2017

Comparing the physical and psychological effects of food security and food insecurity

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Although much research exists on how food insecurity impacts one's quality of life, there are no studies to date that have compared the quality of life between food insecure and food secure individuals. This mixed-methods study explores these comparisons. The online survey assessed quality of life in the areas of performance at school/work, psychological and physical health, and quality of relationships. The survey included closed and open-ended questions and was analyzed using quantitative and qualitative methods. This study reveals that food insecure individuals had a poorer quality of life in most of the areas that were assessed. The results are intended to give a deeper and more personal perspective of what it means to be food insufficient and how food insecurity may impact one's quality of life.

Degree Type

Open Access Senior Honors Thesis

Department

Social Work

First Advisor

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Second Advisor

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Keywords

Food Insecurity, Food Security, Marginal Food Insecurity, Quality of Life

Subject Categories

Social Work

COMPARING THE PHYSICAL AND PSYCHOLOGICAL EFFECTS OF FOOD SECURITY AND FOOD INSECURITY

A Senior Thesis Submitted to the

Eastern Michigan University

Honors College

In Partial Fulfillment of the Requirements for Graduation

with Honors in Social Work

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Approved at Ypsilanti, Michigan, on this date March 30, 2017

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Abstract

Although much research exists on how food insecurity impacts one's quality of life, there are no studies to date that have compared the quality of life between food insecure and food secure individuals. This mixed-methods study explores these comparisons. The online survey assessed quality of life in the areas of performance at school/work, psychological and physical health, and quality of relationships. The survey included closed and open-ended questions and was analyzed using quantitative and qualitative methods. This study reveals that food insecure individuals had a poorer quality of life in most of the areas that were assessed. The results are intended to give a deeper and more personal perspective of what it means to be food insufficient and how food insecurity may impact one's quality of life.

Keywords: Food insecurity, food security, marginal food insecurity, quality of life

Introduction

Within the United States, millions of people are food insecure. According to the United States Department of Agriculture (2011), food insecurity is defined as a state in which "consistent access to adequate food is limited by a lack of money and other resources at times during the year" (para. 2). Therefore, food insecurity includes lacking access to food on a regular basis, as well as not having access to healthy (adequate) foods that have nutritional value, and contribute to good health such as fresh fruits, vegetables, and meat. According to Gunderson and Ziliak (2015), around fifty million people in the United States are currently living in a food insecure household, making food insecurity one of the United States' main health and nutrition issues.

Much is known about the physical and mental health consequences of food insecurity, as will be discussed in the literature review. However, not as much attention has been paid to the quality of life of those individuals who are experiencing food insecurity. Furthermore, there are no studies to date that compare the quality of life between people who are food secure with those experiencing food insecurity. This research study aims to fill this gap in the literature by comparing the quality of life between participants who are food secure and food insecure.

Demographics

The demographics of people who are most likely to be food insecure are individuals and families in poverty. Within the population of Americans in poverty who are suffering from food insecurity, eighty-five percent of these households include an adult who is employed (Black, 2012). Therefore, the myth that people are receiving food

stamps because they are not working is not true. The United States Department of Agriculture (2015) estimates that 14.1 percent of Americans were food insecure in 2014.

African Americans

According to Feeding America (2016), African Americans are twice as likely to be food insecure than the rest of the United States population. There is also a relationship between food cost and food insecurity within counties that are primarily African American. These counties fall into the highest rates of food insecurity. Five of the 92 food insecure counties that are majority African American also fall into the top ten percent of counties with the highest food index. The average cost per meal in these counties is $3.17, compared to the national average of $2.79 (Feeding America, 2016).

Latinx Population

The Latinx- American population is more likely to suffer from food insecurity than the overall population. According to the United States Department of Agriculture, in 2014, 6.9 % of Latinx households were food insecure. In comparison, the national average of food insecurity in 2014 was 5.6% (United States Department of Agriculture [USDA], 2014b).

Native Americans

Food insecurity is of particular concern to the Native American population. The Native population has one of the highest rates of food insecurity within the United States. According to Gordon and Oddo (2012), "American Indian (AI) and Alaska Native (AN) children have approximately twice the levels of food insecurity, obesity, and Type II diabetes, relative to the averages for all U.S. children of similar ages" (p. vi).

Women

Women are significantly more affected by food insecurity than men. Single mothers are more likely to suffer from food insecurity than single fathers. Statistics show that among single parent household among adults ages 18 and over, 30.3 % of women in single parent households vs. 22.4% of men in single parent households are food insecure (USDA, 2015).

Lesbian Gay Bisexual Transgender Population

Individuals who classify as lesbian, gay, bisexual, or transgender (LGBT) experience disproportionate levels of food insecurity. According to Gates (2014), 2.4 million (29%) of all LGBTQ people experienced food insecurity in 2013. According to a study by Brown, Romero and Gates (2016) that analyzed the proportion of LGBT individuals and same-sex couples who participated in SNAP, one in four were using the nutritional assistance program. The study also found that within the LGBT population, people of color who were recipients of SNAP had insufficient resources to feed themselves and their families at disproportionate levels. In comparison to the 21% of food insecure, white, LGBT SNAP recipients, 42% of African Americans, 33% of Hispanics and 32% of American Indian and Alaskan Natives were food insecure in the past year. There were also notable differences between men and women, with 31% of female SNAP recipients classifying as food insecure in comparison to 22% of male SNAP recipients (Brown et. al, 2016).

Elderly

Within the elderly population, food insufficiency is more commonly found within female poor, minority, and/or disabled individuals (Ziliak & Gundersen, 2014). Latino seniors experience the highest levels of food insecurity (18.2%), closely followed by African American seniors (17.2%). These numbers are significantly higher than the 7.2% of white seniors who are food insecure (Ziliak & Gundersen, 2014). Elderly individuals who are participants of food assistance programs were also found to have significantly higher chance of being food insecure (Lee & Frungillo, 2001).

The prevalence of food insecurity among the elderly has been found to vary with age. For example, among seniors that fall below the federal poverty line (FPL), 39.1% of seniors' ages 60-64 years old are food insecure. As the age range increases to ages 65-69 years old, the percentage of food insecure seniors below the FPL falls to 25.6% (Gundersen & Ziliak, 2015).

It is important to note that food insecurity is also prevalent within seniors who fall above the FPL. A report from 2013 shows that 16.9% of seniors who classify as 200% and above of the poverty line experienced food insecurity. The report notes that seniors who fall above the poverty line do not have access to federal food assistance programs, which could help lower the high rates of food insecurity if implemented (Gundersen & Ziliak, 2015).

History of Food Insecurity Policy in the United States

In the United States, the efforts to combat food insecurity have had a long history. The notion of helping under-resourced communities in the United States was influenced

by British attempts to combat the poverty that resulted from the industrial revolution. During the industrial revolution, the settlement house movement strengthened social justice within communities by providing essential resources such as healthcare, childcare and education (Koerin, 2003). As a part of the settlement house movement, social reformers attempted to reduce hunger by living within the impoverished communities and serving meals to families (Matzner, 2015). During the Great Depression, charity organizations and local churches began to take measures to combat hunger by participating in food distributions in what are known today as "soup kitchens" (Gruber & Hungerman, 2007).

In 1933, the federal government attempted to respond to widespread hunger during the Great Depression when President Franklin Delano Roosevelt signed the Agricultural Adjustment Act into law, which included the foundation for the Supplemental Nutrition Assistance Program (SNAP). This program was originally named the Federal Relief Surplus Corporation and was aimed at providing assistance to farmers who were struggling due to the fact that prices for crops had dropped greatly during the Great Depression. This program intended to help the farmers by providing basic farm commodities to them at discount prices (SNAP to Health!, 2016). The first Food Stamp Program was later created in 1939 as a part of the New Deal. The program operated by allowing individuals to buy orange food stamps that could be used to purchase food, and they would receive blue food stamps that could only be used to purchase specific foods that had been deemed as surplus (SNAP to Health!, 2016). Much like the Agricultural Adjustment Act, the first Food Stamp Program greatly aided the farmers.

1960's

In 1964, The Food Stamp Act was passed and served as a part of President Lyndon Johnson's Great Society Program. Recipients of Food Stamps were first required to pay for them, as measured by the amount that they regularly spend on food expenditures, and they were given a bonus amount, called a benefit which was based on the income level of the individual(s). Similar to how it is now, the federal government funded the program, while the states were involved in administering the program and authorizing applicants. However, the federal government gave less support for the implementation of the program at the state level than it does currently (SNAP to Health!, 2016).

1970's

Several years later, the Food Stamp Act was reauthorized in 1977 to include major revisions to the prior Food Stamp program. These revisions included taking out the requirement for recipients to purchase the stamps, as well as "... the establishment of uniform national standards of eligibility; the expansion of the program to minority communities; more federal support for the implementation of the program at state level; and restricted access to benefits for students enrolled in a university" (SNAP to Health!, 2016, para. 5).

2000's

In 2002, the Food Security and Rural Investment Act, commonly referred to as the Farm Bill, was introduced and signed into law in order to restore eligibility benefits to immigrants who "have lived in the country for 5 years, are receiving disability-related

assistance or benefits; or are children under 18 years old" (USDA, 2014c, para. 17). The 2008 reauthorization of the Farm Bill renamed the Food Stamps program to the Supplemental Nutritional Assistance Program, and a pilot program was established to "...to study the use of incentives to encourage the purchase of healthy foods with SNAP benefits" (SNAP to Health!, 2016, para. 9). In 2014, the Farm Bill was reauthorized as the Agricultural Act of 2014. This bill "created major changes in commodity programs, added new crop insurance options, streamlined conservation programs, modified some provisions of ...SNAP, and expanded programs for specialty crops, organic farmers, bioenergy, rural development, and beginning farmers and ranchers" (USDA, 2014a, para. 2).

Critique of Supplemental Nutrition Assistance Program

Throughout the years that SNAP has been implemented, there have been many changes made to make the policy function better, such as those in the 2014 Agricultural Act. These changes include the expansion of benefits to documented immigrants, as well as providing funding for farmers and bioengineers who are working to promote healthy living within their communities. Despite the changes that were made for the better, the policy most certainly is not perfect, and it has many disadvantages. One of greatest disadvantages of the SNAP program is the incredibly low benefit amount that is provided to recipients. Because recipients receive so little assistance, they are left with the option of buying cheap processed foods instead of healthy foods. Another disadvantage with SNAP is that it only covers food products. When people go to the grocery store, they are often purchasing other things than food. Products such as sanitary napkins, tampons, face

wash, paper products, cleaning products, and many other products within the grocery store are necessity items for a household and they should be included in SNAP.

Currently, around one million people who are greatly in need of SNAP will be cut off from receiving benefits. This is due to the fact that in 2016, more than 40 states implemented a three-month limit to unemployed individuals ages 18-49 that are not disabled or raising children. According to Bolen, Rosenbaum, Dean and Keith-Jennings (2016), individuals will be cut off from receiving food assistance benefits no matter how poor they are and/or how hard they are looking for employment. Most of the population that will be affected will have limited education and job skills. Therefore, this change in the policy will create negative consequences on unemployed individuals enrolled in the program. Instead of providing funding so that these unemployed individuals can afford to feed themselves in order to have the energy to find employment, it discriminates against them, and makes it more difficult for them to find work by causing them to struggle more from hunger.

Detrimental Effects of Food Insecurity

Studies have shown that people who suffer from food insecurity experience adverse effects; the mental and physical health consequences being different throughout the lifespan. Food insecurity is correlated to nutritional deficiencies and various mental and behavioral problems in children and parents, and increased suicidal risk among older adults (Black, 2012; Ju et al., 2016). Food insecurity has been linked to increased obesity and diabetes rates, as well as adverse effects on mental health within young and middle-aged adults (Lee, Gundersen, Laraia & Johnson, 2012).

Mental Health Consequences

Food insecurity can have severe negative implications on one's mental health. The combination of poor nutrition with the stress that accumulates from being food insecure can contribute to mental health consequences that can last a lifetime. These consequences include, but are not limited to stress, depression, mood disorders, anxiety, substance abuse, stressed relationships, suicidal risk and poor sleep quality (Alaimo, Olson & Frongillo, 2002; Liu, Njai, Greenlund, Chapman & Croft, 2014; McLaughlin et al., 2012).

Adolescents. Food insecurity is associated with the prevalence of mental health disorders within adolescents. A 2012 study with 6,483 adolescent participants (13-17 years old) measured factors of low socioeconomic status that may affect the mental health of the participants. These factors included "...food insecurity, parental education, household income, relative deprivation, community-level inequality, and subjective social status" (McLaughlin et al., 2012, p. 1293). The study discovered that food insecurity significantly increased the risk for mental health disorders within the food insecure participants more than the other factors listed. The mental health disorders that food insecure adolescents are at an increased risk for include mood disorders, anxiety, behavioral disorders and increased risk of substance abuse (McLaughlin et al., 2012).

Food insecure adolescents are also found to have higher rates of low mood, and are a higher risk for suicide. A study found that food insecure adolescents are significantly more likely than adolescents who are food secure to be diagnosed with dysthymia, a mild and persistent form of depression (Alaimo et al., 2002). The same

study also found that the food insecure participants were more likely to have suicidal thoughts and to have attempted suicide.

Young and non-elderly adults. A recent study found that food insecure young adults have increased rates of depression, substance use, and suicidal ideation. These consequences can have a negative impact on mental health throughout the lifespan if food insecurity is not significantly reduced during this period of life (Pryor et al., 2016). Another study discovered that a majority of food insecure young adults reported insufficient levels of sleep and high rates of mental distress. The research suggests that chronic stress combined with poor nutrition experienced by food insecure young adults lead to heightened levels of cortisol, which has been found to disrupt sleep (Liu et al., 2014).

Food insecurity was also found to increase the severity of symptoms of mania among non-elderly adults diagnosed with mood disorders. In particular, the severity of symptoms was related to nutrient deficiencies within the diets of the participants. The mood disorders and mania symptoms were correlated with inadequate levels of protein, zinc and folate within the diets of non-elderly, food insecure individuals (Davison & Kaplan, 2015).

Caregiver-child mental health. Food insecurity may have a profound impact on the caregiver/child relationship. Research indicates parental depression combined with food insecurity can have negative consequences on the child's mental health and level of attachment to his her caregiver (Black, 2012). For example, food insecure parents have difficulties providing their children with an emotionally healthy and supportive

environment when they are stressed about finding their next meal (Wickrama, Conger, Lorenz, & Jung, 2008).

A study conducted by Knowles, Rabinowich, Ettinger de Cuba, Cutts and Chilton (2015) conducted interviews with parents with children under four years old who self-reported marginal, low and very low levels of food insecurity. They found that food insecurity was associated with negative mental health outcomes in the parents and the children. The mental stress of the parent originates from not knowing where the next food source will come from, as well as from not being able to feed their child. These stresses lead to mental health consequences such as severe depression, anxiety attacks, anger, intense worry and shame. The study also found that food insecurity can have a profound negative impact on the child's mental health, correlating with severe behavioral problems, depression, and sadness as well as decreased cognitive, behavioral and social functioning.

Pregnant women. Food insecurity can be of specific concern to the mental health of pregnant women. In a study comparing the psychosocial health of a mix of food insecure and secure group of pregnant women, it was discovered that the food insecure pregnant women had significantly higher rates of anxiety, depression and stress (Laraia, Siega-Riz, Gunderson & Dole, 2006). Another study found that food insecure pregnant women to have higher levels of mental distress than pregnant, food secure women (Jebena et al., 2015).

Young, expectant mothers are at an increased risk of negative mental health outcomes when food insecure. A study that assessed the mental and physical health of

pregnant, food insecure women ages 14 through 21 years old found that the participants had significantly higher rates of depression than food secure mothers of the same age range. The study also found that food insecurity was associated with low-birth weight (Grilo et al., 2015).

Elderly. There are few studies that explore the mental health of food insecure older adults. One study found an increase in suicidal risk among elderly people who were food insecure. The study measured suicidal ideation among economically insecure adults, and found that those who were food insecure were found to have a prominent increase in suicidal ideation (Ju et al., 2016). Another study that largely measured the demographics and physical health of older adults found that food insecure seniors were 60 percent more likely to be diagnosed with depression in comparison to food secure seniors (Gunderson & Ziliak, 2015).

Individuals enrolled in food assistance programs. Higher levels of stress have been found in individuals who were enrolled in food assistance programs such as SNAP or the Special Supplemental Nutrition Program for Women, Infants and Children (WIC). According to a study conducted by Whiting and Ward (2010), individuals enrolled in food assistance programs such as SNAP are likely to experience higher levels of stress. Interviews with the SNAP recipients suggest that heightened stress levels were related to their negative encounters with the insufficient allocations of SNAP (Whiting & Ward, 2010). The use of SNAP is not discrete, and it instills shame in those who have to use it. For example, a sense of inequality is created for the participants when they go to the grocery store, and they have to pay with an EBT card instead of cash or a credit card.

Physical Health Consequences

There is significant evidence of physical health risks associated with food insecurity. Growing up in a food insecure household can have severe negative health outcomes, long lasting health consequences and can differ by race and ethnicity (Casey et al., 2005; Ryu & Bartfield, 2012; Skalicky et al., 2006). Similar to the effects of food insecurity on mental health, food insecurity has different disadvantages on the individual throughout the lifespan.

Children. Food insecurity during childhood can pose serious, lifelong implications on the child's physical health. A longitudinal study followed a group of food insecure students from kindergarten to eighth grade, with the objective of finding specific patterns and measuring health status. The study found lower health status among the eighth-graders who were persistently food insecure over the eight year period (Ryu & Bartfield, 2012).

Studies have also shown racial disparities between food insecure children. A cross-sectional study assessed health related quality of life within children and teens ages of three through seventeen years old, and discovered that food insecure children between the ages of three and eight years old were reported to have lower physical functioning. Results showed that there was a prominent increase in diminished functioning for Black males in particular. Unlike the rest of the children within the study, results showed diminished functioning up to the age of seventeen within Black males (Casey et al., 2005).

Lack of nutrients can also be detrimental to the health of children who are food insecure. Research has indicated that lack of iron may contribute to the higher prevalence of anemia in food insecure children, which can lead to negative lifelong physical, mental, social and behavioral consequences (Skalicky et al., 2006). A Canadian study found inadequacies in "...protein, vitamin A, thiamin, riboflavin, vitamin B-6, folate, vitamin B12, magnesium, phosphorus, and zinc" within the diets of food insecure children (Kirkpatrick & Tarasuk, 2008, p. 604). These deficiencies are of specific concern because they are all essential nutrients for normal growth and health function (Kirkpatrick & Tarasuk, 2008).

Non-elderly adults. Studies have shown that non-elderly, food insecure adults are specifically at risk for developing diseases that are related to poor diet. In the diets of individuals living in food insecure households, there is a high intake of processed foods that are high in sugar and lower in whole grains than food secure individuals (Mello et al., 2010; Rossen & Kobernik, 2015). High consumption of sugar contributes to serious health consequences such as obesity, diabetes, and tooth decay (Wetter & Hodge, 2016). Overall, the United States population has increased its consumption of sugar by 19% between 1970 and 2005. This increased sugar consumption is correlated with the increase of cardiovascular disease, which makes those who are food insecure at specific risk (Johnson et al., 2009). Research has shown that food insecure, non-elderly adults are at high risk for developing hypertension and diabetes (Seligman, Laraia & Kushel, 2010).

Pregnant women. Food insecurity during pregnancy leads to many physical health risks that affect both the mother and the baby. Food insecurity is highly associated

with high gestational weight gain and gestational diabetes mellitus (Laraia, Siega-Riz, Gunderson, & Dole, 2010). Food insecure pregnant women are also at risk of giving birth to a child with birth defects such as anencephaly, cleft palate, and transposition of the great arteries. Birth defects are found to arise out of a variety of different factors correlated with food insecurity, such as from the mother being underweight, stressed, or deficient in nutrients vital to fetal development (Carmichael, Yang, Herring, Abrams, & Shaw, 2007).

A recent study conducted by the Center for Disease Control and Prevention found that food insecure pregnant women are at a greater risk for acquiring cardio metabolic diseases. The study compared women who were enrolled in a specific food assistance program (which provides resources to food insufficient women) to women who were not enrolled in the program. The results showed poor cardiovascular health among the women not enrolled in the program, and improved cardiovascular health among the individuals who were enrolled (Morales, Epstein, Marable, Oo & Berkowitz, 2016).

Elderly. Elderly, food insecure individuals are more likely than the food secure elderly population to experience a significant decrease in overall physical health (Ziliak & Gundersen, 2008). Similar to children, the elderly food insecure population is at high risk for developing health problems related to nutritional deficiencies. Individuals living in food insufficient homes found that individuals within the elderly population are generally found to be deficient in nutrients vital to health such as protein, vitamin A, vitamin B6, calcium, phosphorus, thiamin, niacin, and minerals such as iron, magnesium and zinc (Laraia, 2013).

Food insufficient seniors also have a high risk towards severe health issues such as cardiovascular problems and asthma. Food security status is found to be an important indicator of quality of health in these areas. An extensive report found that food insufficient seniors are "...40 percent more likely to report an experience of congestive heart failure, 53 percent more likely to report a heart attack, and twice as likely to develop asthma" (Ziliak & Gundersen, 2014, p.7).

Marginal Food Insecurity

Marginal food insecurity can cause negative consequences that are similar to those who classify as food insecure. For example, low academic achievement and physical and mental health problems have been found to present as the same in children classified as food insecure and as marginally food insecure (Ryu & Bartfield, 2012). In a study that measured the mental and physical health of food insecure and marginally insecure households with caretakers and children 48 months old and younger, it was found that marginal food insecurity was also found to have the same negative implications on caretakers and their children. The study found that "...both marginal food security and insecurity were positively and significantly associated with higher odds of child fair/poor health status, hospitalizations and with mothers' depressive symptoms and fair/poor health status compared with children and mothers in food-secure households" (Cook et al., 2013, p. 57).

Intergenerational Trauma

Recent research has shown that what a person goes through in his or her life may have an effect on the next generations to come. Epigenetics. "the study of heritable

changes in gene function that do not involve changes in DNA sequence but still get passed down to at least one successive generation" (Merriam-Webster, n.d) has suggested that food insecurity may be detrimental to more than the mental and physical health of an individual. In fact, the negative implications of food insecurity on physical health such as diabetes, obesity, and cardiovascular disease may get passed down generations, making those who inherit genes from food insecure ancestors more susceptible to these diseases (Sullivan, 2013). Intergenerational trauma regarding food insecurity is of specific concern for historically marginalized groups, such as Native Americans and African Americans because they have suffered extensive trauma surrounding devastating events such as genocide, slavery, and deculturalization (Curran et al., 2005; Reid, Mims & Higginbottom, 2004).

Native Americans

The deculturalization of Native Americans included stripping away their seeds, and traditional foods; prohibiting them from eating the foods that they had eaten for generations (Curran et al., 2005). Native Americans turned to eating foods high in unhealthy fats and sugar due to the limited access to traditional foods. Eating these foods also helped Native Americans to cope with the stress and trauma of deculturalization (Curran et al., 2005). The drastic change in dietary consumption has appeared to have profound, visible impacts on intergenerational health, including high rates of cardiovascular disease, and world record obesity rates among Native Americans (Center for Disease Control and Prevention [CDC], 2000; Chino, Haff & Dodge, 2009). Research has suggested that the rapid change in dietary consumption over the past 100 years has

predisposed Native Americans to inheriting a gene that is correlated with obesity (Broussard et al., 1995).

There has been a recent implementation of food intervention programs that use traditional Native foods such as wild-caught fish, elk, beans and corn to reduce the rates of diabetes and obesity within the Native population. For example, the Muckelshoot Traditional Foods and Wellness Program in Washington, the Native Health Community Garden in Arizona and the Sherwood Valley Band of Pomo Indians Tribal Historic Preservation Department in California are among the few organizations who are working towards bringing back Native food traditions to Native American communities (CDC, 2015). In an interview with Hillary Rennick, an enrolled member of the Sherwood Valley Band of Pomo Indians who serves as Tribal Historic Preservation Officer for Sherwood Valley Rancheria, she is quoted describing the significance of the preparation and consumption of Native ancestral foods:

> Integrating traditional food knowledge into every program—language, food distribution, education, environmental, and more—is an important aspect. Reciprocity and respecting our past and future is important for our future generations. It wasn't too long ago that many of our people lived over 100 years with a great quality of life. Now we have a diminished quality of life. Returning to our native foods, respecting ourselves, and honoring our beautiful landscape and homelands are part of the healing process. Many of our communities are suffering from historical trauma, deep pain and loss from removal, intentional extermination policies. Loving ourselves and allowing gifts from our Creator to

> heal us is part of the path to having successful balanced communities. (CDC, 2015, pp. 28-29)

This example demonstrates the cultural significance of food security. Not only does eating healthy foods provide health and nutrition, but it also provides a sense of community, and a sense of identity with one's own culture. When this is taken away, there can be serious consequences such as metabolic disorders and obesity (Brossard et al., 2005).

African Americans

Similar to the Native population, when Africans were taken as slaves from their homeland, they were forced to leave their traditional foods and adapt to a new diet (Airhihenbuwa & Kumanyika, 1996). Not only did Africans endure the trauma that came with being enslaved, but they also were traumatized from being forced to abandon their culture (Reid et al., 2004). Once they arrived to the United States, they created their own diet that consisted of rich meats, gravies, and a large variety of fruits and leafy green vegetables. Over time, as fresh, natural foods became more expensive, the diet evolved to include cheap, processed foods and sugary drinks (Airhihenbuwa & Kumanyika, 1996).

Currently there is a lack of research of the direct epigenetic effects of food insecurity on African American intergenerational physical and mental health. However, African Americans have a high rate of obesity (Ogden, Carroll, & Kit, 2014), one of the most common consequences of food insecurity (Wetter & Hodge, 2016). Therefore, it is possible that the accumulation of Africans Americans living in food insecure environments generation after generation may have a direct epigenetic impact on their

predisposition towards inheriting a gene that increases the risk of inheriting obesity (Dong et al., 2005; Feeding America, 2016).

Importance of Research

This research study provides the social work profession with additional data that can be used to gain a better understanding of how food insecurity impacts quality of life. While there are studies that focus on detailed aspects of food insecurity, such as demographics, specific nutritional deficiencies, and levels anxiety or depression, there is little data that measures quality of life from a broad perspective. The data from this study will help social workers to not only have a more comprehensive picture of their clients' quality of life, but it may also help to identify food insecure individuals that are in need of services. For some people who may not readily identify as food insecure, understanding how food insecurity may impact other areas of an individual's life may provide social workers with the insight to ask about an individual's level of food security.

While there are studies that compare the statistics between food insufficient and food sufficient individuals, there is a lack of research that asks the participants about their personal opinion and perspective. This study is unique because it supplements past research that is quantitative in nature with the personal perspectives of those who are food insecure. For example, instead of inquiring about depression alone, (as done in previous studies) there is an open-ended question that asks the participant to describe their mood. In addition, the study includes close-ended questions about the physical and mental health of the participant that have not been explored in previous research.

This research is specifically useful to social workers who are working with clients who are food insecure. The comparison and contrast of the quality of life between food insecure and secure individuals provided in this study will give the social worker a better perspective on the life quality of clients who are food insufficient. Furthermore, this research may provide additional support towards policy interventions that address food insecurity.

Method

The primary aim of this study is to develop an increased understanding of how food insecurity impacts quality of life. The research question for this study is: In what ways does quality of life differ for food secure and food insecure individuals? This study received IRB approval by Eastern Michigan University's Human Subjects Review Committee.

Sample

A convenience sample was recruited through posts on Facebook for three days. All individuals ages 18 and up were able to participate in the study. However, participants needed to have access to the internet as the survey was not distributed in paper form. There were 42 total participants. As shown in Table 1, the majority of the sample was female (86%) and White/Caucasian (77.5%).

Table 1

Demographics

	Frequency	Percent
Sex		
Male	4	9.3
Female	37	86
Other	1	2.3
Race/Ethnicity		
American Indian	1	2.5
Asian or Pacific Islander	3	7.5
Black or African American	1	2.5
Hispanic or Latino	2	5
White/Caucasian	31	77.5
Two or more Races	1	2.5

Measures

Participants completed an online survey that first measured their level of food security and then inquired about their quality of life, and physical and emotional health. The survey was 53 questions long, and included both multiple choice and open-ended questions (see Appendix A). Participants were first assessed for their level of food security or insecurity using the Six-Item United States Food Security Survey Module (Blumberg, Bialostosky, Hamilton, & Briefel, 1999). The survey gave the Principal Investigator a raw score that determined their food security status of the participants. This validated survey was used to group the participants into two classifications: food insecure

and food secure. The survey continued with a series of 47 open and closed ended questions that assessed the quality of life of the participant. Quality of life was assessed by asking about one's physical and emotional health, social life, and financial situation.

Data Analysis

Data analysis was completed in three phases. In the first phase, the food security status of the participants was determined by totaling the raw scores of the Six-Item United States Food Security Survey Module. Due to the small sample size, "low food security" and "very low food security" were collapsed into one category: food insecure. The other category, food secure, was kept per the guidelines of the Food Security Survey Module. These groups were used to compare and contrast both the quantitative and qualitative data.

The second phase was the analysis of the quantitative questions. In reviewing the data, it was noted that several of the quantitative questions had to be categorized and coded in order for further analysis to take place. In order to create the categories, the responses were examined for commonalities and much of this was based on the actual words they used (see Appendix B). The other 22 questions were presented as multiple-choice answer questions and did not require further action. Once the coding was complete, the data were analyzed using Statistical Package for Social Services (SPSS) Version 23. Chi square analyses were conducted on all of the quantitative questions.

The third phase was the analysis of the qualitative questions. A thematic analysis (Braun & Clarke, 2006) was conducted to explore how the participants described their quality of life in the various domains. Thematic analysis is described as "a method for

identifying, analyzing and reporting patterns (themes) within the data" (Braun & Clarke, 2006, p. 79). Each question was analyzed and coded individually. Inter-rater reliability was established by the PI and PI's advisor coding a sample of responses from five of the questions. The codes were discussed and refined until 95% agreement was reached. Once the questions were coded, the next step was to analyze the codes for patterns among the quality of life domains. Finally, the two groups (food secure and food insecure) were compared and contrasted within the themes.

Results

A total of 42 individuals participated in the survey over the period of three days. Slightly less than half of the participants presented as food insecure, while the rest classified as food secure (see Table 2).

Table 2

Food Secure Vs. Food Insecure

	Frequency	Percent
Food Secure	24	57.1
Food Insecure	18	42.9

Quantitative Data

Chi square analyses were conducted to compare food secure and insecure participants with the various quality of life dimensions. Feelings about the amount of money that participants were making was found to be significant (X^2 (3, n=42) = 8.888,

p=.031). Of those who felt great about the money that they were making, 60% were food secure and 40% were food insecure (see Table 3).

Table 3

How do you feel about the money that you are making?

	Great	Not Satisfied
Food Secure	60%	40%
Food Insecure	40%	60%

Lack of money that kept participants from doing that they wanted to do was found to be significant (X^2 (2, n=42) = 7.534, p= .023). Of those who felt that money has kept them from doing what they want to do, 51.9% were food secure, and 48.1% were food insecure. In contrast, among participants who felt that money has *not* kept them from doing what they doing what they want to do, 90% were food secure, and 10% were food insecure (see Table 4).

Table 4

Has money kept you from doing what you want to do?

	Yes	No
Food Secure	51.9%	90%
Food Insecure	48.1%	10%

Feelings about having a lack of money needed to have a healthy diet was found to be significant (X^2 (2, n=41) = 18.010, p < .000). Of those who felt they had sufficient

resources, 83.3% were food secure compared to 16.7% of food insecure participants (see Table 5).

Table 5

Do you feel that you don't have sufficient resources/money needed to have a healthy diet?

	Yes	No
Food Insecure	83.3%	10%
Food Secure	16.7%	90%

Feelings that lack of access to healthy food has prevented participants from having a healthy diet was found to be significant (X^2 (2, n=41) = 12.752, p = .031). Of those who felt that lack of access to healthy food has prevented them from having a healthy diet, 0% of participants were food secure, and 100% of participants were food insecure (see Table 6).

Table 6

Do you feel that lack of access to healthy food has prevented you from having a healthy diet?

	Yes	No
Food Secure	0%	69%
Food Insecure	100%	31%

Personal reports of physical health were found to be significant (X^2 (3, n=42) = 8.407, p = .038). Of those who reported they were "very healthy", 87.5% of participants were food secure, and 12.5% were food insecure (see Table 7).

Table 7

How physically healthy are you?

	Very healthy	Somewhat healthy	Not so healthy	Not at all healthy
Food Secure	87.5%	59.3%	16.7%	0%
Food Insecure	12%	40.7%	83.3%	100%

Feelings regarding lacking the proper resources/money to properly to engage in bodily care were found to be significant (X^2 (2, n=41) = 8.733, p = .013). Of those who felt like they lacked the proper resources to properly care for their bodies, 42.1% were food secure compared to 57.9% of food insecure participants (see Table 8).

Table 8

Do you ever feel like you don't have the proper money to care for your body?

	Yes	No
Food Secure	42.1%	80%
Food Insecure	57.9%	20%

The comparison of food insecure and secure participants who have been diagnosed with a mental illness was found to be significant (X^2 (1, n=42) = 4.286, p = .038). Of those who have been diagnosed with a mental illness, 38.9% of participants were food secure compared to 61.1% of those who were food insecure (see Table 9).

Table 9

Have you ever been diagnosed with a mental illness?

	Yes	No
Food Secure	38.9%	70.8%
Food Insecure	61.1%	29.2%

The average hours of sleep that participants got per night was found to be significant (X^2 (2, n=42) = 7.031, p = .030). Of food secure participants, 28.6% slept for less than 6 hours compared to 71.4 % of food insecure participants (see Table 10).

Table 10

Please estimate how many hours of sleep you get every night.

	Less than 6 hours	6-8 hours	More than 8 hours
Food Secure	28.6%	72.0%	57.1%
Food Insecure	71.4%	28.0%	42.9%

Satisfaction with living situation was found to be close to significant (X^2(2, n=42) = 5.906, p = .052). Of food secure participants, 37.5% of respondents were dissatisfied with their living situation, compared to 62.5% of food insecure participants (see Table 11).

Table 11

Are you satisfied with your living situation?

	Yes	No	Mostly
Food Secure	53.6%	37.5%	100%
Food Insecure	46.4%	62.5%	0

Several other dimensions of quality of life were not found to be significant. Chi-square analyses showed no statistically significant relationship between food security and food insecurity among the following: who the participants lived with, X^2 (4, n=42) = 2.52, p=.641, perceived levels of safety X^2 (2, n=42) = 2.984, p= .255, level of education X^2 (4, n=42) = 4.419, p =.352, employment X^2 (2, n=42) = 4.198, p =.123, educational status X^2 (5, n=42) = 1.983, p = .851, satisfaction with work/and or school activities X^2 (2, n=42) = 2.709, p =.258, amount of fast food consumed, X^2 (4, n=42) = 3.879, p =.423, amount of processed food consumed X^2 (4, n=42) = 3.118, p =.538, sugary drinks consumed X^2 (4, n=42) = 3.931, p =.415, access to fresh food at local store X^2 (4, n=42) = 3.401, p =.183, preparation of meals X^2 (4, n=41) = 1.743, p =.783, satisfaction with diet X^2 (2, n=41) = 2.504, p =.286, number of alcoholic drinks consumed X^2 (4, n=42) =1.683, p =.794, exercise X^2 (2, n=41) = 2.506, p =.286, diagnoses of diabetes X^2 (1, n=42) = .748, p =.387, diagnoses of pre-diabetes X^2 (2, n=42) = 2.886, p =.236, use of street drugs X^2 (1, n=42) =.622, p =.430, perception of drug use X^2 (5, n=41) =5.241, p =.387, satisfaction with social life X^2 (2, n=42) = 1.836, p =.399, and closeness to family X^2 (2, n=42) = 1.750, p =.417.

Qualitative Data

The thematic analysis revealed three broad themes that were representative in both participants who were food secure and food insecure. These themes were also present across the various quality of life domains. Theme one and theme two were similar in that they both included an overall satisfaction with life and feeling that basic needs were met; however, in theme two there was also a desire for change. Theme three included a lack of satisfaction with life and an inability to meet basic needs.

Theme One

Responses within the first theme expressed an overall satisfaction with life and feelings that basic needs were met. Most of the responses in the first theme were from food secure participants; however, there were a few responses that came from food insecure participants. Participants expressed satisfaction with their living situation including perceived levels of safety, daily work and/or school activities, personal financial situation, sufficient resources to have a healthy diet, quality of social life and mood.

Satisfaction with personal living situation revealed similar responses among food secure and insecure participants. A handful of food secure and insecure participants answered that their living situation met their basic needs. One food secure participant noted, "yes, we have everything we need", and food insecure food participant said, "yes, my house is enough."

The majority of both food secure and insecure participants described feeling safe where they lived. The reasons for perceived levels of safety varied such as living in low

crime neighborhood, living with people or animals that provided a sense of safety, or according to one participant, the color of the participant's skin, sexuality and gender. A food secure participant said, "I live in a neighborhood with minimal criminal activity, and police respond promptly if needed." A food insecure participant explained, "yes, I feel safe here because I am white, straight and cisgender. I don't know that I would feel in my community otherwise."

In general, most of the food secure and insecure participants answered that they were happy with the daily work and/or school activities that they participated in. However, among the food insecure participants, the responses were overwhelmingly positive in comparison to the food secure respondents. One food secure participant said, "my job is very fulfilling, sometimes emotionally stressful, but overall I am in a good field which brings me great happiness." A food insecure participant said, "I love my job, I work for a charity so the pay isn't great but it's good enough. I have a great work/life balance."

The majority of food secure respondents said that they had sufficient resources to have a healthy diet: "Yes, I am fortunate enough to earn an income that allows me to purchase healthy food. And furthermore, if I lost my job, my parents would help support me until I got back on my feet." Among food insecure participants, around one third of the participants felt that they could eat healthy most of the time: "I don't think it's expensive to eat healthy where I live. I'm in a town in the UK and within walking distance of supermarkets. I can get cheap fruits and vegetables."

Among the quality of life domains of personal financial situation, social life, and mood, most of the food secure individuals stated that they made enough money to meet their basic needs, were satisfied with their social life, and described their mood as positive or average. One participant stated, "I recently got a promotion and make almost double the money that I used to make, so I feel very comfortable and fortunate, but also overwhelmed with what I should be doing with it."

Theme Two

Responses that fell into the second theme expressed a satisfaction with quality of life and a feeling that basic needs were met, but also expressed a desire for change. In particular, this desire for change was presented as a luxury or something in addition as opposed to a change to meet a basic need. For example, in regards to one's personal living situation a food secure participant explained. "Yes- it's reasonable rent for my area and there is only mold in the bathroom, which is a massive plus for a seaside home. I really hope that one day I can afford my own place to rent, or even buy a place of my own, but I can't see that happening for a very long time (which makes me feel unhappy after how hard I work)."

The desire for more time was noted for both food secure and food insecure respondents. There was a higher number of food secure respondents who reported satisfaction regarding work and/ or school activities but wished that they had more time to do other things (n=6). According to a food secure participant, "my job takes up all of my time, I wish I had more free time", while another food secure participant said, "I am not able to participate in outside activities because being a single parent takes up all of

my time." The issue of time was also raised in regards to the quality of one's social life. Participants described having friends, but lacking time to see them. A food insecure participant stated, "I don't have much of a social life, I am busy with work and a child, while another food insecure participant said "I have a strong social support network but don't see my friends often". The majority of responses who echoed this sentiment were from food insecure participants.

The desire for more money was expressed mostly by food secure participants. One food secure participant stated that "The money I make contributes towards household bills, but I don't have enough money leftover to buy luxury items such as new clothes, etc.". In regards to having the proper resources to properly care for their bodies, a high percentage of food secure participants said they wished that they could put more of their money towards resources that aid to physical health such as a gym membership or fitness classes: "I would love a good gym membership, but I get by with online resources", while another participant stated "I would like to go to yoga classes or other fitness classes but it's too expensive". Similar to the responses of those who were food secure, there were also a high number of responses from food insecure individuals who wished that they had access to extra resources to aid in health such as gym memberships: "yes, I would love to go to sport classes or get massages, and it hurts that I can't afford it."

A majority of food secure participants explained that they were satisfied with their diet, but noted the desire to make a personal change. One participant stated "I am satisfied sometimes. I tend to binge on chocolate when stressed" while another

participant noted, "my diet could always be better, but that's my own doing." The responses described moods that varied, and most of these responses were from food secure participants. One food secure participant stated "Typically positive. I do have my days where I do not feel "right" and anxious". While another food secure participant stated "I have learned coping mechanisms, so I manage."

Theme Three

The third theme expressed a lack of satisfaction with life and an inability to meet basic needs. Responses within this category were generally from food insecure participants, but there were also a few responses from food secure participants. For example, in comparison to the food secure participants who generally had either a positive or slightly negative perspective on their living situation, most food insecure participants were unhappy to a stronger degree. This included a dislike for the people that the participants were living with, a feeling of the house being too small or crowded, and/or an overall feeling that the participant deserved better for the amount of money that they paid towards their mortgage or rent: "It's cramped, 6 people in a 3 bedroom apartment. I share a room with my seventeen-year-old brother. I also have a very unhealthy, often abusive relationship with my mother." Another food insecure participant exclaimed, "My apartment sucks and I pay too much for rent."

There were a handful of both food insecure (n=3) and secure (n=3) participants who did not feel safe where they live. Among the food secure participants living in an unsafe area with criminal activity made them feel unsafe: "I do not feel safe at night due to high burglary rates and antisocial behavior in my neighborhood." The food insecure

participants who lived in unsafe neighborhoods were more likely to report that they felt safe "sometimes" than food secure participants who felt unsafe more often. A food insecure participant said, "I feel safe some of the time, though the crime rates are getting increasingly higher." While another food insecure participant said "sometimes, there are often gangs hanging around, setting off fireworks and fighting."

There were a couple of food insecure participants who expressed dissatisfaction with their daily work and/or school activities. Reasons for dissatisfaction include being stressed, or underpaid. One food insecure participant noted, "It is difficult to enjoy my work when I am underappreciated and poorly paid." Making insufficient money to meet basic needs was common among food insecure participants: "I don't make enough money to meet my expenses (living alone) despite working full-time in a professional field. If I didn't have access to credit, I don't know how I would survive." While another participant stated "I am beyond frustrated with the fact that I work fifty-sixty hours per week, a yet, after moving out this month and paying bills I might have one hundred dollars for the rest of the month (for gas, food, etc.)."

Most food insecure participants were not able to have a healthy diet due to time constraints, food scarcity, or lack of money: "I am not able to have a healthy diet because I am working limited hours due to studies." Another food insecure participant noted, "Food scarcity is a big problem where I live. I have to drive twenty minutes away to get to the closet store with everything I need." A food insecure participant with financial constraints explained "I live beyond my means and often use credit to purchase healthy

foods when I can't afford it". While another participant said, "in reality, I cannot afford a healthy diet, nor do I qualify for any supports."

There were several food secure participants who stated that they were not able to afford basic healthcare necessities such as doctor's visits: "I wish I could afford gym and the doctor more often. I also wish I had the time to do these things if I had money." Another food secure participant stated, "I would like to be able to see a private doctor about my back problems and see my masseuse more often, but I can't due to a lack of funds." While another respondent noted "I need to go to the dentist, the gynecologist. I also have a weird growth on one of my arms that I need to get removed but I do not have good insurance."

Among food insecure participants, there were a higher number of respondents who said that they could not afford basic resources to care for themselves: "I have multiple medical issues that I cannot address due to the fact that it costs too much to be seen and to have testing done as well as surgeries due to high deductibles." Another food insecure participant stated, "I cannot afford access to all of the medical supports to include the medication that I need", while another participant said, "we do not always have the money to cover copays; we have insurance but it doesn't cover everything all of the time."

Food insecure participants were less likely to describe their mood as positive: "My mood depends on the day. I go through phases. My mood is currently low because a number of things aren't great, having no money doesn't help. I feel that poverty contributes to a lack of confidence, which impacts my ability to get a job." Another

participant stated, "I take my meds because my sanity has to come first, even before food or doctor's appointments. My mood is somewhat depressed." Other participants used phrases such as "very low", "up and down", "very stressed", "depressed" and "tried" to describe their mood.

Food insecure individuals were found to have a poor quality social life: "I have a close circle of friends, but a lot of toxic relationships too." There were also a couple of food secure participants who expressed a desire for more or closer friendships: "I get out often, but I wish I had more satisfying friendships", while another participant noted, "I wish that I had more friends nearby."

Discussion

The intent of the research conducted was to deepen the understanding of how quality of life differed between food secure and insecure individuals. As expected, many of the findings suggest that food insecurity negatively impacts life on many different levels. However, some of the results were unexpected and contrasted with previous data. For example, lack of money was found to be a significant factor in the lives of food insecure individuals. Lack of money was seen to negatively affect personal satisfaction with living situation, income, perceived levels of health, and the ability to afford healthy food and other necessary resources such as medications and doctor's visits that aid to physical health. These findings support previous literature that has found a relationship between food insecurity and poor physical health consequences (Casey et al., 2005; Ryu & Bartfield, 2012; Skalicky et al., 2006).

Most food secure participants were able to afford the basic resources needed to have healthy diets and to properly care for their bodies. However, it is important to note that there were a couple of food secure participants who were not able to afford basic resources, such as doctor's visits. This could suggest that while an individual may not qualify as food insecure, the individual may still be struggling with poverty and fulfilling basic needs.

It is also important to discuss the differences in language that were used between food secure and insecure individuals. When participants were asked whether or not they had the proper resources to care for themselves, several of the food secure individuals stated they believed that taking care of one's body did not cost more. In contrast, most of the food insecure individuals were not able to afford the basic resources to care for their bodies, and many also stated that it was too "expensive". This may suggest that food secure participants prioritize food more than other necessities. It also may suggest that there may be a lack of knowledge regarding the lack of affordability of healthy food among participants who have the resources to eat healthy. This is particularly important in terms of education and awareness of food insecurity as an issue.

This study also found food insecurity to negatively affect mental health. Food insecurity was found to be significantly related to higher rates of self-reported mental illness and poor sleep quality. In addition, a higher number of food insecure participants reported feelings of anxiety, depressive symptoms, and a low mood overall. These findings support previous research that has found a high prevalence of depression and poor sleep quality among food insecure individuals (Alaimo et al., 2002; Liu et al., 2014;

McLaughlin et al., 2012).

Some of the results on diet were not expected, and contrasted with previous literature. For example, previous research has suggested that food insecure individuals are more likely to consume processed foods high in sugar than food secure individuals (Mello et al., 2010; Rossen & Kobernik, 2015). However, this research found that food secure and insecure participants consumed sugar and processed foods in similar amounts. This suggests that even though food secure participants may have the budget needed to have a healthy diet, eating healthy is a matter of choice for those who are food secure. This research also found no difference in perceived levels of safety of living situation. Food secure individuals were just as likely to feel unsafe in their living situation as food insecure individuals.

Level of satisfaction with daily work and/or school activities was found to be more positive among food insecure individuals than food secure individuals. Food secure individuals were more likely to say that they were "somewhat" satisfied with their daily activities, but wished they had more time to other things. In contrast, food insecure individuals were more positive about the daily activities that they participated in and less likely to express a desire for change. The heightened level of satisfaction with daily activities among food insecure individuals was unexpected. This could suggest that food insecure individuals are more apt to "settle" for their given situation, or it is also possible that food insecure individuals were more content with the activities that they participate in. Interestingly, in the open-ended questions food insecure participants were less likely

than food secure participants to describe their social life as positive. This could suggest the former explanation is more plausible than the latter.

The results from this study demonstrate that the negative effects of food insecurity can have widespread effects on quality of life. Given the extent to which food insecurity can negatively affect an individual, it would be ideal to increase the benefit levels and expand eligibility requirements for recipients of SNAP. This is a particularly important point since the majority (66%) of food insecure participants in this study were both employed and struggling to put food on their tables. There is a need for a change in the policy to allow for a wider range of eligibility under SNAP.

The similarities among food insecure and secure responses to questions that addressed living situation and diet demonstrates that being food secure does not necessarily mean that one is secure in all areas of life. Therefore, when working with clients, it is important for social workers to look at the individual's life as a whole, with food security being one of many important areas of assessment.

Limitations

This study is limited in terms of its demographics. Due to the fact that the survey was distributed online, there was limited control of who and where the survey was distributed. Therefore, the participants of the study were a majority Caucasian and female. This is of particular concern given that African Americans are twice as likely as the general population to be food insecure but were less than 3% of the sample size. The study is also limited due to its small sample size. Due to the time constraints, there was limited time to gather data which therefore resulted in a small sample size.

Implications for Future Research

In order to further understand this research topic, a similar study needs to be carried out with larger sample size. The results of this study suggest the need for further research that compares levels of food insecurity with financial status. Given the number food secure participants who stated that they were not able to afford basic resources, a future study regarding financial status would help to distinguish poverty from food insecurity. Further research on the topic of food insecurity and Native American and African American intergenerational trauma would be of benefit to the Native and African American communities, and to the social work profession.

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Appendix A: Survey Questions

1. Do you consent to participating in this survey?*
    1. Yes
    2. No

2. What is your age?*
    A. 18-24 B. 25-34 C. 35-44 D. 45-54 E. 55-64 F. 65-74 G. 75 or older

3. What is your gender?*
    A. Female B. Male C. Other

4. What is your race/ethnicity? (Please select all that apply.)
    A. American Indian or Alaskan Native B. Asian or Pacific Islander C. Black or African American D. Hispanic or Latino E. White / Caucasian F. Prefer not to answer

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 Continue

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

6. I couldn't afford to eat balanced meals. Was that often, sometimes, or never true for (you/your household) in the last 12 months?*
    A. often true B. sometimes true C. never true

7. In the last 12 months, did you ever cut the size of your meals or skip meals because there wasn't enough money for food?*
    A. Yes B. No

8. [IF YES ABOVE,] How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?*
    A. Almost every month B. Some months but not every month C. Only 1 or 2 months D. N/A (I answered "No" to the previous question)

9. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money for food?*
    A. Yes B. No

10. In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?*
    A. Yes B. No

The next set of questions are an inquiry on your quality if life within the past 12 months. Please answer the questions to the best of your ability.

11. Who do you live with? Please explain (e.g. with parents, roommate(s), live alone etc.)

12. What kind of housing do you live in? (e.g. apartment, house, dorm etc.)

13. Are you satisfied with your living situation? Please explain answer.

14. Do you feel safe where you live? Please explain answer:

15. In a typical day, which of the following forms of transportation does your household use? (Check all that apply)
Choose as many as you like

A. Automobile B. Bus C. Train D. Subway E. Cab F. Ferry G. Airplane H. Other

16. What is the highest level of school you have completed or the highest degree you have received?

A. Less than high school degree B. High school degree or equivalent (e.g., GED) C. Some college but no degree D. Associate degree E. Bachelor degree F. Graduate degree G. Doctoral Degree

17. Are you employed?

A. No B. Yes, part-time C. Yes, full-time

18. If you answered "yes" to the previous question, how many jobs do you have currently?

19. Are you currently enrolled as a student?

A.Yes, full time in graduate school B. Yes, part time in graduate school C. Yes, full time at a four year undergraduate college/university D. Yes, part time at a four year undergraduate college/university E. Yes, at a high school or equivalent F. Yes, at a community college G. Yes, at a technical college H. No, I am not currently enrolled as a student I. Other

20. How satisfied are you with the work and/or school activities that you participate in during the week? Please explain your answer.

21. How do you feel about the money that you have/ are making?

22. Does lack of money keep you from doing what you want to do? Please explain answer.

23. Please describe your diet. (What are some typical foods that you include in your diet?)

24. About how often do you eat fast food?

A. Every day B. A few times a week C. A few times a month D. A couple of times a year E. Never

25. Do you eat processed foods often? (foods that are packaged in boxes, cans or bags)

A. Every day B. A few times a month C. Never D. A few times a week E. A couple of times a year

26. Which processed foods do you consume the most?

27. About how often do you consume sugary drinks?
    A. Every day B. A few times a week C. A few times a month D. A couple of times a year E. Never

28. Do you have access to fresh foods at your nearest grocery store?
    A. Yes- A large variety B. Yes- but fresh foods are limited C. No

29. In a typical day, how many of your meals or snacks include fruit and/ or vegetables? Please briefly explain answer:

30. Do you prepare your own meals?
    A. Yes, every day B. Yes, most days of the week C. Yes, a couple times a week D. No, but someone in the household prepares meals for me E. No

31. If applicable, what prevents you from preparing your own meals more often?

32. Is eating healthy important to you? Please explain answer.

33. Do you feel that you have the resources/ money needed to have a healthy diet? Please explain:

34. Do you feel that lack of access to healthy food and/or lack of resources have prevented you from having a healthy diet? Please explain

35. Do you feel satisfied with your diet? Please explain answer:

36. About how many alcoholic drinks do you have each week?
    A. 0 B. 1-4 C. 5-8 D. 9-12 E. 13-16 F. more than 17

37. Do you have a history of alcoholism in your family?
    A.Yes B. No C. Unknown

38. What do you think about your alcohol use?

39. How physically healthy are you?
    A. Extremely healthy B. Very healthy C. Somewhat healthy D. Not so healthy E. Not at all healthy

40. Do you ever feel like you don't have the proper money/ resources to properly care for your body? Please explain answer.

41. Do you exercise? If yes, please briefly describe exercise methods and how often.

42. Have you been diagnosed with diabetes? If yes, which type, and what was the age of diagnoses?

43. Have you ever been diagnosed with pre-diabetes? If yes, what was the age of diagnoses?

44. Have you ever been diagnosed with a mental illness? If so, what is the diagnoses?

45. If you answered yes to the previous question, have you ever been prescribed medication for a mental illness, but could not afford it?

A. Yes B. No

46. How do you describe your mood on an everyday basis?

47. How is your quality of sleep?

48. Please estimate how many hours of sleep you get every night.

49. On a scale from zero to ten (zero being no anxiety at all , and ten being anxiety that strongly interferes with daily life) how anxious do you feel on a daily basis?

50. Do you use any type of street drug(s) (e.g. marijuana, LSD, cocaine etc.)
A. Yes B.No

51. If applicable, what do you think about your drug use (not inclusive of prescribed medications) ?

52. Are you satisfied with your social life? Please explain

53. Are you close with your family? Please explain.

Appendix B: Codes for Quantitative Responses

Questions	Codes
Are you satisfied with your living situation?	A. I live with a person/people that I care about or like B. I dislike the people that I live with C. My house is too small/cramped D. I am satisfied E. I live with too many people F. I am mostly satisfied, but would prefer things to be another way G. I deserve better for the money I pay
How safe do you feel in your living situation?	A. I feel safe B. I feel fairly unsafe C. I feel unsafe
Why do you feel safe/unsafe in your living situation?	A. I have animals/people around me that make me feel safe B. There has been recent criminal activity in my neighborhood C. I live in a safe neighborhood with low crime
How satisfied are you with the work and/or school activities that you participate in during the week?	A. I am happy with what I do B. I wish I had more time to do other things C. I am stressed by what I do D. I am mostly satisfied E. My work is fulfilling F. I am very unhappy
How do you feel about the money you are making?	A. I feel great B. It meets my basic needs, but wish I had more C. I do not feel like I am paid enough for the work I do D. It does not meet my basic needs, I am struggling
Do you feel that you have the resources/ money to have a healthy diet?	A. I have the money I need B. I put money aside to have a healthy diet C. Healthy food is not more expensive D. I wish I had more money to spend on healthy food E. I cannot find stores with fresh food near me F. I do not have the time to have a healthy diet G. No, I have to focus on paying bills

	H. Healthy food is too expensive I. Sometimes
Do you feel satisfied with your diet?	A. No, I eat unhealthy food when stressed B. Somewhat satisfied-could be better C. Yes, I have a healthy diet D. I would like more money to eat a healthy diet E. I do not eat healthy often F. I eat healthy sometimes G. I am satisfied when I eat healthy foods
Do you ever feel like you don't have the proper money/resources to care for your body?	A. I have access to resources B. Time prohibits me from caring for myself C. I would like to be able to afford a gym D. Money is not a factor in bodily care E. Lack of motivation prevents me from caring for myself