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Barriers and Coping Strategies Among Women in a Food Desert

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Barriers and Coping Strategies Among Women in a Food Desert

By

Renee Holt

Accepted in Partial Completion
of the Requirements for the Degree
Master of Arts

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Renee Holt

May 13, 2019

Barriers and Coping Strategies Among Women in a Food Desert

A Thesis
Presented to
The Faculty of
Western Washington University

In Partial Fulfillment
Of the Requirements for the Degree
Master of Arts

by
Renee Holt
May 2019

Abstract

This qualitative research focused on how women living in a neighborhood identified as a "food desert" experience food insecurity, and to learn what coping strategies are used in response. The closure of the full-size Albertsons grocery store centrally located in the Birchwood neighborhood on Northwest Avenue led to the identification of the area as a food desert by the USDA in 2016. Food deserts, neighborhoods with limited options for buying fresh food, are created through socio-economic and spatial inequalities that impact food access. In food deserts, fresh food access may be severely limited, which leads communities to organize in order to create solutions to address food access and inequality. Analyzing food access through the transformative paradigm, a social justice lens for conducting research, allowed for a closer look at how gender is tied to food insecurity, as women are one marginalized group at a higher risk of experiencing food insecurity. This study was completed through semistructured interviews with 12 self-identified women from Birchwood. Interviews were transcribed and inductively analyzed for common themes. The results of this study showed that many residents face physical and financial barriers to food in the neighborhood and use a variety of coping strategies leading to negative physical and mental health impacts when food accessibility is low. Participants also discussed solutions to increase food security, including more stores, increased public transportation and attention to the citywide affordable housing crisis.

Keywords: food deserts, food security, food insecurity, food justice, transformative paradigm, gender.

Acknowledgements

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Introduction

Food insecurity impacts individuals and families in communities across the country, urban and rural. Nationally, over 12% of Americans in 2016 were faced with food insecurity (USDA 2017). Here in Washington State between 2014 and 2016, about 12% of residents were food insecure, and 5% had very low food security, slightly lower than the 13% national rate (Washington State Department of Health, 2018). A 2011 study found that among Washington women aged 19-44, 16% reported their households cutting the size of meals or skipping meals because there was not enough money to buy food in the last 12 months, and 31% of these women reported cutting meals every month (Washington State Department of Health, 2011).

In Bellingham, Washington, the closure of the full-size Albertsons grocery store on Northwest Avenue led the Birchwood neighborhood to be identified as a food desert by the USDA and by neighborhood activists in 2016. When the Albertsons closed, few options for fresh food were left in the neighborhood, and the only full service grocery store is Haggen Food and Pharmacy, a more expensive store at the southeastern corner of the neighborhood. In food deserts, food access may be severely limited, which leads communities to organize in order to create solutions to food access and inequality.

The goal of this qualitative research is to explore how women living in a neighborhood identified as a "food desert" experience food insecurity, and to learn what coping strategies they use in response. Food deserts, neighborhoods with limited options for buying fresh food, are created through larger socio-economic inequalities that impact food access. I focused my research in Birchwood because of the "food desert" identification and the number of identifiable efforts of both individuals and local organizations to

demand accessible, culturally relevant, and affordable food after the closure of Albertsons. This includes local activists with the Birchwood Food Desert Fighters for example, who are organizing everything from gardening and community food pantries, to vigils and protests to demand political action. A second group, Community to Community Development is highly active in improving food access in the neighborhood and collaborating with members of the Food Desert Fighters to organize protests and stands with fresh fruits and vegetables in the neighborhood. Community to Community is an ecofeminist non-profit based in Bellingham with a focus on food sovereignty, farmworkers rights, and immigrant rights.

My research explored the personal stories of 12 women to gain a better understanding of food access in the Birchwood neighborhood. I used qualitative research methods, including semi-structured interviews, transcription of interviews, and inductive data analysis surrounding food insecurity. The main questions guiding this exploratory research were:

Q1: What are the experiences of women living in a food desert?

Q2: What strategies do women use to address food access within a food desert?

Study Context

In November 1903, the City of Bellingham was officially established consolidating four smaller towns and supporting a major coal mining industry, which began in 1852 (Southcott, 2003; Lieb, 2006). The Birchwood neighborhood, now an area with primarily single family homes and apartment complexes along Northwest Avenue and West

Maplewood Avenue, was the cite of the Bellingham Coal Mines, which employed over 200 people and closed in 1955 (Southcott, 2003). The neighborhood now has a commercial plaza centrally located on Northwest Avenue, which was home to the full-size grocery store chain Albertsons from 1960 until 2016 (Birchwood Neighborhood Plan, 1995).

The Birchwood neighborhood in Bellingham is an ideal study context for several reasons. One is the identification by the USDA of this area as an urban food desert, lacking access to a full-size grocery store within one mile (Ver Ploeg et al, 2009). Studies show correlations between renting and food insecurity, as affordable housing is becoming an issue across the United States (Kirkpatrick, Tarasuk 2011). The median price of rent for all dwellings in Bellingham has risen over recent years, and in February 2018 was $1,623 per month, a 5.6% increase from 2017. The median rent in Birchwood in 2016 was $897 (ACS, 2016). Renting is the most common household situation in this census tract, with 2,059 of 3,509 housing units occupied as rentals (2010 Census).

Additionally, data from the 2016 American Community Survey estimated within the census tract for Birchwood that 72.3% of residents are non-Hispanic white, 1.4% are African American, 8.0% are Asian, 3.3% are American Indian and Alaska Native, 5.3% were two or more races, and 9.7% identified as another race. 14.2% of residents identified as Hispanic or Latino of any race. Birchwood is one of the most diverse neighborhoods when compared to all of Bellingham, where 82.8% of residents identify as non-Hispanic white (ACS, 2016).

The median household income in 2016 was $37,703 (ACS, 2016). The rates of poverty are higher when compared to the rest of Bellingham, with an estimated 29.4% of all people and 30.1% of families living below the poverty level in the past 12 months (ACS

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2016). 68.8% of families with a female householder were living below the poverty level, and 78.2% with related children under 18 years old (ACS, 2016). This is over 20% higher compared to the rest of Bellingham. Over 75% of residents moved in between 2000 and 2014, prior to the Albertsons closure (ACS, 2016). Finally, 24.5% of residents had SNAP benefits in the past 12 months (ACS, 2016).

The Birchwood area of Bellingham, Washington, is identified as one of the lowest-income and highest minority areas of Bellingham, with also several languages besides English spoken, and a large percentage of residents identifying as renters rather than homeowners. These neighborhood characteristics are consistent with other studies that identify spatial and demographic similarities in food deserts (Zenk et al., 2005; Moore, Diez Roux, 2006). These characteristics show why a qualitative study with women living in Birchwood allowed a greater understanding of food insecurity and its relationship to barriers created through gender identity.

Literature Review

Introduction

Inequalities created by political, economic, and socio-environmental injustices are root causes of food insecurity in communities across the country. Individuals experience and manage their food insecurity in a variety of ways. Food insecurity, and geographic areas identified as "food deserts" specifically, have been defined and studied in various ways. This research focuses on food insecurity among women living in a community identified as a food desert. In order to better understand these experiences, a closer look at the literature on definitions of food security, food deserts, and the impacts of food insecurity on women is necessary. Food security research looks at a variety of determinants of food insecurity, mental and physical health impacts, commonly used coping strategies, and food justice-oriented community responses in areas with low food access.

Food Security

Food insecurity occurs when one experiences a shortage of food and is a "household-level economic and social condition of limited or uncertain access to adequate food," (USDA, 2016, 1). Food insecurity can be further broken into two definitions: low food security, and very low food security. Low food security occurs when households report reduced quality, variety, or desirability of diet, with little or no indication of reduced food intake (USDA, 2017). Very low food security is reported when there are multiple indications of disrupted eating patterns and reduced food intake (USDA, 2017). A USDA

study estimated that 12.3 percent of American households were food insecure, and 4.9 percent had very low food security in 2016 (USDA, 2017). This report found 59 percent of households reported participation in the last month in one or more federal nutrition assistance programs, including WIC, SNAP, and the National School Lunch Program (USDA, 2017). This is only one way to define food insecurity, and controversy exists over the best way to identify food deserts and food security, as well as debate over best solutions to address low food access. Scholars and critics, particularly from the food justice perspective, are critical of traditional definitions of food security from the USDA, proposing a definition rooted in community self-reliance and social-justice instead (Bellows, Hamm, 2002). The literature on food justice examines acknowledges, and confronts race, gender and class inequalities that form social trauma, community reliance and control of food, innovative ways to share and manage land, and supports a minimum income not reliant on unpaid labor and reproduction, especially by women and people of color (Cadieux, Slocum 2015). Scholars argue neoliberal solutions are incapable of fully addressing these four areas of food justice. In contrast to neoliberal solutions to food access, a food justice orientation examines the root causes of unjust food access, which scholars argue is rooted in the commodification of food and deregulation of the marketplace (Agyeman, McEntee 2014). The food sovereignty movement, which prioritizes small-scale and indigenous farmers, is committed to helping activists define their own agri-food systems and scholars from this perspective argue the only way to ensure food security is by localizing food (Cadieux, Slocum 2015).

Despite different views on the USDA definition of food insecurity and approaches to increasing local food access, this definition was used for the research because it is

recognizable and widely accepted. Food justice and innovative, community-level solutions are just one aspect of conversations surrounding food insecurity among women, the larger focus of this research.

Food Insecurity Among Women

Women experience and manage the impacts of food insecurity in a variety of ways and often face additional physical, mental and financial risks when experiencing food insecurity. Researchers have found that several groups have higher rates than the national average for food insecurity, including women living alone, households with children headed by a single woman, households below the poverty threshold, and households headed by Black non-Hispanics and Hispanics (USDA, 2017). For many women, this is exacerbated by pressures as the head of household. Societal gender expectations and roles place additional pressure on women to provide food for their households, both within the United States and globally (Warren, 2000; Lawrence, Barker 2009; Ivers, Cullen 2011). Women experience food insecurity in a variety of ways and feel physical and mental health impacts when food access is low. Causes of food insecurity among women can vary from sudden unemployment, ethnic identity, economic status, number of children in the household, and other circumstances.

An ethnographic study with mother-headed households in four urban cities throughout the United States found that reasons for food insecurity were linked to economic circumstances and women frequently addressed economic hardship in immediate ways to obtain more cash, such as pawning items (Polit et al., 2000). In another study with food insecure women near Toronto, Canada, circumstances leading to food

insecurity were closely linked to financial insecurity created by bills, debt, and unusual expenses (Tarasuk, 2001). Limited employment opportunities and high costs of living are also financial factors to food insecurity (Beaumier, Ford 2010). Researchers have found the greatest predictor of food insecurity is poverty and low income, as employment and income are closely tied (Rose, 1999).

Food Deserts

Food insecurity can be created and further reinforced through spatial inequalities and structures, such as the physical composition of a neighborhood and how accessible food is for residents. A way to further examine food insecurity is by studying accessibility and affordability of food for residents within a neighborhood. A food desert refers to a geographic area with limited access to affordable and nutritious food, particularly an area composed of predominantly lower income neighborhoods and communities. Residents might only be able to buy most of their food from fast-food establishments or small convenience stores located nearby and when compared to more affluent neighborhood, have fewer full-size supermarkets (Powell et al., 2007; Alwitt, Donley, 1997). The USDA defines an urban food desert as a neighborhood with no supermarket within one mile (Ver Ploeg et al., 2009; USDA 2009), but food justice scholars critique these rigid definitions of a food desert. While some scholars in the existing food desert literature advocate for increased grocery stores (Zenk, 2005), others promote ideas outside of the tradition of neoliberalism to combat the impacts of living in a food desert. Food justice scholars argue that neoliberal solutions to food access focus on the market rather than the state and safety net programs to be responsible for food access (Agyeman, McEntee 2014). Additionally,

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scholars point out that supermarkets are required to be driven by profit and stakeholder satisfaction (Agyeman, McEntee 2014).

The connections between lower income neighborhoods and the density of these retail options has been documented in cities both in the United States and internationally, from New Orleans, Edmonton, and Melbourne. (Cummins, Macintyre 2005; Wang et al., 2014). Food deserts can be described as economically disadvantaged neighborhoods structured and contextualized by race and class (Hilmers et al., 2012). One example of this is historical racial disparities and differences in neighborhoods across the country, seen in Chicago and San Francisco, for example (Raja et al., 2007). Although most research shows that communities of color and low-income communities are more likely to be identified as food deserts (Powell et al., 2007; Glanz et al., 2008; Lewis et al., 2005), these findings vary in different geographic contexts, not all research shows average neighborhood income levels and grocery store access are linked. For example, in a Pittsburgh neighborhood identified as a food desert, grocery stores were still the primary food outlet for mothers in a predominantly African-American and Hispanic neighborhood (Vaughan et al., 2016).

Food justice scholars also argue that definitions of a food desert can be problematic because they do not consider convenience stores or small markets as sources of healthy food, implying that the foods available in ethnic food stores are unhealthy (McClintock, 2011) or that industrial supermarkets are the primary solution to food insecurity (Joassart-Marcelli et al., 2017; McClintock 2011). Scholars critical of the USDA definition point out that this approach focuses on spatial distribution of grocery stores, but not density or affordability of stores. Other scholars and researchers focus on inequalities created by race

and class and argue that supermarkets are a neoliberal solution that ignores problems of racism, class, patriarchy, and food interests (Agyeman, McEntee 2014; Broad, 2016; Alkon, Norgaard, 2009). Neoliberalism describes a "political philosophy that promotes market-based rather than state-based solutions to social problems," and is driven by market rule and commodification (Agyeman, McEntee 2014, 216). Scholars from the food justice perspective critique corporate supermarkets as a solution because of the inherent focus on market rule and commoditization of food as a solution to inadequate food access (Agyeman, McEntee 2014). Feminist scholars have argued that neoloiberalism shapes food choices by placing responsibility and knowledge for healthy food choices on the individuals (Cairns, Johnston, 2015).

By definition, residents in food deserts do not live near adequate grocery stores and other food outlets. Many of these residents also lack access to convenient and reliable transportation, creating barriers to the quality and affordability of food (Coveney, O'Dwer, 2009), and might be limited to using public transportation, biking, and walking (Junfeng et al, 2012; Zenk 2005). Transportation is a barrier to food access in rural areas (Sharkey et al., 2010) as well as urban areas. A study of low-income families from Austin, Texas on transportation and food access found a variety of mobility strategies to access food stores, such as transit, walking, or getting rides from neighbors (Clifton, 2004). The lack of transportation prevents access to healthy and affordable food, and for low-income residents in Baltimore, a lack of access to healthy food through public transit leads to increased ill health effects (Plano et al., 2015). Participants in another study of food deserts report that a lack of access creates inconveniences when the scheduling and timing of activity depends on constraints of time and money (Clifton, 2004). Researchers within the

environmental justice field argue prioritizing bringing affordable public transit is one of the best ways to approach addressing food access and increasing access to job opportunities as well for residents (Plano et al., 2015). For residents with no access to a car or unreliable public transportation, trips to pick up food are an additional stressor and can be a financial burden.

Food justice and community responses

Disparities in food access have been addressed through the food justice movement nationally by an analysis of racial and economic injustice with a focus on environmentally sustainable alternatives (Alkon, Agyeman, 2011). Food injustice stems from economic disparity, poverty, and historical and structural racism (Horst et al 2017; Alkon, Norgaard, 2009). Studies on community-based solutions in food deserts found correlations between income and race with health outcomes (Brinkley et al., 2017; Monteiro, 2009). Structural causes of food insecurity are also related to political processes that influence food consumption, such as taxation and regulation of location of retail chains (Sadler, Gilliland, Arku, 2016). The food justice movement focuses on the connections between inequality and the food system, with a focus within communities to address oppression (Sbicca, 2012). This includes workers exploited through the food industry because of low wages, poor working conditions, and farm labor. As communities of color have been excluded from their own food production systems, the corporate food system can further racial oppression in areas considered food deserts (Alkon, Norgaard, 2009). Another term in the literature on alternative food movements is food sovereignty. Food sovereignty is described as, "when all peoples, nations, and states are able to determine their own food

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producing systems and policies that provide every one of us with good quality, adequate, affordable, healthy and culturally appropriate food" (Patel, 2009, p. 674). This can relate to the mental and physical health, and financial impacts food insecure women feel, and the food justice movement aims to mitigate these injustices and impacts.

The food justice movement works to address the intersections of race, class, and gender, for example by critically examining who does what work in our food systems, and what the conditions of this work are (Allen, Sachs 2007). Often, low-income and immigrant women end up working in unsafe conditions for food production (Ruiz, 1987). Farmworkers are at risk for chemical-related exposures and for women specifically, this pesticide use is a threat leading to endocrine, reproductive, and oncogenic effects on pregnant women and children (Hansen, Donohoe 2003; Oria, Yih, 2017). Existing studies show that women face economic and social inequalities working in the food retail industry (Giuffr, Williams, 1994; Oria, Yih, 2017; Ruiz, 1987; Glenn, 1985). The food justice movement addresses the inequality facing low-income and people of color in the food production system through alternative solutions.

The food justice movement stresses the importance of community-based solutions and relationships, as reliance on social support networks are commonly mentioned strategies in the literature to manage food insecurity (Smith, Morton 2009). Gardening and sharing of excess produce is one way to combat inequality and provide neighborhoods with nutritious and culturally relevant foods (White, 2011; Sbicca, 2012; Baudry, 2012; Banjeree, Bell 2007). Homegrown food could be an alternative to purchasing food, and foster environmental and social connections through a shared sense of place (Alkon, Mares,

2012; White, 2011). Urban gardens have historically served as a space for showing that not only the rich, powerful and educated can have influence in shaping cities, and that lived knowledge from the local community is valuable (Baudry, 2012). Community supported agriculture and urban gardens provide a space for women to share their experiences and methods of accessing and interacting with food, fostering social support for food insecurity. Another alternative solution is household level gardening (in private yards, patios, balconies, and even fire escapes), which can support food security and sustainability, foster social connections, and give households nutritious, and culturally acceptable foods (Dewaelheyns et al., 2014; Kortright, Wakefield, 2010).

The literature identifies various remedies to address community-wide food insecurity, and some scholars argue the best solutions to alleviate low food access at the local level require political action, including removing or limiting restrictive covenants, implementing ordinances on fast food, improving public transportation to grocery stores, and financial incentives for infrastructure (Donald, 2013; Sanders, Shattuck 2011). In contrast, food justice scholars looking at community solutions critique this concentration of more grocery stores because it focuses on solutions only at the neighborhood level, rather than responding to larger factors such as the way "race and class organize the production, distribution and consumption of food" (Alkon, Agyeman, 2011, 4), and those critical of the social ecology perspective would argue an examination of ethnicity, race and racism related to food consumption is necessary, especially for developers and planners looking to address neighborhood food availability (Short et al., 2007). Additionally, a social ecology perspective argues changes in the social environment will lead individuals to change

(Shannon, 2014). Proposed solutions for food deserts vary across disciplinary and ideological perspectives, from strategies at the individual level to society wide solutions.

Determinants of Food Insecurity

Several determinants related to gender lead to higher food insecurity levels among women. Socio-demographic characteristics linked to food insecurity include: single parenthood, race and ethnicity, educational status, lack of home ownership, lack of savings, income shocks, unemployment, poor health status, social isolation, living in a central city of metropolitan area, having three or more children, serving as a female head of household, having no elderly in the household, having a household member with a disability, and having a noncitizen head of household (Bartfeld, Wang, 2006; Nord et al., 2014). Also, unexpected expenses, such as medical expenses or job loss frequently cause food insecurity (Olson, Rauschenbach, 1996; Rose, 1999).

There is a strong relationship between income and hunger; however, not a one-to-one correspondence because many households above the poverty level show signs of food insecurity (Rose, 1999). Although poverty and food insecurity are not always directly connected and experienced by individuals or households these factors are closely tied together. In 2005, 38.5 percent of households below the poverty level were also food insecure (Cook, Frank, 2008). When food security is compared to poverty status rather than household income, households in poverty are more likely to experience food insecurity (Guo, 2010). Studies show that economic disadvantage, even in the distant past, is associated with food insecurity (Lahteenkorva, Lahelma, 2001). This connection was strongest with those experiencing economic problems in childhood and unemployment

within the past 5 years, and is related to health problems such as low and high body weight (Lahteenkorva, Lahelma, 2001).

A number of other economic factors are associated with food insecurity, with research showing homeowners are less likely to be food insufficient (Rose, 1999; Guo, 2010). There are three main factors tied to homeownership related to preventing food insecurity: households without mortgages and with mortgage payments less than the rental value of their home have more money for food than renters, secondly, homeowners can avoid making repairs to their home whereas renters find the rent increased for repairs to the home, and finally homeowners can borrow against equity present in the house (Gundersen, Gruber, 2001). There were also lower rates of food insecurity among households who head was over 60, which could be explained by the fact that elderly have life-savings not reflected in income and have paid off their mortgages, freeing additional money for food purchasing (Rose, 1999). In addition to homeownership and age, vehicle ownership shows positive associations with household food security (Guo, 2010).

Health Impacts of Food Insecurity

Women experiencing food insecurity are more likely to suffer from mental health issues (Siefert et al., 2001). Women's physical and mental health is negatively impacted by food insecurity because of social inequality as determinants of health (Heflin et al., 2005) Studies show mental health impacts including generalized anxiety disorder and depression, frequently stemming from risk factors such as unemployment and poorer health outcomes (Siefert et al., 2001). A study of adults in food insecure households in the Lower Mississippi Delta found a poorer self-reported health status compared to food secure households, and

women who reported difficulty accessing enough food were more depressed and had a poorer quality of life and physical performance (Heflin et al., 2005).

Food insecure women must often make different decisions and sacrifices about health and food than men. Food insecurity impacts women significantly because of their culturally constructed roles as providers of food and these expectations lead food insecure women to prioritize the health of other household members over their own. Existing literature finds health disparities among food insecure women, and concerns over food supply is the first indicator of food insecurity. Researchers find women's food consumption and diet quality are quickly reduced when experiencing anxiety over food (Coleman-Jensen, 2009). For low-income mothers, these decisions are even more pronounced and dietary intakes are typically poorer than their children's nutritional intake (McIntyre et al., 2003).

Women experiencing food insecurity frequently report physical symptoms such as fatigue, hunger pains, and weakness (Hamelin et al., 2002). Existing studies find women experiencing food insecurity are more likely to be overweight and experience related health impacts of obesity (Townsend, 2001; Adams et al., 2003), and marginally food insecure women were more likely to be overweight, while women with low food security were more likely to be obese (Hanson et al., 2007). A study of food assistance users found that food insecure women, but not men, participating in food stamp programs were significantly likely to experience obesity (Gibson, 2003). Reasons for this are related to decisions about quality and quantity of food, including inexpensive high energy food choices, periods of overeating followed by periods of normal eating, periods of overeating

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followed by periods of deprivation, other types of disordered eating, and stress-induced biological changes (Gibson, 2003).

Mild food insecurity is related to obesity through disordered eating patterns as a potential coping mechanism, but research on the connection with eating disorders is limited (Gibson, 2003; Frongillo et al., 1997).

Studies show food insecure adults experiencing obesity were more likely to report buying cheaper food and having fears about running out of money to buy food, possibly leading to a reduced quality of diet and intake of fat-rich food to prevent hunger (Dietz, 1995; Lahteenkorva, Lahelma, 2001). In another study, adult participants cut back their own food quantity to make sure kids have enough to eat, and concerns about nutrition and rates of consumption of salt, sugar, fat, packaged food, junk foods were high (Hoisington et al., 2002). These practices lead to increased rates of health risks, from nutrient deficiencies to heart disease and diabetes (Vozoris et al., 2003; Tarasuk, 1999). Another major health impact of food insecurity is weight, and some studies show a relationship between marital status, race, and BMI. One study comparing BMI among women in food secure and food insecure households found that household food insecurity was positively related to BMI, and women from the food insecure households were on average two BMI units heavier (Townsend et al., 2001). This difference is significant because this increased BMI was associated with a 25 percent increased risk of death (Olson, 1999). BMI may be related to race, as one study found obesity rates in California among food insecure women of color are higher than among non-hispanic whites (Adams et al., 2003). Marital status can also play a role in food security and likelihood of obesity, as food insecurity relates differently to

women and men, and researchers found a greater likelihood of obesity among married women, those living with partners, and widows when compared to never-married women (Hanson et al., 2007). Pregnant women face additional challenges when food insecure as nutrient demands are higher and may have to leave the workforce, causing negative financial impacts (Ivers, Cullen 2011).

Coping strategies

Coping strategies are used when individuals are concerned about maintaining an adequate food supply for themselves or their households and use behaviors to stretch food supply when individuals run out of food (Anater et al., 2011). These strategies can vary in frequency and riskiness and vary at the individual and community-wide level. Qualitative and ethnographic studies show when food security is low, women frequently ration food to other household members first, and skip and cut meals (Wehler et al. 1992; Hamilton et al. 1995; Beaumier, Ford 2010).

In a study on residents living in rural Minnesota and Iowa food deserts, dominant themes emerged surrounding physical and social environments as both barriers and constraints to food access. Reliance on community members for social support is one mentioned coping strategy, with informal transportation networks for example (Smith, Morton, 2009). In a study of food pantry users from nine different locations in Washington State, a number of coping mechanisms are used to delay hunger. The most commonly used strategy was skipping meals, as a result of not being able to afford balanced meals, or because the food that was bought did not last (Anater et al., 2011; Hoisington et al., 2002).

This study from Washington found various strategies related to food acquisition, including shopping at multiple different stores, food substitutions for canned and cheaper versions of foods, free meals from sources like neighbors, family, daycare, and private and public food assistance (Wood et al., 2007; Hoisington et al., 2002). Women were also likely to cut food portions, eat the same foods, have meals at a friend's house, or eat unsafe and cheap foods (Hoisington et al., 2002). Those experiencing food insecurity must make decisions throughout the month about food and to ensure food, particularly at the end of the month, participants in one study reported putting off other bills and non-food expenses, and relying on food banks (Hoisington et al., 2002). Another study with mostly women participants in Quebec City also reported putting off utility bills to save money for food (Hamelin et al., 2012). Women report eating modified diets and purchasing lower cost, convenience foods such as beans and rice, instant soups, macaroni and cheese, and potatoes (Hoisington et al., 2002; Hamelin et al., 2002). Another study of food pantry clients report similar coping strategies related to shopping, including buying food on sale, shopping at bargain and discount stores, hiding food for for later, visiting more than one store, using coupons, and getting ingredients in bulk (Wood et al., 2007; Anater et al., 2011). This study also found agriculture-based coping strategies, such as hunting and fishing, using home and community gardens, gleaning, and preserving food through canning (Wood et al., 2007). Other forms of coping strategies include methods to immediately attain more money for food or to reduce appetite, such as pawning items for food, going to stores with free samples, donating plasma, panhandling, increased water consumption and smoking to reduce hunger (Polit et al., 2000; Anater et al., 2011).

Food insecure women accessing food assistance programs and shopping for food

general can face several barriers. Reported barriers to some of these coping mechanisms

include local stores not accepting food stamps or coupons, a lack of storage space for

stocking low-cost items, juggling work and school schedules, and difficulties in food choices

for child and adolescent family members (Hoisington et al., 2002). In interviews with

African-American women from Detroit experiencing food insecurity, women reported

stores that do not accept food assistance benefits were seen as a major barrier to obtaining

food (Zenk et al., 2011). In a study with residents living in rural Minnesota and Iowa food

deserts, physical and social environments can be constraints to food access (Smith, Morton,

2009). Even participation in food assistance programs does not always guarantee access to

enough food. A study among low-income women living in a homeless shelter in Harlem,

New York with limited access to fresh fruits and vegetables report that food stamps are not

enough to cover food, and they frequently rely on soup kitchens or shelters (Valera et al.,

2009). Studies show that engagement in food acquisition practices can be dangerous and

researchers identify six types of risks posed to food insecure individuals and society at

large; financial, health, food safety, illegal or regulatory, nutritional, or and physical (Anater

et al., 2011). Coping strategies can be dangerous and unsustainable, including sex work for

food, leading to increased likelihood of disease and health impacts (Ivers, Cullen 2011).

Conclusion

The literature on food access shows that communities identified as food

deserts are shaped by inequalities in food access, which are closely tied to neighborhood

demographics like racial identity and income, in addition to personal economic circumstances impacting food affordability. Rates of food insecurity impact women differently, and the impacts are particularly worse for women experiencing unemployment, serving as head of household, renting instead of owning a home, or living in an area with limited transportation.

Food insecurity impacts women on a personal level and can impact health outcomes as they navigate barriers to food access, such as rationing food or skipping meals when resources are low, relying on community resources like food pantries, or spending additional time traveling to more affordable stores. A closer examination of the way women in particular experience food insecurity, and the mechanisms they describe to cope with food insecurity provides a deeper understanding of this complicated socio-environmental issue.

Methods

Study Population

This research took place in the Birchwood area of Bellingham, Washington, identified as one of the lowest-income and non-white areas of Bellingham, with several languages besides English spoken, and a large percentage of residents identifying as renters rather than homeowners. This neighborhood was chosen because of the identification as a "food desert" after the closure of the full size grocery store Albertson's on Northwest Avenue in 2016. The closure of Albertson's left limited options for affordable and easily accessible for food for residents in the area. In Birchwood, renting is the most common household situation with 2,059 of 3,509 housing units occupied as rentals (2010 Census). Data from the 2016 American Community Survey estimated within the census tract for Birchwood that 72.3% of residents are white, 1.4% are African American, 8.0% are Asian, 3.3% are American Indian and Alaska Native, 5.3% were two or more races, and 9.7% identified as another race. 14.2% of residents identified as Hispanic or Latino of any race. Birchwood is one of the most diverse neighborhoods when compared to all of Bellingham, where 82.8% of residents identify as white (ACS 2016). Additionally, the rates of poverty in Birchwood are higher when compared to the rest of Bellingham, with an estimated 29.4% of all people and 30.1% of families living below the poverty level in the past 12 months (ACS 2016). 68.8% of families with a female householder were living below the poverty level, and 78.2% with related children under 18 years old (ACS 2016). This is over 20% higher compared to the rest of Bellingham.

In order to better understand how food insecurity impacts marginalized groups, like those marginalized by their gender identity, interviewing women in this neighborhood provided a closer look at how food insecurity and living in a food desert is shaped by socio-economic factors. The demographic characteristics of Birchwood reflect the demographics commonly cited in other studies of food deserts and areas with low food access (Zenk et al., 2005; Moore, Diez Roux, 2006). Reported characteristics of Birchwood align with several of the determinants of food insecurity identified within the existing literature, including the lack of homeownership, single female head of household, and racial identity. A qualitative study of self-identified women living in Birchwood allowed for a stronger understanding of food insecurity and its relationship to gender and class.

The Transformative Paradigm

The focus of this study is to understand women's experiences with food insecurity and to both support and inform action surrounding food access in the Birchwood neighborhood food desert in Bellingham, WA. The methodological approach guiding this research is the transformative paradigm, a research and evaluation approach conducted for social justice purposes described by Mertens (2007). The transformative paradigm assumes cultural norms guide ethical behavior, and research should strive to examine aspects of power and privilege to promote social justice (Mertens, 2007; Jackson et al., 2018). Additionally, an underlying assumption is that knowledge is not neutral and is influenced by human interests. Knowledge influenced by human interest reflects the power and social relationships within society and the purpose is to aid people and improve society (Sweetman et al., 2010). This methodological framework for research emphasizes

"capturing reality in an ethical manner," (Mertens, 2007, 215). The transformative paradigm relies primarily on participants' lived experiences, and I followed this approach by providing an opportunity for participants to share their personal experiences with food insecurity and coping strategies. The transformative paradigm is appropriate for this research in a lower-income and ethnically diverse community like Birchwood, especially when focusing on the impacts of living in a food desert and food insecurity on women.

The transformative paradigm aims to examine how power structures have impacts on the lives and experiences of marginalized groups, such as women, ethnic and racial minorities, and people living with disabilities (Mertens, 2007). One of the basic tenets of the transformative paradigm is that realities are socially constructed, and transformative researchers need to be "aware of societal values and privileges in determining the reality that holds potential for social transformation and increased social justice." (Mertens, 2007, 216). The methodological assumptions under the transformative paradigm leads researchers to "reframe [the] understanding of our worldview" and data collection is "complex and require[s] an awareness of the cultural values and practices in the specific population of interest," (Mertens 2007, 219), and this assumption guided my research on how best to reach women impacted by living in a food desert.

The transformative paradigm emphasizes carefully building relationships with the participating community. To build a deeper understanding of the complex issues facing Birchwood residents I focused on connecting with local community groups and leaders, including the ecofeminist non-profit Community to Community Development and the Birchwood Food Desert Fighters at the start of my research. This included a meeting with a

leader from Community to Community Development prior to conducting interviews who was already doing outreach within the neighborhood in order to better understand the current community-based solutions to bring fresh food to the neighborhood and political action through attending rallies. I also maintained email correspondence with those involved with the community produce share spot to learn about the resource.

This research was conducted in English, limiting the variety of experiences of food access that could be uncovered. Mertens brings attention to the challenges and power issues in social justice research when, "less powerful stakeholders are not familiar with English," (Mertens, 2007, 223). This is important to note given the fact that 12.4% of Whatcom County residents over five speak a language other than English (U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates), and Birchwood specifically is a linguistically diverse neighborhood where about 85% of residents speak English as their first language. Spanish-speakers were not included in the study because I am not a fluent Spanish-speaker, and felt I would be unable to fully capture their experiences because of a language barrier. Despite not including Spanish speakers in the study, outreach was done through the elementary and middle schools to connect with bilingual adult speakers who may qualify.

One goal of my research was also to provide research results back to the community, specifically through connections already established with the local ecofeminist and food sovereignty group Community to Community, who are focusing on farmworkers rights and health. In order to involve persons from groups who may benefit from applications of the research, I shared results with the Whatcom County Department of

Health with a program specialist who shapes food policy within the county. Before

publication, I shared the results section of my research and focused on sharing responses

to the last interview question "If you had unlimited funds and support, what suggestions

would you have for a solution to this issue?" with existing organizations in the community.

This was a crucial step as researchers guided by the transformative paradigm have a

responsibility to educate relevant community members and interested parties.

Collaboration and communication with community groups was important because

researchers should not act in the role of advocate, rather link research results to social

justice and action in the community (Mertens, Ginsberg, 2008). Research dissemination is

covered in more detail at the end of the methods section.

The next part of my research incorporated qualitative, hour-long interviews with 12

Birchwood women experiencing food insecurity, recruited through outreach in the

neighborhood and social media, by convenience and snowball sampling. Interviews were

transcribed and inductively coded during the data analysis portion of my research.

Recruitment and Sampling

I chose to interview 12 women about their experiences with food insecurity because

this was a manageable population size given the time and resources available for my

research. This number ideally reached "data saturation," or a sample size large enough to

begin hearing repetition in perspectives and themes in conversation. I primarily used

convenience sampling to select participants because of the limited time available. This

approach is generally used when all participants are from the same geographical area and

may be from similar socioeconomic backgrounds (Emerson, 2015). In a convenience

sample the most accessible subjects are included, although demographics of participants might not reflect the whole population being studied. I also used snowball sampling, when additional respondents are recruited through contact information provided by another participant (Acharya et al., 2013).

The sampling methods create limitations in the representativeness of food insecure residents of Birchwood because the most convenient people were reached out to as well as those comfortable responding to the initial screening survey.

I used flyers (Appendix D) and social media posts on Facebook groups connected to the Birchwood neighborhood, such as the Birchwood Food Desert Fighters and the Birchwood Neighborhood Association, with a brief description of the study, participant requirements and incentive, contact information, and links to a Western Washington University supported Qualtrics survey (https://wp.wwu.edu/osr/qualtrics/) to recruit and pre-screen the participants (See Appendix A). I coordinated with neighborhood businesses, such as Neteo's Bakery and Birchwood Botanicals, and social media groups on Facebook to distribute flyers and share social media posts. To reach as many perspectives as possible, I created 100 flyers to leave on community boards, bus stops, and other locations and businesses in the neighborhood. 84 people responded to the qualification survey, and 22 responses included contact information in the form of an email or phone number to schedule an interview.

Participants were self-identified women living in the Birchwood neighborhood experiencing food insecurity and 18 or older. Participants could define their own

experiences with food insecurity, but were asked how many of the following they

experienced over the past 12 months: (USDA, 2018).

- My food did not last and I didn't have money to get more

- I couldn't afford to eat balanced meals

- I had to cut the size of meals or skip meals

- I had to hungry because there wasn't enough money for food

- I struggled to access enough food within my neighborhood

At the end of the Qualtrics screening survey collection, I contacted each qualifying

respondent through the email and phone number provided at the end of the survey to

schedule an interview.

Interviews

Across the social sciences, qualitative methods like semi-structured interviews are

used to uncover emerging themes to gain a deeper understanding of a phenomenon or

social issue (Bernard, 2006). To collect narratives of food insecurity from the participants, I

used semi-structured interviews, identified in the literature as a way for researchers to

develop a deeper understanding of social topics while including open ended questions that

serve as a guide for the conversation (Bernard, 2006). Qualitative methods are appropriate

to use in social justice research because this approach allows participant experiences to be

captured beyond just numerical data and charts. Because the purpose of this research was

exploratory and not hypothesis-driven, I took a semi-structured approach to interviews

(Barriball, While, 1994). Semi-structured interviews allow for the exploration of

"perceptions and opinions of respondents regarding complex and sometimes sensitive issues," (Barriball, While, 1994, 330).

An interview protocol (see Appendix B) served as a guide for this research, but participants were free to share other topics if it helped to enhance understanding of their experience with food insecurity. Interviews were conducted at Mi Rancho, a local restaurant and market in the Birchwood neighborhood. Interviews lasted between 45 to 60 minutes long. By using the semi-structured interview format, interview questions were shaped in a way to start conversations and allow participants to guide conversations to other relevant topics. Participants were asked a variety of questions about their daily experiences and strategies when food security is low. To encourage participants to open up and share more of their experiences, I used additional follow-up prompts and probes in order to follow established interview strategies commonly used in the field (Bernard, 2006).

Through the transformative paradigm, Mertens addresses issues with sampling and participation, and importance of recognizing barriers such as differences in language, transportation access, childcare, and conflicting work schedules and meeting times (Mertens, 2007). I addressed these concerns by selecting a meeting location centrally located in the neighborhood and accessible by public transportation, and working with the schedules of participants.

IRB and Ethics

The Western Washington University Internal Review Board approved this research in 2018 (documentation can be found in Appendix D). I followed IRB requirements by

protecting the privacy of participants through deleting email communication, maintaining

anonymity in interviews by redacting personal identifying information, describing the risks

and benefits of participation in research, and obtaining verbal consent before each

interview. Risks to participation were limited but it was possible participants may feel

uncomfortable answering questions or talking about their experiences with food

insecurity, and were free to end the interview at any time or skip questions they did not

want to discuss. I worked to avoid creating undue burden for participation, which could

violate the social justice ethics of the NIH requirements. Participants were compensated for

their time and effort with a $30 gift card.

Broader ethical concerns were addressed through the transformative paradigm by

providing research results directly back to the community. The results of the study were

framed through a social justice lens with analysis of how larger barriers impacted the

women involved.

Data Analysis

I used grounded theory to code interview data, starting with common themes

throughout each interview. Grounded-theory research, typically based on inductive coding,

allows for understanding to emerge from a close study of texts (Bernard, 2011).

Researchers following grounded theory first create preliminary jottings, and following each

interview I took notes and created memos of possible codes and notable categories. A list of

codes with concepts from existing literature was created beforehand, added to and

adjusted as new categories emerged. The list of codes is under Appendix C as "code book."

After conducting all of the interviews, I used Temi, (www.temi.com), a speech-to-text transcription service, to transcribe each audio file. To maintain anonymity of my participants, names were never used in the recorded portion of the interview. If I, or participants, inadvertently disclosed information that would identify the research subject (e.g. name, specific details of their work, apartment name), I removed that sensitive information in the transcription and made a note (e.g. [identifiable information removed]).

Following transcription, analysis software Dedoose (Dedoose.com) allowed for further data exploration and organization. I coded one interview at a time, adding additional code categories as I went. At the end, I re-coded interviews and looked for any concepts that may not have emerged until the later interviews. Expected themes surrounding food access were based on other existing literature, and could be categorized as gendered experiences and expectations, personal and community coping strategies, reasons for experiencing food insecurity, barriers to food access, usage and views on nutritional assistance programs, and the physical and mental health impacts of food insecurity. Participants were also asked what solutions they would ideally like to see implemented in the community or state as a whole. By approaching the coding inductively, themes unique to the participants living in Birchwood emerged.

Grounded theory is one way to ensure rigor in qualitative research (Chiovitti, Piran, 2003). During the coding process, I focused on connecting emerging results to existing theory and patterns identified in the relevant literature to demonstrate how research findings were transferable to similar situations. Additionally, I looked for negative cases and new concepts to describe differences in existing literature and my study.

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Research Dissemination

Research dissemination is a crucial part of the transformative paradigm and a way to communicate research findings with the appropriate audiences. At the conclusion of the research, I created a research report with a summary of study results, major findings, and future directions for addressing food security in Birchwood discussed by each participant, in addition to a brief flyer summarizing the research. I had a meeting with two Birchwood Food Desert Fighter members prominent in the community to collaborate and share results, and this report was also was shared with the Whatcom County Department of Health. The results and report were also shared with Bellingham City Council member April Barker, who has been active in bringing attention to the Birchwood food desert prior to publication. The Whatcom County Department of Health was particularly interested in the issue of limited transportation, resident's experiences with the Bellingham Food Bank, and the solutions suggested by participants. A focus of our conversation was how to increase accessibility to the food bank, and how to allow more individual choices in what foods to take home, for example allowing people to take more produce if they do not want non-perishable items.

Results

Participant Demographic Characteristics

The study sample (See Table 1) included self-identifying women of all ages with various living situations, employment statuses, time as a resident of Birchwood, and racial identities. None of the women were homeowners and none were unemployed. (N=12)

Table 1: Participant Demographic Information

Age	Percentage	(#)
18-25	20%	2
26-35	30%	3
36-45	20%	2
46-55	10%	1
55+	20%	2
Racial Identity	Percentage	(#)
White	50%	5
Native American/Alaskan Native	20%	2
Mixed Race	30%	3
Time in Birchwood	Percentage	(#)
< 6 months- 3 years	50%	5
4 years-10 years	20%	2
11+ years	30%	3
Living Situation	Percentage	(#)
Live alone	30%	3
Live with partner/spouse (no children)	0%	0
Live with roommates	20%	2
Live with family (no children under 18)	30%	3
Live with family (children under 18)	20%	2

	Percentage	(#)
<u>Employment*</u>	<u>Percentage</u>	<u>(#)</u>
Full-time	58%	7
Part-time	8%	1
Student	25%	3
Social security	8%	1
Unemployed	0%	0
<u>Homeownership</u>	<u>Percentage</u>	<u>(#)</u>
Homeowner	0%	0
Renting	100%	10

*Some overlap between student/working

**Int 1 and 2 not asked full demographic questions.

Food insecurity and gender

Several participants discussed how they had experienced gendered impacts of food insecurity. Their experiences varied from gendered expectations related to food acquisition and preparation, stigma about what women should eat, and health impacts like missed menstrual cycles. Four women identified as both a wife and mother, and said they focused on prioritizing other household members food security over their own, in addition to paying attention to family member's preferences for foods. This included purchasing specific foods and snacks their spouses prefer, and the focus on unique tastes of their children. Often this prioritization was connected to coping strategies, including skipping meals so children could eat and increased water consumption to save food for the rest of the household. In one case, a 65-year old mother and wife talked about skipping meals consistently to save money as her children grew up, saying, "if that meant that I went longer [before eating] or just drank water or whatever, I would do that."

Participants also saw connections between gender and community and social support. One mother felt there was a low amount of help and social support stemming from competition and judgment from other women, and noticed men were more likely to help one another by giving each other rides to the store or extra food. As a single-mother, she described seeing men help each other out and felt this difference was a result of societal expectations, "whereas men, they are more willing to help one another because I think with women, we're just taught to be more competitive." In contrast, one woman involved in social work who volunteered at food banks across the region, including in Bellingham, saw gender impacting the types and amount of food offered to women versus men and noted, "women were almost put in front of men [at the Bellingham Food Bank], especially if they had a child with them and they were offered more food." Additionally, participants discussed how gender was connected to stigma and social pressure. Several participants described feeling societal pressures for women to eat healthier compared to men, and one thought men were more likely to feel comfortable going to fast food restaurants or the 7/11 in the neighborhood for affordable meals. There was also discussion of increased embarrassment about not knowing about food assistance programs, as two participants thought women might face more pressure to be knowledgeable about these programs compared to men. A woman in her late 20s described feeling strong pressure to eat certain foods because of her gender, saying:

> I think there's a lot of stigma around like what women are comfortable eating around men or just in general. I think it's kind of a given that women should   eat less and eat healthier foods because they have to look a certain way and at least most people, most women usually like to look a certain way for men or men look down on a woman who's going to eat something large or unhealthy.

Another participant, a 25-year-old woman, described this by saying, "I think women are expected to know those sorts of things and like how to save money, so if you don't know how the food bank works women may be embarrassed to ask." One woman felt the select hours and long lines at the food bank could be a limitation for women who have to juggle multiple responsibilities like childcare and work.

In some cases, gender was tied to gender expectations and roles. Participants described challenges with family member's health and strict diets. Other participants with children described having to keep in mind nutritional value of foods for their children, as well as the preferences and tastes that their kids liked. For one woman, prioritizing the health of other family members, especially her children, was consistently on her mind because, "the priorities were always to make sure that they were getting nutrition, making sure they had protein, and I always tried to make sure that they got their dairy in, whether it was milk or eggs and cheese." For this mother, skipping meals and eating the more unhealthy foods was directly tied to her identity and not an expectation for her husband to also follow because of his career involving labor, "even though we both worked, we did make sure that he was healthy and all that for work." For women who did not live alone, frequently their own health was compromised in order to provide for others.

Gendered health impacts

Almost all participants described feeling negative physical and mental health impacts related to not having enough to eat and not having access to enough healthy foods. The health impacts of food insecurity included mental health, such as PTSD, stress, and anxiety, as well as physical health impacts such as weight gain, low energy, weakness, and

missed menstrual cycles. For one 78-year-old participant who had to eat keto and low-carb meals to manage diabetes, her health issues further complicated managing food insecurity because she had limited options for appropriate foods at the food bank, which were primarily high-carb. Eight women described feeling generally more tired and worn down when eating primarily processed and packaged foods instead of fresh food and produce. For one woman in her 60's, gender was connected to health consequences, especially managing the stress of providing food for everyone and said, "some of it [health issues] I feel like it's also due to growing up being extremely poor and so almost like a predisposition when I became a mother and a wife, I'm stressing even more than before about having enough food." For many of the participants, food insecurity either further aggravated existing mental health conditions, or created an additional stressor in their daily lives.

Causes of food insecurity, prior experiences, and temporal patterns

Food insecurity was a result of external, sudden events for some women, and some saw fluctuations throughout the year in their food security. More than half of the women had experienced food insecurity at some point in their life beyond the past 12 months. For example, the causes of food insecurity ranged from past unemployment to sudden rent increases.

Seven participants had experienced food insecurity in some form previously, some even before adulthood. Prior food insecurity was closely tied to current coping strategies; for example, one woman learned to use her home garden for extra produce and valued not

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letting any food go to waste because her parents had grown up during the Great Depression and passed these strategies on to her:

> So being resourceful and doing what you can with what you have is definitely where my makeup comes from. I'm really a farm girl in the city, but a lot of it was learned from my family heritage. You weren't picky, you weren't unthankful, and you just did with whatever you had, using your resources.

Others discussed how budgeting, rationing food, planning cheap meals, and skipping meals were learned from their prior experiences. One mother with adult children felt her family ate healthier now compared to the first time they experienced food insecurity now that they knew how to plan meals together and stretch food scraps.

Temporal patterns were discussed by five women, with four describing extra challenges during wintertime to pay heating bills, avoid illnesses, and participate in social obligations and celebrations around the holidays. This yearly pattern had an impact on mental health and stress management. For a woman in her 60s who described the yearly difficulties of food insecurity in the winter said, "I always panic during winter, I think it has just been so ingrained in me because winter is the hardest because of illnesses, it's hard to get around, how cold it gets and how susceptible we are to illnesses. It's an anxiousness that I carry with me throughout winter until we get to spring and I almost feel like my body goes, 'ah, we made it, we made it through the hard winter.'" One woman spent more money on food in the summer when a community produce stand was open.

While the causes and amount of prior food insecurity were varied, these issues were closely tied to other aspects of food security, like usage of coping strategies and health impacts.

Barriers to Food Access

Many participants said a combination of barriers impact their access to food, with all participants discussing the lack of options in the neighborhood. In addition to a lack of options in the area, cost was a factor for nine; health, quality, quantity of food for seven; time for seven; and transportation was barrier for five.

Participants described physical difficulties accessing grocery stores and carrying groceries, with some having to walk further, take longer bus trips, or even spend additional money on the ride-share program, Uber. Cost was a major barrier, preventing women from accessing the foods they would prefer and comparing prices between stores. This overlapped with time for many participants who felt food shopping took extra time now that there was no large grocery store in the neighborhood. Time was also a major constraint for women currently attending university or community college. The health, quality and quantity of foods in the neighborhood were an issue for seven participants, many describing the lack of organic options and fresh produce. Gender was a factor in the ability to have enough resources to manage food for one 34-year-old woman who said, "I definitely feel like gender might make some difference if you don't have the resources for food because you have a lower paying job or have to work just part-time that can be really challenging." Barriers to food access were felt by many to have increased when Albertson's closed, taking away affordable and close options for fresh and healthy foods.

Food prioritization and coping strategies

Table 2: Coping Strategies

Strategy	#
Budgeting	7
Canning food	1
Community/social support	5
Compare store prices	4
Coupons	4
Gardening	2
Increased caffeine consumption	1
Increased water consumption	2
Informal transportation networks	1
Meal planning	11
Meals at work	1
Political action	1
Prioritize bills/expenses	4
Purchase foods that last	8
Rationing food	3
Sell belongings	1
Skip meals	9
Snacking	2

Women reported having to make priorities when it comes to decisions about food, and usually had one or two priorities. Affordability was the first priority for eight women, health for five, and convenience for four.

A variety of coping strategies came up during conversation. Skipping meals, one of the most used strategies, varied from almost daily to a few times throughout the month, to even not eating for a few days at a time (Table 2). One 20-year-old woman described the varying frequency she is able to eat and said, 'I'd say two to three times a week I will only eat maybe a meal a day with snacks dispersed between that, or I've caught myself a few times just not eating for a few days at a time, which becomes problematic." Many women described negative feelings caused by skipping meals, such as having low energy and being fatigued, connecting this to feeling especially worn down when eating heavily processed and high carb foods. Participants would skip meals for a variety of reasons, such as skipping meals in the start of the month to make food stretch longer, or eating one meal at the end of the day. This was an issue for another woman attending school full-time who said, "a lot of the time I kind of only eat one or two meals a day, and I tend to skip meals a lot if I notice I'm getting low on food and I know I won't have time to go to the grocery store." One woman in her 20's described how skipping meals was learned from an early age where food was limited, but also felt this was a bad habit because some of her food would go bad from trying to save it. For three mothers, skipping meals was related directly to saving food for their children and making sure they had the full nutrition necessary instead of themselves.

Community and social support varied from financial to emotional support from family, friends and neighbors. For example, one woman asked to pick apples from neighbors. A mother of two thought food insecurity brought them closer together as a family because they were all going through this shared experience and said, "instead of breaking us apart, it just made us a stronger family unit." Her family also became more involved in community events, such as a neighborhood bridge restoration and painting project. One woman borrowed money loaned from friend to help with medical bills while experiencing food insecurity, but expressed additional stress trying to pay back the loan. One woman in her 20's shared meals with friends during holidays. A woman employed in social work attended community mental health meetings where there were open discussions about the stress of poverty and connections to mental health, and she also discussed the ShareSpot with free produce created with the Birchwood Food Desert Fighters in 2018. The ShareSpot was created by community members who wanted to address the few options for affordable produce in the neighborhood, and provide a space for gardeners who wanted to share extra fruits and vegetables. For her, produce offered in the community was a tremendous benefit in the summer and early fall when, "[The Food Desert Fighters] had stands where they were giving away produce and we went to them all the time and it was really, really nice because we got to eat the food that was grown in our neighborhood."

Each participant had different opinions on stigma surrounding food insecurity and their openness with talking about their situation; one described herself as extraverted and very open, while others were private about food insecurity. Most participants said they preferred to keep their experiences private or only share with immediate family. For

example, one mother said, "I'm not secretive about it, but that's not something that I would go out of my way to talk about I suppose." Another woman who had visited the food bank said she felt no stigma surrounding using the service, saying, "I don't think I was ever worried, or embarrassed."

Prior to participating in the study, some of the women had not recognized themselves as food insecure, and felt conversations and efforts to bring awareness to the topic were important. This was the case for a first-generation college student who said, "I think maybe some people don't even realize you're going through it [food insecurity] because it's not something I even realized until recently that it applied to me." For other women who had experienced food insecurity for a longer duration of time this was not a new concept, as was the case for one 65-year-old mother who grew up poor in a family of seven.

Multiple coping strategies around food acquisition and planning were commonly combined. When it came to shopping, several women reported focusing on planning multiple meals with the same ingredients like pastas, potatoes, chicken, and purchasing canned foods over fresh to save money. 11 of the participants described the importance of meal planning to make sure no food was wasted and staying within a set budget. Meal planning also included deciding which grocery store to visit and transportation to get there. For one 25-year-old woman, meal planning was crucial because, "there is no room for anything extra and I need to follow my plan and budget what is mostly likely going to be filling and cheap." Meal planning was a strategy commonly combined with others, including budgeting and purchasing foods that last.

One mother took political action by reaching out to local elected officials, and said, "I wrote a letter to city council and I asked members to just go grocery shopping here so they have an understanding of what it feels like." In contrast, another woman who had lived in the neighborhood for several years discussed reasons she had a negative view of the political action taken in the neighborhood, questioning the timing of community efforts and stated "that's why I haven't gone to any of their rallies because I know that would be the first thing I would bring up is 'where were you guys a few years ago?' I mean it's like taking the cause of something that is already over and done," when asked about political participation. From her perspective, the community efforts to address for access should have started before Albertson's closed and chose not to join the rallies because of the timing.

Interviews also covered the usage and opinions of food assistance programs, including SNAP, WIC, and the Bellingham Food Bank. Nine participants discussed SNAP benefits, however only two currently used the program. For the seven women who had not used SNAP but were familiar with the program, barriers ranged from a lack of knowledge about specific program requirements to having incomes outside the set threshold, which disqualified them from using the program. 11 women discussed their usage and opinions on the food bank. One woman with health issues visited the Bellingham Food Bank, but expressed concerns about the options available because the large number of carbohydrates did not work with her dietary guidelines. Two women had very positive views of the Bellingham Food Bank; one woman had recently discovered the food bank and was pleased when she received meals for the holiday, and another also described having a positive experience with selecting the foods she wanted. However, many who had not used it felt

stigma about using food banks and viewed these programs as something for other individuals or families to use because they felt they were not struggling as much compared to others. This was the case for a 58-year-old mother with two adult children who said:

> We don't use the food bank because we have as a family talked about it, and as much as we're struggling there's people who are in worse positions than us, and so we don't use it so they could use the food bank.

One participant mentioned feeling SNAP was not a great program because it encouraged unhealthy food purchases, creating a negative health impact on the community as a whole, "I think food stamps should be promoting things that are going to benefit you health wise and also potentially change the way you eat, because it kind of gets you stuck in a rut."

Three women had used WIC at some point and all were very satisfied with the program and the options for food it gave, but felt the age cut off at five suddenly left them without other help. This was a problem for a mother of two living in the neighborhood for two decades who said, "when my kids were small I used WIC. But even in our current situation, we applied for food stamps and we were told that we were too rich and we just started crying because we thought that is so not true." Another mother of two was in a similar situation after her kids were too old for WIC and they did not qualify for food stamps and said, "we have to go to the food bank, or you know, have a really tight budget."

Dietary restrictions described by five participants ranged in severity, from lactose intolerance and choosing non-dairy milk alternatives, multiple food allergies, managing diabetes and a keto diet, to helping a family member with severe Crohn's disease. These dietary limitations affected food insecurity because it meant spending more money on non-dairy alternatives, and needing to travel further away to purchase organic and fresh foods

to manage on-going health issues. For a grandmother with her own food allergies who continues to help out her adult son with Crohn's disease, she spends more time planning natural meals and having to prioritize fresh produce since a limited amount of processed food can be eaten. Balancing dietary restrictions with food insecurity was an additional barrier connected to financial resources, time, and the stress of managing health issues.

Impacts on community

The closure of Albertson's not only left many without access to affordable food, it caused job loss for 70 families and took away space to meet and socialize with neighbors. One mother said she felt less safe with an increase in persons experiencing homelessness spending more time in the vacant plaza where Albertson's was. Another participant noticed that after Albertson's closed more fast-food places began to open up in the area selling pizza or chicken. Two participants were financially impacted by the closure, which created job loss within their family. A 23-year-old women who used to work part-time at Albertson's said:

> When I worked at Albertson's it kinda felt like I knew so many people in the neighborhood, I always got recognized, and it was just kind of an area to meet up with your neighbors, so it'd be nice to have that again because the whole area just seems so isolated and empty now.

The closure of Albertson's not only impacted food access and employment. but created immediate social impacts for the entire community.

Other patterns and issues

Other issues brought up in interviews included balancing family medical issues with food security, and additional stress of paying off a loan to a friend to cover medical bills. Health issues were also connected to transportation as a barrier, as one woman in her 70's was unable to take public transportation because of mobility issues. She also described working with the local electrical company to keep the heat on because of medical issues and negotiating payments.

Solutions

Each participant was asked at the end of the interview if they had unlimited funds and support, what sort of solutions would they like to see to address food access in the neighborhood. Eight women thought any sort of market or grocery store would be the best solution, either farmers markets, small local meat and produce shops, or another full-size store. For a 20-year-old student who recently moved to the area, having a grocery store again would not only be convenient for her, but could be a "big benefit to everyone that lives in my community because we're just so far away from all types of grocery stores and maybe having a farmer's market near us I think would be really nice for a lot of people." One woman in her 70's saw connections between affordable housing and food security and suggested a company that builds small, metal homes which could give people a sense of home and a place to garden and connect with food. One women in her 20's saw community gardens as a benefit to the neighborhood, while another participant wanted to see more pantries throughout the community with food and toiletries. A woman in her 20's wanted to see increased transportation options after noticing neighbors carrying groceries from

Fred Meyer's and struggling. Two women, one a nursing student, and the other a mother of two, thought the state should re-evaluate the SNAP requirements to be more inclusive of working students and those with incomes just above the current guidelines. A working student said, "I think it'd be really beneficial for the state to maybe check over their guidelines, because there are the people like us who are just outside of that range to qualify."

While a full-size grocery store was the most requested solution, several of the women knew about the legalities surrounding development of another grocery store in the existing location, but felt the community could work around this with smaller shops or farmers markets in Birchwood.

Discussion

Intro and Summary of Research Objectives

The goal of this research was to understand the impacts of food insecurity on women who live in a neighborhood identified as a "food desert." Through qualitative interviews with 12 women from the Birchwood neighborhood of Bellingham, Washington, conversations focused on gendered implications of food insecurity, food prioritization, the usage of coping strategies and food assistance, the causes and barriers to food access, and impacts on health. This study shows several similarities to existing literature on the impacts and experiences of food insecurity among women, while also illuminating new concepts and suggesting the variety of solutions women would like to see in their community to alleviate the impacts of living in a food desert.

Food Insecurity and Barriers to Access

All participants described their experiences with low food security over the past year where quality, quantity, or desirability of diet are reduced, as well as very low food security, where eating patterns were disrupted and food intake was reduced multiple times, reflective of the USDA definitions of food insecurity. Women described the multiple barriers to food access, including a general lack of accessible options for shopping in the neighborhood, few affordable and quality foods, physical barriers due to transportation and distance of the nearest stores, and a lack of fresh and organic options. One woman expressed concerns over the safety of the plaza where Albertson's used to be because of the increase in persons experiencing homelessness camping. These reports reflect physical and financial barriers in existing studies where there is a lack of a convenient supermarket

within walking distance, concerns about availability and quality of products, economic barriers because of high prices, and concerns over safety of the location of current food retail outlets (Cummins et al., 2008; Zenk et al., 2013). Very few studies have focused attention on the safety of the food environment, either crime-related or traffic-related, as a concern for women but this has been a documented concern among women in major cities like New York City and Philadelphia (Zenk et al., 2013). Reports of unreliable transportation, which prevents access to fresh and affordable food, is consistent with studies of food deserts in Texas and Adelaide, South Australia (Sharkey et al., 2010; Coveney, O'Dwer, 2009).

A lack of accessible options for grocery stores creates safety hazards when residents do not have access to cars or public transportation. A focus group study on the neighborhood safety concerns in a low-income area of Dallas, Texas found reports of safety stressors, including intimidation by people begging for money, which led community members to not want to shop at local stores. Other participants were afraid of shopping at night, being afraid to wait at bus stops after dark, poor lighting conditions, or being outside during unsafe weather conditions like high winds and rain (Crowe et al., 2018). In order to address these safety concerns efforts must be made to make neighborhoods identified as a food desert more walk able, and invest in bike lanes and bike sharing programs to help able-bodied residents access grocery stores in a shorter amount of time. Bus stops can be made safer with more lighting and shelters to protect from rain and wind. Also, living-wage jobs can address unemployment and safety concerns over persons experiencing homelessness camped outside of vacant lots and convenience stores. Safety concerns are particularly important for women and older adults. Increased neighborhood public safety

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is one strategy proposed by scholars conducting similar research on barriers to food access (Pothukuchi, 2005; Larson et al., 2009; Chung et al., 2012; Shannon, 2016).

Nearly all participants described the inconveniences of not having a neighborhood store since the closure of Albertson's in 2016, and the additional time and financial resources needed for shopping trips. This included the stress of planning trips and carrying grocery bags, comparing which stores have the best deals, and limitations of public transportation. These findings reflected the results of research in urban food deserts where accessibility was limited because of the spatial composition of the neighborhood and lack of grocery stores (Powell et al., 2007; Zenk, 2005). The options for food in the Birchwood neighborhood are limited, as many women mentioned how the only food options left were small convenience stores, like 7/11, and fast-food establishments serving pizza or chicken wings. Other studies have also found a limited density of full-size grocery stores in lower-income neighborhoods (Powell et al., 2007; Alwitt, Donley, 1997).

To address food retail options, researchers and activists argue more should be paid attention to small full-service retail food stores, which can enhance community food security and provide local and fresh produce, meats, fish, and dairy. An analysis of the neighborhood food environment in California came to the conclusion that residents of food deserts have a poorer diet compared to those in other neighborhoods and found a correlation between fast-food establishments and obesity and other chronic health conditions (Wright et al., 2016).

Gendered Impacts and Determinants of Food Insecurity

The results of this study show how societal expectations of women as preparers of food for the household is an additional stressor for food insecure women and mothers in particular. Societal gender expectations for women to provide food for their households, often at the expense of themselves, has been documented in the United States and globally (Lawrence, Barker, 2009; Ivers, Cullen, 2011). For example, in a study of low-income mothers, providing food specific for their children's unique tastes and preferences was an additional stressor as they navigate the difficulties of children's eating patterns (Hoisington et al., 2002). In this study of the Birchwood food desert, even women who were living alone or did not have children, still noticed gendered impacts of their food insecurity through negative physical and mental health, like weight gain and missed menstrual cycles, stigma and a lack of social support from others.

Participants in this study reported multiple socio-economic determinants of food insecurity, including: lack of homeownership, female head of household, lack of vehicle ownership, single parenthood, and poor health status (Bartfeld, Wang, 2006; Nord et al., 2014; Rose, 1999; Guo, 2010). One of the most notable determinants was the lack of homeownership, with 100% of participants renting their homes, and one woman mentioning that she almost lost her house in the past and was nearly homeless. Research shows that homeowners are less likely to be food insufficient for a variety of reasons (Gundersen, Gruber, 2001). Some women also described their longer-term health issues, lack of own transportation, and experiences as a single parent.

The high cost of living is another documented financial factor to food insecurity (Beaumier, Ford 2010), and this was an issue for one woman in her 20's who mentioned

becoming food insecure when the price of rent increased across the city. A comprehensive housing market analysis conducted by the U.S. Department of Housing and Urban Development in August 2017 found that the rental market for houses and apartments in Bellingham is tight, with "consistently low levels of vacant inventory since 2010" (U.S. Department of Housing and Urban Development, 2017, 10). Since 2010 the apartment vacancy rate has been below 5 percent, and even lower at apartments within 2 miles of WWU where the average vacancy rate is 0.7 percent (U.S. Department of Housing and Urban Development, 2017). A 2018 article from The Bellingham Herald on Bellingham's climbing rental rates points out that, "the low number of available homes for buyers also means new rental home owners will be motivated to continue raising rents," (Gallagher, 2018). Research conducted on the relationship between food insecurity and increasing housing costs suggests that a $500 yearly increase in rental costs is associated with a 3% increase in food insecurity rate (Fletcher et al., 2009). Research conducted in Oregon also suggests that housing costs play a role in food security and, "successful efforts to reduce local housing costs for low-income households, for example, may be expected to decrease local household food insecurity," (Bernell et al., 2006, p. 207). Given the high costs of living and few options available, especially for renters, this reason for experiencing food insecurity is likely widespread throughout Birchwood and Bellingham.

Participants were not asked their income level, but some women described longer-term experiences with poverty, some experiencing poverty before adulthood, which has been documented as an economic disadvantage associated with food insecurity (Lahteenkorva, Lahelma, 2001).

There are multiple health impacts associated with food insecurity, particularly related to mental health and long-term stress. Anxiety and other mental health issues were connected to the stresses of managing food insecurity and reflect the health issues and experiences of food insecure women in Michigan (Siefert et al., 2001; Heflin et al., 2005). The long-term stress and anxiety of managing food insecurity in a low-income household is supported by research showing those who are food insecure, especially women and socially isolated individuals, are at a greater risk for mental illness when compared to food secure households (Martin et al., 2016; Coleman-Jensen, 2009), and chronic stress can contribute to both mental health and depressive symptoms in addition to obesity (Zenk et al., 2013; Hammen, 2005). There is additional evidence that food stamp participants in particular have a greater amount of emotional distress (Heflin, Ziliak, 2008). This long-term relationship between food insecurity, stress, and mental illness was discussed in-depth by a woman identifying as a mother, wife, and grandmother who had been food insecure for over 40 years.

Physical health impacts aligned with other studies with food insecure women, with several women describing low energy and fatigue, and weight gain (Hanson et al., 2007; Hamelin et al., 2002; Zenk et al., 2013). These conversations around weight gain are consistent with research showing food insecurity and gender are risk factors for obesity and related diseases (Martin, Ferris, 2007). Cutting back on food quality to provide more for other household members was an issue for women who also identified as mothers, reducing both the quality and quantity of meals to make sure their children had enough to eat (Hoisington et al., 2002; McIntyre et al., 2003, Zenk et al., 2013). The poorer quality of

foods eaten by food insecure women is connected to health, both in the short-term and long-term.

Coping strategies

The coping strategies discussed were similar to research with other food insecure women, with participants used multiple coping strategies on a daily and weekly basis. For example, skipping meals (Anater et al., 2011; Hoisington et al., 2002; Maxwell, 1996) occurred on a daily basis for some, and occasionally throughout the month for other women. The reasons for skipping meals varied from trying to save food for other household members or as a result of not being able to afford balanced meals, as studies with food insecure adults and food pantry users has shown (Anater et al., 2011; Hoisington et al., 2002). For food insecure mothers who save the most nutritious food for their children, this has been referred to as "maternal buffering" or the practice of a mother deliberately limiting her intake to make sure children have enough to eat (Maxwell, 1996). Rationing food was also a common strategy to save food for later in the month or for other household members (Beaumier, Ford 2010). Reducing and rationing consumption is a coping strategy practiced by many participants in other studies on food insecurity (Maxwell, 1996).

Other coping strategies used included purchasing foods that last longer, or choosing canned and frozen foods over fresh food. This was a coping strategy also commonly used in a study where participants in a food pantry program reported using food substitutions and using canned or dried foods for fresh or more expensive ones (Hoisington et al., 2002). In this study multiple women reported buying canned vegetables over fresh ones for example,

and for some this was learned from previous experiences with food insecurity or growing up in poverty.

Budgeting and meal planning were also strategies used by a majority of participants as a way to manage food throughout the week and month. These strategies came with additional stress since women had to plan out their financial resources and manage their time to maintain enough food in the household. Part of budgeting and meal planning included making decisions about transportation, which stores to shop at, and what foods they would be able to purchase. Studies with low-income households also reported the disadvantages of their acquisition of food, especially without owning transportation (Clifton, 2004). Many women pointed out that the absence of Albertson's in the neighborhood meant they could no longer make short trips into the store for a few items during the week, making meal planning absolutely crucial. Allocating a budget also meant putting off other bills and expenses, like phone bills, and one woman sold her car to use a bus pass and save money monthly. Temporal patterns were covered in studies where women experiencing food insecurity spaced out meals more towards the end of the month, and had to put off paying other bills (Hoisington et al., 2002). One structural cause of food insecurity is related to the cost of heating and energy, as one study of households with children in Vancouver, British Columbia found that, "children with moderate energy insecurity had greater odds of household food insecurity." (Cook et al., 2008, p. 867).

Five women in the study used community and social support as a coping strategy. For women who did rely on friends, neighbors or family in some way, this included carpooling together or sharing food with a friend, and similar to the coping strategies reported in existing studies (Hoisington et al., 2002; Smith, Morton, 2009). Nutritional

assistance programs, including SNAP, WIC and the Bellingham Food Bank were often viewed as valuable resources but there were multiple factors that limited usage for the women in this study such as very limited hours and distance to the downtown food bank, which is two to three miles away for most Birchwood residents. Women with children under five reported enjoying benefits of WIC until their children aged out and were suddenly left with no support. Depending on the children's birthday and state of residence, this can create a gap of time between eligibility for the National School Breakfast Program and National School Lunch Program. In 2016, 10% of five-year olds were not enrolled in kindergarten and research shows a gap in support threatens the food security of families (Network For Public Health Law, 2018). Legislation to address this gap by increasing the cut-off age to six in 2015 was not successful (H.R.2 660, 2015). Additionally, women who do qualify for SNAP still do not have financial support for non-food items, including menstrual products. The results of this research reinforce how common coping strategies are used by women across socio-economic and geographic locations.

Community solutions and food justice movement

Participants mentioned several common solutions to the food desert issue in Birchwood, with any sort of grocery store or market as the most common response. The literature identifies multiple remedies to food insecurity at the community-wide level, including improved public transportation, removal of restrictive covenants, in addition to an examination of how racism and inequality are incorporated in food availability and the development of neighborhoods (Donald, 2013; Short et al., 2007). A restrictive covenant placed on the building where Albertson's was located prevents competition from another

grocery store, but has a negative impact for the community. However, other cities in the United States and Canada have looked into ways to deal with restrictive covenants and avoid a lawsuit. For example, Chicago has an ordinance to limit the use of restrictive covenants and these restrictions may only last for three years (del Canto, Engler-Stringer, 2018). Cities like Bellingham should focus on ways to prevent restrictive covenants in the future.

Alternative food movements emphasize the importance of self-reliance and control over food production, which can be achieved through gardening. Gardening and sharing of produce was also brought up by women who had visited the Birchwood Food Desert Fighters ShareSpot, a produce stand available to anyone in the neighborhood, and another woman who managed a garden at her home. For her, gardening and using all food scraps available from her garden to help alleviate food insecurity was important. Gardening as a community-wide solution and individual coping strategy was covered in food justice literature, which shows that gardening can foster social connections, encourage sustainability, and improve health all while addressing food insecurity (Dewaelheyns et al., 2014; Alkon, Mares, 2012; White, 2011; Kortright, Wakefield, 2010). While the creation of food stands and gardens may not fully address the socio-economic inequalities that are root causes of food insecurity, these solutions do help increase local food security and strengthen relationships in the community. From the food justice perspective, community-based solutions can bring nutritious and culturally acceptable foods to low-income households.

Interestingly, many participants who applied for SNAP benefits were denied because their incomes were above the requirements and suggested the state re-evaluate

the requirements. In Washington State, eligibility for benefits is on a case-by-case-basis

depending on household size and income level. As of 2019 for a household of 4, the

maximum income level per year before taxes is $41,415 (Washington Supplemental

Nutrition Assistance Program, 2018). The median household income in 2017 for

Bellingham, Washington was $47,886 (US Census Bureau, 2018). For women in this study,

the main barrier to using this benefit program was not a lack of awareness or knowledge

that it exists, or even feelings of stigma and shame, but disqualification based on income.

More should be done at the state and federal level to evaluate the qualification income

levels. Additionally, more attention should be paid to the differences in gender and

employment. According to the Center on Budget and Policy Priorities, most SNAP recipients

are employed in occupations with low wages, unpredictable schedules and few benefits,

like paid sick or vacation leave, and turn to the program to help feed their families (Center

on Budget and Policy Priorities, 2017). Experts point out that the federal minimum wage

has not kept up with inflation, hitting low-wage workers the hardest and 63% of SNAP

participants are employed in the education, health services, hospitality and retail industries

(Center on Budget and Policy Priorities, 2017). According to research compiled by Status of

Women in the States, 27.6% of employed women work in low-wage jobs in Washington

State (2015), and nationwide:

> Women are much more likely than men to work in service occupations, which
> include personal care aids, home health aides, nursing assistants, cooks, and food
> service staff...which have median annual earnings for women of less than $25,000
> per year (Status of Women in the States, 2015).

Additionally, data from the U.S. Bureau of Labor shows that 63.9% of part-time workers are

women and 43% of full-time workers are women (U.S. Bureau of Labor, 2016). This is

noteworthy as part-time positions are unlikely to offer full benefits.

Unexpected Themes, Limitations of Research, and Future Research Directions

This study covered two notable themes about social stigma and gender surrounding food insecurity and food choices, and also the impacts of low food access on socialization and feelings of community. These conversations were surprising because little research has been conducted on the impacts of food insecurity and socialization, and might be unique to the Birchwood community given the population size. Broad social implications of food insecurity studied in Quebec, Canada through group interviews showed decreased constructive participation in social life, feelings of exclusion and helplessness (Hamelin et al.,1999). The implications of full-size grocery store closure can cause divestment and business closures in the neighborhood, which not only creates physical barriers to food access but creates a negative impact on the social environment (Zenk et al., 2013). This was mentioned by participants who saw the closure of Albertson's as also a loss of a social gathering spot. There are limited studies on social stigma and food insecurity. One ethnographic study of food bank users from the United Kingdom found stigma and embarrassment were hidden "costs" of using the service (Garthwaite, 2016). In this particular study, participants reported feeling embarrassed to be seen inside or around the food bank because of negative judgment. Further research should be considered to better understand how social stigma impacts women specifically and might prevent them from using food resources or the types of foods women choose to eat.

Other novel findings on community included creative solutions to fostering relationships with neighbors. For example, one woman would ask neighbors with apple trees if she could take a few back home. Another mother talked about how the closure of

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Albertsons led them to get more involved in community projects, such as renovating and painting the bridge to the entrance of the neighborhood. While restrictive covenants can create a longer-term loss of community in neighborhoods, residents who have time and are interested in fostering relationships with neighbors may be more likely to participate in community projects.

One limitation of the study was the methods used for recruitment, as part of recruitment was conducted using social media and Facebook groups, which may have led overrepresentation of women in their 20s. Additionally, given the sample size and smaller population size of Bellingham, these results may not be replicated in studies with women in other, larger cities. A final limitation is the exclusion of Spanish speakers, as the sample population may not be representative of the demographics of the neighborhood. Despite these limitations, one benefit of this research was the small sample size and qualitative methods used, which allowed by in-depth conversation with each woman. Additionally, this study followed established interview practices and data analysis methods, and closely followed themes from the literature on food insecurity among women.

Future research should focus on the ways that affordable and healthy foods can be brought to underserved communities, as well as the role of economic development and subsidies for food options in neighborhoods like Birchwood where there are legalities surrounding future supermarket development in the old Albertsons location. If given the opportunity to interview a larger population of women about their experiences with food insecurity in the future, I would collaborate with a researcher in the field of public health, nutrition, or psychology to go further in detail about the relationship between mental health, food insecurity, and the stresses created by living in poverty. According to

nutritional experts, little is known about the relationship between depression and food insecurity (Lent et al., 2009). Additionally, public transportation in a medium size city can only serve so many people, and more research should focus on how the geographical composition of Birchwood, and location of needed services, could be improved to allow more people to access the public bus system. By identifying the major barriers to food access in Birchwood, future research should aim to understand how to mitigate these specific barriers, whether through increased transportation, improving accessibility of food assistance resources, removing restrictive covenants, or incentives to build more food options in the neighborhood. Additionally, this research focused on gender as a marginalized group experiencing food insecurity, but future research should examine the role other demographic factors may play in experiences of food insecurity, such as race or age.

One lingering question surrounding this research topic is the role of the grocery store closure compared to the larger causes of food insecurity, influenced by gender, income level and affordable housing, health status, and barriers to social support systems. Among the participants I spoke with, at least 10 had been food insecure before the closure of Albertsons in 2016, some for even a decade or more. Living in a neighborhood identified as a "food desert" led to additional difficulty in accessing affordable food, but was not the factor that caused food insecurity. This finding is important because it highlights that food insecurity is not caused by distance to nearest stores, and the focus on proximity ignores other factors that shape food access (Shannon, 2016). As scholars who are critical of the USDA definitions of food deserts have pointed out, other more effective ways to focus on food access could include the economic and physical barriers to food, or the type, size, and

number of stores available to residents (Wright et al., 2016). Food insecure residents in a food desert experience not only unavailability of food, but have concerns over the nutritional value of foods linked to long-term health issues that are worsened when residents are already low-income or racial minorities. Multiple women in this study expressed concerns over the nutrition of available foods in Birchwood as it related to experiences with health issues as a result. While many food insecure residents now face additional barriers to access in the neighborhood, the lack of financial resources for food goes beyond the lack of a grocery store.

Through the transformative paradigm, results of this research can be used to identify causes of food insecurity for women in the neighborhood. By capturing each woman's lived experiences and conducting analysis through a social justice lens, this study can be used to influence future efforts to improve food security in Birchwood.

Appendices

A. Qualtrics Survey

B. Interview Themes & Questions

C. Code Book

D. Recruitment Flyer

E. IRB Documentation

Appendix A: Qualtrics Survey

Birchwood Food Security

Thank you for your interest in the Birchwood food security study. The following questions will be used to screen participants for qualification. Renee Holt, graduate student at Western Washington University, (holtr3@wwu.edu, 425-530-8800) is conducting research to better understand women's experiences with food insecurity and living in an area identified as a food desert.

A food desert refers to an urban area with low-access to affordable and nutritious foods. This has been an issue in Birchwood since the closure of Albertson's on Northwest Avenue in 2016.

Completing this brief survey will determine if you are eligible for the study and should take no more than 5 minutes. If you are eligible for the study, you will be prompted to enter your email address to provide more information and to schedule a time for an interview. Please be aware that email communications are not protected or confidential. Participation in the following screening survey is voluntary. You may stop at any time.

Q1 Are you over 18?

○ Yes (1)

○ No (2)

Q2 Are you a resident of the Birchwood neighborhood?

○ Yes (1)

○ No (2)

Q3 Do you self-identify as a woman?

○ Yes (1)

○ No (2)

Q4 Which of the following have you experienced in the last 12 months? (Select all that apply)

☐ My food did not last and I didn't have money to get more (1)

☐ I couldn't afford to eat balanced meals (2)

☐ I had to cut size of meals or skip meals (3)

☐ I had to go hungry because there wasn't enough money for food (4)

☐ I struggled to access enough food within my neighborhood (5)

Q5 Are you comfortable having an hour long conversation in English about food security?

○ Yes (1)

○ No (2)

Q6 Thank you for your responses. Please enter your email here, or phone number if you prefer, so that if you qualify for the study, I can schedule a research interview with you to learn more about your experiences with food insecurity. Please contact Renee Holt (holtr3@wwu.edu, 425-530-8800) with any questions.

○ Email (1) _____

○ Phone Number (2) _____

B. Interview Themes and Questions

Food Insecurity Among Women in Birchwood: Themes & Interview Questions

Health impacts (mental, physical)

o   Food provisioning and preparation

o   Attention to household members unique tastes/health.

Say you had a less limited shopping budget, what sorts of foods would you ideally buy?

How would you describe or define food insecurity yourself?

Do you or anyone you shop for have any food allergies or need a special diet?

Food insecurity can impact people's physical and mental health. Have you ever experienced any health problems related to your food security?

Expectations related to gender roles

The focus of this research is on the impacts of food insecurity on women. How do you see differences in experiences with food security in comparison with men in your community? Do you think food insecurity impacts you differently because of your gender?

Barriers to food access

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o   Financial resources

o Physical accessibility

o Time

o Health, quality, quantity

Can you walk me through a typical trip for food? Where do you usually go? How do you get there?

How has your grocery shopping habits changed since the closure of Albertsons in 2016?

What sorts of foods do you buy on a typical shopping trip?

Are there certain foods that you are unable to access in the neighborhood or Bellingham that you would like to see? Or foods that you used to be able to access?

How long have you lived in Birchwood? Can you talk a little about the community you live in and how you see that impacting your food security, especially before the Albertson's closure?

About how much per week or month do you spend on groceries? Does this budget change throughout the year at all?

What would you describe as the biggest barriers to food access for you personally? This could be physical barriers that limit your access to food, financial barriers, or otherwise?

Methods and coping strategies

o Modifying or skipping meals

o Selling items to cover food

o Rationing food to other household members

o Community/social support networks

o Political action

o Gardening (household/community level)

o Informal transportation networks (carpool to bulk with neighbors)

o Community resources: Food pantries, soup kitchens, etc.

When money for food is tight, what strategies do you use to manage your food?

Often times people will skip meals as a coping strategy, have you ever done this? How often do you find yourself cutting meals due to your food security?

Some people turn to resources like food banks when they are experiencing low food security. Have you ever used a service like the Bellingham Food Bank?

Some people use federal nutrition assistance programs like SNAP or WIC. Have you had any experiences using these? If not, what has prevented you from using those programs?

If you had unlimited funds and support, what suggestions would you have for a solution to this issue?

C. Code Book

- Academic life
- Attention to household members tastes/health
- Barriers to food access: cost; health quality, quantity; lack of options in neighborhood; time; transportation
- Causes of insecurity: out of school; rent increase; unemployment
- Coping strategies: budgeting; canning food; community/social support; compare store prices; coupons; gardening; increased caffeine consumption; increased water consumption; informal transportation networks; meal planning; meals at work; political action; prioritize bills/expenses; purchase foods that last; rationing food; sell items to cover food; skip meals; snacking
- Dietary restrictions
- Food assistance use: food bank; food stamps; lack of awareness of programs; stigma. WIC
- Food insecurity related to gender: food provisioning and preparation; gendered expectations, gendered health impacts; gendered health impacts
- Food prioritization: affordability, convenience, health
- Health impacts: fatigue, mental health, missed menstrual cycles, weight gain
- Impacts on community
- Impacts on social life
- Income source: rentals, school loans, social security, work
- Other
- Prior food insecurity
- Solutions: address housing crisis, community gardens, food pantries, increased transportation, market, re-evaluate SNAP requirements
- Temporal patterns

D. IRB Documentation

WESTERN WASHINGTON UNIVERSITY
Office of Research and Sponsored Programs

MEMORANDUM

To: Renee Holt

FROM: Stephanie Richey, Research Compliance Officer

DATE: 8/21/2018

SUBJECT: Institutional Review Board– Exemption Research Approval

Thank you for submitting a research protocol regarding your human subject
research EX19-006 "Food Insecurity Among Women in Birchwood, Bellingham"
for review by the Institutional Review Board (IRB).

Approval: The IRB has reviewed the materials you submitted and found the
project described falls into Category #2. Although the research qualifies for
exempt status under 45 CFR §46, the investigators still have a responsibility to
protect the rights and welfare of their subjects, and are expected to conduct their
research in accordance with the ethical principles of Justice, Beneficence, and
Respect for Persons, as described in the Belmont Report, as well as with state and
local institutional policy. All students and investigators collecting or analyzing
data must be qualified and appropriately trained in research methods and
responsible conduct of research.

Determination Period: An exempt determination is valid indefinitely, as long as
the nature of the research activity remains the same. If the involvement of human
participants changes over the course of the study in a way that would increase
risks, please submit a modification form.

Problems: If issues should arise during the conduct of the research, such as
unanticipated problems that may increase the risk to the human subjects or change
the category of review, notify the Research Compliance Officer promptly. Any
complaints from subjects pertaining to the risk and benefits of the research must
be reported to the Research Compliance Officer.

If you have any questions, feel free to email me at compliance@wwu.edu.

REVIEWER'S SIGNATURE:

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Renee Holt** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 02/25/2018.

Certification Number: 2663799.

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