Square analysis, revealed a difference between Food Guide Pyramid Knowledge and education which approached significance ($p=.114$). Respondents with a higher education level had higher Food Guide Pyramid knowledge (Table 13).

Table 13: Education and Food Guide Pyramid Knowledge (N=95)

	Poor/ Fair Food Guide Pyramid Knowledge	Good/Excellent Food Guide Pyramid Knowledge	Total
Less than HS degree	17 73.9%	6 26.1%	23 100.0%
HS degree	28 75.7%	9 24.3%	37 100.0%
Post HS	19 54.3%	16 45.7%	35 100.0%

Food Nutrient Knowledge

Chi squared analysis showed a significant difference ($p=.074$) between food nutrient knowledge and education level. Among this population, a higher education level meant higher nutrient knowledge (Table 14).

Table 14: Education and Nutrient Knowledge (N=95)

	Poor/ Fair Nutrient Knowledge	Good/Excellent Nutrient Knowledge	Total
Less than HS degree	14 60.9%	9 39.1%	23 100.0%
HS degree	21 56.8%	16 43.2%	37 100.0%
Post HS	12 34.3%	23 65.7%	35 100.0%

Total Nutrition Knowledge

Significant differences were found between total nutrition knowledge, which included both Food Guide Pyramid and nutrient knowledge, and education level ($p=.046$). Those with a higher education level had higher total nutrition knowledge (Table 15).

Table 15: Education and Total Nutrition Knowledge (N=95)

	Poor/ Fair Nutrition Knowledge	Good/Excellent Nutrition Knowledge	Total
Less than HS degree	12 52.2%	11 47.8%	23 100.0%
HS degree	19 51.4%	18 48.6%	37 100.0%
Post HS	9 25.7%	26 74.3%	35 100.0%

6. Is nutrition knowledge associated with dietary intake?

There were no statistical differences between nutrition knowledge and dietary intake.

7. Is caretaker nutrition knowledge associated with child's food intake?

Chi squared analysis revealed a significant difference between child's dietary adherence and caretaker's total nutrition knowledge ($p=0.016$). Thus, children were more likely to meet Food Guide Pyramid recommendations if the caretaker had good/excellent nutrition knowledge. (Table 16).

Table 16: Caretaker's Nutrition Knowledge and Child's Food Intake (N=75)

	Poor/ Fair Child Adherence	Good/Excellent Child Adherence	Total
Poor/Fair Food Knowledge	16 50.0%	16 50.0%	32 100.0%
Good/Excellent Food Knowledge	10 23.3%	33 76.7%	43 100.0%

Caretaker's Dietary Adherence and Child's Dietary Adherence

There is a significant difference between child's adherence score and respondent's adherence score ($p=.06$). Caretakers who have good/excellent dietary adherence are more likely to take care of children who have good/excellent dietary intake (Table 17).

Table 17: Caretaker's Dietary Adherence and Child's Dietary Adherence (N=75)

	Poor/Fair Caretaker Adherence	Good/ Excellent Caretaker Adherence	Totals
Child Poor/Fair Adherence	16 61.5%	10 38.5%	26 100.0%
Child Good/ Excellent Adherence	19 38.8%	30 61.2%	49 100.0%

Utilizing an ANCOVA analysis, this relationship strengthens after controlling for food security, child's age, and the caretaker's education level ($p=0.004$).

Discussion

The purpose of this research was to examine relationships between food security and obesity, self-rated health, and food stamp participation among a low-income African American female headed household population. Nutrition knowledge of this group was examined, in order to determine the associations between nutrition knowledge and education, obesity, dietary adherence, and child dietary adherence. In this population of African American female caretakers, 87.4% stated that she was the head of the household, which is considerably higher than the North Carolina average of 42% (North Carolina Minority Health Facts, 2005).

Almost two-thirds of the respondents rated their health as good or excellent, contrary to previous research that suggests the majority of African Americans rate their health negatively (Farmer & Ferraro, 2005; Farmer, Ferraro & Wybraniec 1997; Resnicow et al., 2000). Seventy-five percent of the study population was overweight or obese, which is 6% higher than national overweight and obese statistics of African American females (US DHHS, 2000). Despite reporting high levels of physical activity, almost 14% stated they had diabetes currently or had been diagnosed with some type of diabetes, 32.3% of respondents stated they had hypertension, and 42.1% stated they currently had or had been anemic in the past. This population also had higher rates of

health insurance, 79%, as compared to 23% of African Americans nationally with health insurance (Ni & Cohen, 2000).

Interestingly, almost 70% of these households having at least three types of fresh fruit and vegetables available in their house in the previous week, yet only a small percentage of caretakers and children met fruit and vegetable intake recommendations. Respondents did not report having a healthy or very healthy diet, yet they thought it was important to eat fiber, eat low fat foods, eat healthy, and limit sweet and desert intakes. The majority also felt very confident in their ability to choose and prepare healthy foods and snacks for their children. Yet, respondents, overall, had a low level of nutrition knowledge.

Contrary to previous research, among this sample no association was found between obesity and food security (Adams, Grummer-Strawn, & Chavez, 2003; Townsend, Peerson, Love, Achterber, & Murphy, 2001). This may due to the small sample size (n=95) and the majority of the population being food secure. While not statistically significant, a trend was found among this sample supporting previous research which states that those who are more food secure are more likely to self-rate their health as good or excellent (Stuff et al., 2004). Also among this sample of African American female-headed households, those who were food secure were more likely to be currently receiving food stamps ($p=0.008$), contrary to previous research (Oberholser and Tuttle, 2004).

Nutrition knowledge was also examined. Previous research has suggested that individuals with higher nutrition knowledge were more likely to consume 'healthy foods'

and less likely to consume fast foods (Tepper, Choi, Nayga, 1997; Wardle, Parmenter, & Waller, 2000). Therefore, it was anticipated that greater nutrition knowledge would be associated with a healthier weight and greater dietary adherence to Food Guide Pyramid recommendations; however, in this sample there were no significant associations regarding nutrition knowledge and obesity or dietary adherence and obesity.

However, among this sample the association between total nutrition knowledge, which included Food Guide Pyramid knowledge and nutrient content knowledge, was statistically associated with higher education. Previous research suggests that higher nutrition knowledge is associated with higher education levels (Parameter & Wardle, 1999). Also nutrition knowledge and dietary intake were examined, because, as research suggests, greater knowledge meant better adherence to dietary recommendations (Wardle, Parmeter, & Waller, 2000). No statistical significance was found between caretaker nutrition knowledge and dietary adherence. This may be related to food security in which food security and economic situations override the caretakers' nutrition knowledge and dietary intake when making food decisions (Bell, Adair, & Popkin, 2003). Caretaker nutrition knowledge was also examined in order to determine if their knowledge was associated with their child's dietary intake; as research suggests that children's food consumption is similar to mothers' food consumption (Vereecken, Keukelier, & Maes, 2004). Among this sample of African American caretakers, caretaker nutrition knowledge was significantly related to the child's dietary intake adherence, while there was no association between the caretaker nutrition knowledge and dietary adherence. These relationships need to be examined further. However, as previous

research has shown, the caretaker's intake influences the children's food intake. Among this sample population, the child was more likely to adhere to dietary recommendations if the caretaker also adhered to dietary recommendations.

Overall, no associations were found between food security or nutrition knowledge and obesity among African American caretakers; however, other strong associations were found. Greater nutrition knowledge of caretakers was associated with greater caretaker education, leading to greater child dietary adherence. This illustrates the importance of programs such as WIC, that not only provide healthy foods but also educate the caretakers on healthy eating for themselves and their children.

While this study did not address any questions directly relating to mental health status, during the interviews this topic did emerge when questions such as current employment status, income, and naming other health conditions were asked.

CHAPTER IV

EPILOGUE

This thesis research examined food security, education, obesity, dietary intake, and nutrition knowledge among low-income African American female caretakers. Based on the results of this research and previous research, future research needs to explore the relationship between education and dietary adherence while examining other factors that may influence eating in low-income populations (e.g. social and mental factors). By determining what these other factors are that influence dietary behavior, education this population can be appropriately tailored to this population.

Since WIC provides food supplementation and education, it would as be beneficial to examine the relationship between WIC households and dietary adherence compared to non-WIC low-income household controlling for nutrition knowledge of the caretaker. By examining the nutrition knowledge and dietary adherence deficits among WIC participants, again the education can be targeted to this population.

Also, a stronger association between food insecurity and obesity may be elucidated if participants were not and had not ever received food stamps. In this sample population food stamps did not off-set food insecurity. Future studies need to address the adequacy of the Food Stamp Program regarding offsetting food insecurity. This research and future research is important in determining the effectiveness of all government food assistance programs. A prospective study would be beneficial in order to look at the level

of food insecurity prior to obtaining food stamps and to compare food insecurity overtime as well as examining the respondent's overweight/obesity status overtime. However, it may be difficult to determine this association since the obesity rates are rising for all ethnicities and populations.

In summary, while government food assistance programs do not appear to off-set food insecurity, but these programs do assist low-income participants in making healthy food choices to prevent diet-related chronic diseases through nutrition education. As this research and previous research indicate, a caretaker's dietary habits influence their child's intake. Since caretaker nutrition knowledge was also correlated with child dietary adherence, this relationship is important to examine. Research, results such as this sample population, helps support the need for government food assistance programs in order to provide nutrition education.

This population's receptiveness made for a rapid recruitment and interview process and had more financial support been available, I would have been able to interview more caretakers from this population. I also thought that it was important not address participant incentives until the potential participant committed to participating.

Looking back, there are only a couple of aspects of the project I would change. Because my population is a convenience sample, I, of course, would recruit from other organizations, such as churches, soup kitchens, and other clinics in order to ensure all sub-populations of this low-income population of African American caretakers were included.

Because mental health conditions and issues were brought up during the interview process, I would also administer a depression and other mental health questionnaires to participants.

It may also be important to define a household and income since often a couple of families lived under one house and would possibly offer financial and social support to curb food insecurity and possibly mental health concerns.

I have not only learned a great deal regarding research and statistics, I have learned a lot about myself. I came to graduate school in hopes of determining whether to continue with my public health nutrition background or pursue a nutrition biochemistry track. This research opportunity literally landed in my lap and, through this process, it has confirmed my passion. Initially I had reservations with being able to recruit a population so foreign and unlike my own. I was concerned that I would not be able to recruit even the initial 50 participants. Once recruitment began, the response was overwhelming and the number of participants jumped from 50 to 75 in one month. By the third month, I was informed that 100 participants were to be interviewed. By the end of the fourth and final month, I had interviewed 100 women in their homes and would have gladly continued had the grant not ended. I learned that genuine sincerity and warmth transcends any barriers or personal reservations that one may have about herself or about others. I also learned the harsh reality in America, that even with government assistance, a large percentage of Americans do go hungry every day. It keeps my life in perspective, giving me the desire to assist those in need. Therefore, this research has confirmed my desire to pursue a career in public health.

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APPENDIX A

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THE UNIVERSITY OF NORTH CAROLINA

GREENSBORO

CONSENT TO ACT AS A HUMAN PARTICIPANT: LONG FORM

Project Title: Food Security and Weight Status of African American Caretakers

Project Director: Lauren Haldeman, Ph.D.

Participant's Name:

DESCRIPTION AND EXPLANATION OF PROCEDURES:

The purpose of this project is to learn about the eating habits of African Americans living in Guilford County, North Carolina. Participants will 1. live in Guilford County, NC 2. take care of a child < 12 years of age, 3. live in a house without much food, 4. be the primary meal preparer, and 5. African American. Participants will be asked to spend about 60 minutes with the interviewer talking about their thoughts and feelings about food. The interviewer will also ask questions about money, education, work as well as questions about members of the house. Height and weight will also be taken. All interviews will take place in the participant's home.

RISKS AND DISCOMFORTS:

This study does have some small risks due to the sensitive nature of some of the survey questions, such as money and food issues. The survey questions will be asked in a sensitive manner, and participants will be informed that they have the right to refuse answering any questions at any time. All interviews will take place in the privacy of the participant's own home. All written materials (anthropometric measurements and sociodemographic information) will be kept in a locked office.

All members of the research team will sign privacy agreements which will be kept on file by the Principal Investigator for at least 3 years. All written materials and computer files will be destroyed after 7 years.

POTENTIAL BENEFITS:

Individuals in this study will receive a \$20 gift card to a local food store for their time. The results of this study will serve as a way to gain a better understanding of the nutrition needs and desires of the African American population in Guilford County, NC. These data will aid in the future development of nutrition interventions focusing on the needs of this group.

CONSENT:

By signing this consent form, you agree that you understand the procedures and any risks and benefits involved in this research. You are free to refuse to participate or to withdraw

your consent to participate in this research at any time without penalty or prejudice; your participation is entirely voluntary. Your privacy will be protected because you will not be identified by name as a participant in this project.

The research and this consent form have been approved by the University of North Carolina at Greensboro Institutional Review Board, which insures that research involving people follows federal regulations. Questions regarding your rights as a participant in this project can be answered by call Mr. Eric Allen at (336) 256-1482. Questions regarding the research itself can be answered at anytime before, during or after the interview and will be answered by Dr. Lauren Haldeman by calling (336) 256-0311. Any new information that develops during the project will be provided to you if the information might affect your willingness to continue participation in the project.

By signing this form, you are agreeing to participate in the project described to you by the community interviewer.

Participant's Signature

Date

SOCIOECONOMIC STATUS/DEMOGRAPHICS

Date of Interview: ____/____/____

Respondent's Full Name: _____

Address: _____

Phone: _____ Respondent's date of birth: (MM/DD/YY) ____/____/____

Sex: Male / Female Age: _____

1. How would you identify yourself?
 - 01) African American
 - 02) Black
 - 03) Other _____
 - 99) Refused

2. Do you know how to drive a car?
 - 01) Yes
 - 02) No
 - 99) Refused

3. Do you have access to transportation?
 - 01) Yes, whenever I want
 - 02) Most of the time
 - 03) Very limited
 - 04) No
 - 99) Refused

4. How many times a week do you leave the house?
 - 01) 0
 - 02) 1-3
 - 03) 4-7
 - 04) More than 7 times

(This information should be gathered on the oldest child under 12 years of age)

Child's Full name: _____

Child's sex: Male / Female Child's age: _____

Child's date of birth: (MM/DD/YY) ____/____/____

5. What is your relation to the child?
01) Biological Mother
02) Biological Father
03) Grandmother or Grandfather
04) Foster Parent
77) Other (Please Specify): _____

Education:

6. What is the highest grade you reached in school?
01) No formal schooling
02) Eighth grade or less
03) Some high school
04) High school graduate or GED equivalency
05) Trade or technical training (specify highest grade reached): _____
06) Some college
07) College graduate
08) Post-graduate
99) Refused

The Household:

7. How many people, including yourself, live in your house/apartment? _____
8. How many people 18 years or older, including yourself, are there in your household? _____
9. How many children between 11-17 years of age are there in your household? _____
10. How many children between 6-10 years of age are there in your household? _____
11. How many children between 0-5 years of age are there in your household? _____
12. How many sons _____ and daughters _____ do you have (do not have to be currently living in same house)?
13. Are you the main meal preparer for your household?
01) Yes
02) No
88) Don't know
99) Refused

Head of Household:

2. Do you consider yourself the head of the household, i.e., the person who mainly provides money for your family?

- 01) Yes –
- 02) No
- 99) Refused

3. Who is the head of the household? _____

(**Interviewer:** If there is more than one household head, record **all** household heads.)

4. What is the current employment status of the household head?

- 01) Employed full time
- 02) Employed part time
- 03) Full-time homemaker/caretaker
- 04) Student(not working)
- 05) Unemployed
- 06) Disabled due to poor health
- 07) Retired
- 66) Not applicable
- 77) Other (please specify): _____
- 99) Refused

(**Interviewer:** Ask q. 24 only if respondent is not the head of the household.)

5. What is your present employment status?

- 01) Employed full time
- 02) Employed part time
- 03) Full-time homemaker/caretaker
- 04) Student (not working)
- 05) Unemployed
- 06) Disabled due to poor health
- 07) Retired
- 77) Other (please specify): _____
- 99) Refused

6. Do you do anything to make additional money in your home (e.g., sewing, cooking, secretarial work, babysitting, care of elderly, etc.)?

- 01) Yes Please specify: _____
- 03) No
- 99) Refused

If yes, how much do you make per month from this activity? \$ _____

FOOD PURCHASING BEHAVIORS

1. Are you the main food shopper for your household?
 - 01) Yes
 - 02) No
 - 88) Don't know
 - 99) Refused

(Interviewer: If no, then please ask respondent to answer the next questions to the best of their ability about the main food shopper in the house.)

2. About how much do you (or main food shopper) spend on food at the grocery store every week?
 - 01) \$ _____
 - 88) Don't know
3. Where do you do most of your grocery shopping?
 - a. Store name: _____
 - b. How many times a week: _____

DIETARY INTAKE

Interviewer: Now I would like to ask you some questions about your child's eating habits now (reference child).

- Does your child usually eat meals/snacks in the home?
- 01) Yes
 - 02) No (Go to part 4)
 - 03) I don't know
 - 04) Refused
-

Where does the child eat outside the home?

(Interviewer: If child eats these meals anywhere other than at home, ask q.3)

3. Are you responsible for purchasing / providing the food for the child receives at daycare or school?

01) Yes

02) No

88) Don't know

99) Refused

4. **Interviewer:** I am now going to ask you questions about foods *you* and *your child* eat. For each food, I want to know whether *you* or *your child* eats it (yes or no), and also approximately how many times *you* and *he/she* eats it, (times per day, week, month, or year).

	Does *** eat...	How often does *** eat...	Do you eat...	How often do you eat...
a) Fruits (excluding juices)	Y / N	___ d w m y	Y / N	___ d w m y
b) Legumes (Beans, chick peas, lentils, pigeon peas)	Y / N	___ d w m y	Y / N	___ d w m y
c) Starchy Vegetables (potato)	Y / N	___ d w m y	Y / N	___ d w m y
d) Green Leafy Vegetables (collard greens)	Y / N	___ d w m y	Y / N	___ d w m y
e) Lettuce, tomato, and other vegetables	Y / N	___ d w m y	Y / N	___ d w m y
f) Milk (Specify % _____)	Y / N	___ d w m y	Y / N	___ d w m y
g) Cheese	Y / N	___ d w m y	Y / N	___ d w m y
h) Yogurt	Y / N	___ d w m y	Y / N	___ d w m y
i) Fried Foods (ie. French fries, fried chicken)	Y / N	___ d w m y	Y / N	___ d w m y
j) Sour Cream	Y / N	___ d w m y	Y / N	___ d w m y
k) Meats (e.g. chicken, beef, pork, ham)	Y / N	___ d w m y	Y / N	___ d w m y
l) Fish and Shell fish	Y / N	___ d w m y	Y / N	___ d w m y
m) Eggs	Y / N	___ d w m y	Y / N	___ d w m y
n) Pasta	Y / N	___ d w m y	Y / N	___ d w m y
o) Tortillas	Y / N	___ d w m y	Y / N	___ d w m y
p) Bread (Specify type _____)				
q) Cereal (Specify brand _____)	Y / N	___ d w m y	Y / N	___ d w m y
r) Fruit Juices (specify brand: _____)	Y / N	___ d w m y	Y / N	___ d w m y
s) Soft (Pepsi, Coke)	Y / N	___ d w m y	Y / N	___ d w m y
t) Artificial Drinks(Tang, Sunny Delight)	Y / N	___ d w m y	Y / N	___ d w m y
u) Sweets and Desserts	Y / N	___ d w m y	Y / N	___ d w m y
w/ Snack Foods (eg Potato Chips, Nachos)	Y / N	___ d w m y	Y / N	___ d w m y

5. How often in the past week did you eat food from a: Home of Friend or Quick Food Restaurant, Cafeteria/Buffer Restaurant, Pizza Parlor, Ethnic Restaurant, Delivered food and other

Location	How many times a week?

6. How often in the past week did the child eat food from a: Home of Friend or Quick Food Restaurant, Cafeteria/Buffer Restaurant, Pizza Parlor, Ethnic Restaurant, Delivered food and other

Location	How many times a week?

HOUSEHOLD FOOD INVENTORY

Interviewer: For the next questions, I would like to know if you had any of these food items in your house during the last week. Even if you did not eat these items, I just want to know if you had them in your house.

In the last week, did you have at least three **different** kinds of fresh fruits in your house?

- Yes
- No
- 88) Don't know

In the last week, did you have at least three **different** kinds of fresh vegetables in your house?

- 01) Yes
- 02) No
- 88) Don't know

4. What foods do you consider to be American?

5. What American foods do you eat most often?

CARETAKER AND CHILD HEALTH INFORMATION

Interviewer: Now I would like to ask you about your health and ***'s health.

1. How would you rate your overall health?

- 01) Poor
- 02) Fair
- 03) Good
- 04) Excellent
- 88) Don't know
- 99) Refused

2. How would you rate ***'s overall health?

- 01) Poor
- 02) Fair
- 03) Good
- 04) Excellent
- 88) Don't know
- 99) Refused

3. Please tell us if you or *** has ever suffered from any of the following diseases:

	CARETAKER			CHILD		
a) Diabetes	01)Yes	02)No	88)D/K	01)Yes	02)No	88)D/K
d) Hypertension (High blood pressure)	01)Yes	02)No	88)D/K	01)Yes	02)No	88)D/K
e) Asthma	01)Yes	02)No	88)D/K	01)Yes	02)No	88)D/K
g) Tuberculosis	01)Yes	02)No	88)D/K	01)Yes	02)No	88)D/K
i) Lead poisoning	01)Yes	02)No	88)D/K	01)Yes	02)No	88)D/K
j) Anemia	01)Yes	02)No	88)D/K	01)Yes	02)No	88)D/K
k) Other _____	01)Yes	02)No	88)D/K	01)Yes	02)No	88)D/K

4. If you have to go to the doctor where do you go?

- 01) Hospital
- 02) Health Serve
- 03) Clinic
- 04) Other
- 05) No response

5. Do you have health insurance?

- 01) Yes
- 02) No
- 03) No response

What type: _____

6. Did you ever breastfeed your child?

- 01) Yes
- 02) No

Physical Activity:

8. How active do you consider child to be?

- 01) Not active
- 02) Somewhat active
- 03) Active
- 04) Very Active
- 88) I don't know
- 99) Refused

9. What types of physical activity does your child do?

10. How active do you consider yourself to be?

- 01) Not active
- 02) Somewhat active
- 03) Active
- 04) Very Active
- 88) I don't know
- 99) Refused

11. What types of physical activity do you do?

TV Viewing:

12. About how many hours a day does the child spend watching television during the week?

- 01) _____
- 88) Don't know
- 99) Refused

12a. About how many hours a day does the child spend watching television on weekends?

- 01) _____
- 88) Don't know
- 99) Refused

18 ITEM U.S. HOUSEHOLD FOOD SECURITY/HUNGER SURVEY MODULE

SEE ATTACHED FORM

FOOD ASSISTANCE

Interviewer: In this section we would like to know if you are familiar with and use the following food assistance programs: WIC Program, Food Banks, Salvation Army, and others. Again, all of this information is strictly confidential.

Government Assistance (WorkFirst):

Are you now or have you ever received government checks (WorkFirst)?

- 01) Yes (Go to number 2)
- 02) No
- 88) Don't know
- 99) Refused

2. If you are not currently/ or never have received government checks (WorkFirst), why is your household not receiving them now. Is it because.....

(Circle all that apply)

- 01) It is too difficult to apply
- 02) Don't know what it is
- 03) You are not eligible to receive government assistance
- 02) You applied but have not received answer
- 03) You feel uncomfortable using government checks (WorkFirst)
- 04) There are problems with government checks (WorkFirst) office staff
- 05) You do not have transportation
- 06) You no longer need government checks (WorkFirst)
- 66) Not applicable
- 77) Other (please specify) _____
- 88) Don't know
- 99) Refused

WIC --The supplemental Food Program for Women, Infants and Children.

Maternal WIC:

3. Did you receive WIC Program benefits either during your pregnancy or after the child's

birth?

- 01) Yes, both
- 02) Yes, during pregnancy only
- 03) Yes, after birth only
- 04) Neither

4. Has your child ever received or is receiving WIC benefits?

- 01) Yes
- 02) No
- 66) Not applicable
- 88) Don't know
- 99) Refused

5. If not, could you tell me why you are not receiving WIC benefits for **yourself** now?
Is it because..(circle all that apply)

01) You are not eligible anymore because it has been too long since your child was born

(Interviewer: Non-breastfeeding women get checks for 5 months after birth and breastfeeding women get checks up to a year after child is born)

- 02) It is too difficult to apply
- 03) You applied, but have not received an answer
- 04) You feel uncomfortable using WIC benefits
- 05) There are problems with WIC Program staff
- 06) You do not have transportation
- 07) You did not apply because respondent believed he/she is not eligible
- 08) You applied, but respondent is ineligible due to high income
- 66) Not applicable
- 77) Other Specify: _____
- 88) Don't know
- 99) Refused

HOUSEHOLD INCOME / FOOD STAMP PARTICIPATION

Household Income:

Interviewer: For the next two questions please include all money (employment) and government assistance (government checks, Disability, Food Stamps) received by any and all members of your household.

1. What is the total amount of money your household receives per month from employment and government assistance (Please include income for all members of the household)? \$ _____
88) Don't know
99) Refused

2. From these choices, which best shows the total amount of money your household receives per month from employment and government assistance (Please include income for all members of the household)?
01) \$0-\$500
02) \$500-\$1000
03) \$1000-\$1500
04) \$1500-\$2000
05) More than \$2000
88) Don't know
99) Refused

Food Stamp Participation:

3. Are you now or have you ever received food stamps?
01) Yes
02) No --- **(skip to q.6)**
88) Don't know
99) Refused

4. Do you use food stamps to buy food for all members of your household?
01) Yes
02) No
88) Don't know
99) Refused

5. In an average month, how long do food stamps last you?
01) _____ Weeks
88) Don't know
99) Refused

6. Is anyone currently or has anyone else in your household ever received food stamps?
Yes
No
88) Don't know
99) Refused

(Interviewer: If respondent answered "no" to q. 3 and 6, ask q.7)

7. Why doesn't your household receive Food Stamps now? Is it because...(circle all that apply)
01) It is too difficult to apply
02) You are not eligible to receive Food Stamps
02) You applied but have not received answer
03) You feel uncomfortable using Food Stamps
04) There are problems with Food Stamps Office staff
05) You do not have transportation
06) Your food stamp benefits have stopped because of Welfare Reform
07) You no longer need Food Stamps
66) Not applicable
77) Other (please specify): _____
88) Don't know
99) Refused

CARETAKER NUTRITION KNOWLEDGE, ATTITUDES, BARRIERS

Knowledge:

Interviewer: Now I would like to ask you some questions about nutrition.

1. Do you think it is important to eat fruits and vegetables?
01) Yes
02) No
88) Don't know
99) Refused
2. Do you think is important to eat fiber?
01) Yes
02) No
88) Don't know
99) Refused

3. Have you ever seen the Food Guide Pyramid?

- 01) Yes
- 02) No
- 88) Don't know
- 99) Refused

4. According to the recommendations given on the Food Guide Pyramid, how many servings from each food group should you and your family eat everyday?

	<u>Number of portions:</u>			
a) Fruits	01) 1	02) 2-4	03) 6-11	88) D/K
b) Vegetables	01) 1-2	02) 3-5	03) 6-11	88) D/K
c) Breads/cereals/rice	01) 2-4	02) 3-5	03) 6-11	88) D/K
d) Milk/yogurt/cheese	01) 2-3	02) 5-7	03) 6-11	88) D/K
e) Meat/beans	01) 2-3	02) 5-7	03) 8-10	88) D/K

5. Name some healthy foods.

88) I don't know

6. Do you think it is important to eat foods that are low in fat?

- 01) Yes
- 02) No
- 88) I don't know
- 99) Refused

7. Do you think it is important for a person to eat healthy?

- 01) Yes
- 02) No
- 88) I don't know
- 99) Refused

8. Which of these foods do you think is/are high in saturated fat?

a) Bananas	01) Yes	02) No	88) D/K
b) Beef	01) Yes	02) No	88) D/K
d) Rice	01) Yes	02) No	88) D/K
c) Potato	01) Yes	02) No	88) D/K
d) Tortilla	01) Yes	02) No	88) D/K

9. Which of the following foods would be a good source of calcium?
- | | | | |
|-----------|---------|--------|---------|
| a) Pork | 01) Yes | 02) No | 88) D/K |
| b) Apples | 01) Yes | 02) No | 88) D/K |
| c) Milk | 01) Yes | 02) No | 88) D/K |
| d) Corn | 01) Yes | 02) No | 88) D/K |
| e) Rice | 01) Yes | 02) No | 88) D/K |

10. Which of the following foods would be a good source of iron?
- | | | | |
|-------------|---------|--------|---------|
| a) Tortilla | 01) Yes | 02) No | 88) D/K |
| b) Apples | 01) Yes | 02) No | 88) D/K |
| c) Milk | 01) Yes | 02) No | 88) D/K |
| d) Beef | 01) Yes | 02) No | 88) D/K |
| e) Rice | 01) Yes | 02) No | 88) D/K |

11. Which of the following foods would be a good source of fiber?
- | | | | |
|-------------|---------|--------|---------|
| a) Fish | 01) Yes | 02) No | 88) D/K |
| b) Tortilla | 01) Yes | 02) No | 88) D/K |
| c) Milk | 01) Yes | 02) No | 88) D/K |
| d) Beef | 01) Yes | 02) No | 88) D/K |
| e) Beans | 01) Yes | 02) No | 88) D/K |

12. Do you think that it is important to eat a diet low in sweets and deserts?
- 01) Yes
 02) No
 88) I don't know
 99) Refused

Attitudes:

13. Do you believe that making healthy food choices will help keep you and your family healthy.
- 01) Yes, it will help
 02) It will help a little
 03) No it will not help
 04) Not sure if it will help
 99) Refused

Delivery of Nutrition Information:

14. Have you ever gotten information about nutrition?
 01) Yes 02) No 88) Don't know
If yes, where did you learn about nutrition?
-

15. Would you like learning more about nutrition?
01) Yes
02) No (Answer # 16)
88) I don't know 99) Refused
16. Please tell us how you would like to learn about nutrition.
a) Newspaper
b) Health Fairs
c) Television
d) Radio
e) Community play
f) Workshops
g) Mail
h) From child's school
i) Nutrition professional
j) Family Doctor
k) Theater

Barriers:

17. How would you describe your diet?
01) Very healthy
02) Healthy
03) Average
04) Unhealthy
05) Very unhealthy
88) Don't know
18. Do you think it is difficult to eat a healthy diet?
01) Yes 02) No 88) Don't know
19. If yes, please tell me why it is difficult for you to eat a healthy diet.
-
- a) It takes too much time to prepare
b) Healthy foods cost too much
c) My family does not eat healthy foods
d) It is difficult to find healthy foods that my family likes.
e) I do not know how to buy healthy foods.
f) I do not know how to use food labels.
g) I do not receive any support for preparing healthy foods.
h) I don not know what foods are healthy.
i) Other

Self-Efficacy:

Interviewer: Please tell me how confident you are about the following:

20. You are able to choose healthy foods at the grocery store

- 01) Very confident
- 02) Somewhat confident
- 03) Not confident at all
- 04) Not sure
- 99) Refused

21. You are able to prepare healthy foods for you and your family.

- 01) Very confident
- 02) Somewhat confident
- 03) Not confident at all
- 04) Not sure
- 99) Refused

22. You are able to select healthy snacks for your children.

- 01) Very confident
- 02) Somewhat confident
- Not confident at all
- Not sure
- 99) Refused

CARETAKER/CHILD ANTHROPOMETRY

Caretaker Measurements:

Weight 1: _____ lbs. _____ kgs.

Height 1: _____ inches _____ cm.

Weight 1: _____ lbs. _____ kgs.

Height 1: _____ inches _____ cm

**FOOD-SECURITY/HUNGER CORE MODULE:
3-STAGE DESIGN, WITH SCREENERS
USDA, Food and Nutrition Service and Economic Research Service – 6/23/99**

Transition into Module (administered to all households): These next questions are about the food eaten in your household in the last 12 months, since (current month) of last year and whether you were able to afford the food you need.

USDA Food Sufficiency Question/Screeners: Questions 1, 1a, 1b (Optional, these questions are not used to calculate the food-security/hunger scale. Question 1 may be used in conjunction with income as a preliminary screener to reduce respondent burden for high income households).

1. [IF ONE PERSON IN HOUSEHOLD, USE "I" IN PARENTHETICALS, OTHERWISE, USE "WE."]

Which of these statements best describes the food eaten in your household in the last 12 months: --enough of the kinds of food (I/we) want to eat; --enough, but not always the kinds of food (I/we) want; --sometimes not enough to eat; or, --often not enough to eat?

- [1] Enough of the kinds of food we want to eat (SKIP 1a and 1b)
- [2] Enough but not always the kinds of food we want (SKIP 1a)
- [3] Sometimes not enough to eat [SKIP 1b]
- [4] Often not enough [SKIP 1b]
- [] DK or Refused (SKIP 1a and 1b)

- 1a. [IF OPTION 3 OR 4 SELECTED, ASK] Here are some reasons why people don't always have enough to eat. For each one, please tell me if that is a reason why YOU don't always have enough to eat. [READ LIST. MARK ALL THAT APPLY.]

- | YES | NO | DK | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Not enough money for food |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Not enough time for shopping or cooking |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Too hard to get to the store |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | On a diet |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | No working stove available |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Not able to cook or eat because of health problems |

- 1b. [IF OPTION 2 SELECTED, ASK] Here are some reasons why people don't always have the quality or variety of food they want. For each one, please tell me if that is a reason why YOU don't always have the kinds of food you want to eat. [READ LIST. MARK ALL THAT APPLY.]

- | YES | NO | DK | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Not enough money for food |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Kinds of food (I/we) want not available |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Not enough time for shopping or cooking |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Too hard to get to the store |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | On a special diet |

Stage 1: Questions 2-6 (asked of all households; begin scale items).

[IF SINGLE ADULT IN HOUSEHOLD, USE "I," "MY," AND "YOU" IN PARENTHEICALS; OTHERWISE, USE "WE," "OUR," AND "YOUR HOUSEHOLD."]

2. Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months, that is, since last (name of current month).

The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that often true, sometimes true, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

3. "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q5 - 6; OTHERWISE SKIP TO 1st-Level Screen.]

5. "(I/we) relied on only a few kinds of low-cost food to feed (my/our) child/the children because (I was/we were) running out of money to buy food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

6. "(I/We) couldn't feed (my/our) child/the children) a balanced meal, because (I/we)

couldn't afford that." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

1st-level Screen (screener for Stage 2): If affirmative response to any one of Questions 2-6 (i.e., "often true" or "sometimes true"), OR, response [3] or [4] to Question 1 (if administered), then continue to Stage 2; otherwise, skip to end.

Stage 2: Questions 7-11 (asked of hh's passing the 1st-level Screen: estimated 40% of hh's ≤ 185% Poverty; 5.5% of hh's > 185% Poverty; 19% of all households).

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q7; OTHERWISE SKIP TO Q8]

7. "(My/Our child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

- Often true
- Sometimes true
- Never true
- DK or Refused

8. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

- Yes
- No (Skip 8a)
- DK (Skip 8a)

8a. [IF YES ABOVE, ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- DK

9. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?

- Yes
- No
- DK

10. In the last 12 months, were you every hungry but didn't eat because you couldn't afford enough food?

- Yes
- No
- DK

11. In the last 12 months, did you lose weight because you didn't have enough money for food?

- Yes
- No
- DK

2nd-level Screen (screener for Stage 3): If affirmative response to any one of Questions 7 through 11, then continue to Stage 3; otherwise, skip to end.

Stage 3: Questions 12-16 (asked of hh's passing the 2nd-level Screen: estimated 7-8% of hh's < 185% Poverty; 1-1.5% of hh's > 185% Poverty; 3-4% of all hh's).

12. In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?

- Yes
- No (Skip 12a)
- DK (Skip 12a)

12a. [IF YES ABOVE, ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

- Almost every month
- Some months but not every month
- Only 1 or 2 months
- DK

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK 13-16; OTHERWISE SKIP TO END.]

13. The next questions are about children living in the household who are under 18 years old. In the last 12 months, since (current month) of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?

- Yes
- No
- DK

14. In the last 12 months, did (CHILD'S NAME/any of the children) ever skip meals because there wasn't enough money for food?

- Yes

No (Skip 14a)

DK (Skip 14a)

14a. [IF YES ABOVE ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

Almost every month

Some months but not every month

Only 1 or 2 months

DK

15. In the last 12 months, (was your child/ were the children) ever hungry but you just couldn't afford more food?

Yes

No

DK

16. In the last 12 months, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?

Yes

No

DK

END OF FOOD-SECURITY/HUNGER CORE MODULE

User Notes

(1) Response Options: For interview surveys, DK (“don’t know”) and “Refused” are blind responses - that is, they are not presented as response options, but marked if volunteered. For self-administered surveys, DK is presented as a response option.

(2) Screeners: The two levels of screener are provided for survey designers wishing to reduce respondent burden for households not manifesting: (a) *any* level of food insecurity (1st-level screener); or (b) any signs of *hunger* (2nd-level screener).

To further reduce burden for higher-income respondents, a preliminary screener may be constructed using Q1 along with a household income measure. Households with income above twice the poverty threshold, AND who respond <1> to Q1 may be skipped to the end of the module and classified as food secure. Use of this preliminary screener reduces total burden in a survey with many higher-income household, and the cost, in terms of accuracy in identifying food insecure households, is not great. However, research has shown that a small proportion of the higher-income households screened out by this procedure will register food insecurity if administered the full module. If Q1 is not needed for research purposes, a preferred strategy is to omit Q1 and administer Stage 1 of the module to all households. Administration time for Stage 1 is very nearly the same as administration time for the preliminary USDA food sufficiency question/screener.

(3) 30-Day Reference Period: The questionnaire items may be modified to a 30-day reference period by changing the “last 12-month” references to “last 30 days.” In this case, items 8a, 12a, and 14a must be changed to read as follows:

8a/12a/14a [IF YES ABOVE, ASK] In the last 30 days, how many days did this happen?

_____ days

[] DK

(4) Food-Security/Hunger Scale: Questions 2-16 provide a complete, validated set of food-insecurity/hunger indicator variables for use in: (1) scaled measurement of the severity of household food insecurity and hunger; (2) classification of households by severity level of food insecurity and hunger; and (3) comparison of food-insecurity and hunger prevalence with national benchmark data. To request guidance materials for calculating these measures, contact the U.S. Department of Agriculture, Food and Nutrition Service, Office of Analysis, Nutrition, and Evaluation, Alexandria, VA (703-305-2125), or the U.S. Department of Agriculture, Economic Research Service, Washington, DC (202-694-5433).