

2021

Relationship Between Food Insecurities and Chronic Illnesses: How Low Socioeconomic Status Relates to Chronic Illnesses

Kylie Sakurai
Dominican University of California

<https://doi.org/10.33015/dominican.edu/2021.NURS.ST.05>

Survey: Let us know how this paper benefits you.

Recommended Citation

Sakurai, Kylie, "Relationship Between Food Insecurities and Chronic Illnesses: How Low Socioeconomic Status Relates to Chronic Illnesses" (2021). *Nursing | Senior Theses*. 24.
DOI: <https://doi.org/10.33015/dominican.edu/2021.NURS.ST.05>

This Senior Thesis is brought to you for free and open access by the Department of Nursing at Dominican Scholar. It has been accepted for inclusion in Nursing | Senior Theses by an authorized administrator of Dominican Scholar. For more information, please contact michael.pujals@dominican.edu.

**Relationship Between Food Insecurities and Chronic Illnesses:
How Low Socioeconomic Status Relates to Chronic Illnesses**

Kylie Sakurai

Dominican University of California

Fall 2020

Abstract

In nursing, the job is to care for the patients and get them to be the healthiest version of themselves. This thesis will review articles related to the interrelationship of socioeconomic status, food insecurities and the effect on people's health. Food insecure people have trouble obtaining food and their nutrition suffers because they do not have the resources or money to maintain a healthy diet. Socioeconomic status plays a big role in the availability and obtainability of the necessary nutrients a person needs. Because of this, chronic diseases can arise and cause further health problems for the patients. The studies in this review also look into the availability of food and other resources and how that factors into the severity of a person's food security. Many of the studies were focused on the people attending food pantries to assess their overall health and security. The research showed that most of the people attending these food pantries were food insecure and had a higher prevalence of chronic diseases. A person's socioeconomic status can influence a person's living situation and the area in which they reside. Many of these areas are not given the same resources and access to affordable and healthy food options. Healthy food options need to be made more readily available for the people and families who struggle to feed themselves and the people they love. Finding a solution is essential to the health of the communities. Therefore, a research proposal is presented to address the concerns and seek answers.

Table of Contents

Abstract.....	2
Introduction.....	4
Research Question	5
Literature Review.....	5
Studies Conducted in United States:.....	5
Studies Conducted Internationally:.....	9
Overall Findings.....	11
Proposal for Future Study	12
Overall Research Question:.....	12
Rationale for Proposed Study:	12
Theoretical Framework:	12
Primary Research Aim:	13
Ethical Considerations:	13
Research method:	14
Data Analysis:	15
Conclusion	16
References.....	18
Appendix.....	21

Introduction

Food insecurities shouldn't be a problem in a first world country like America, yet it is. According to the United States Department of Agriculture, in 2018, "one in seven households with children were affected by food insecurities" (Food Security and Nutrition Assistance, 2019). Food insecurity is defined as "the disruption of food intake or eating patterns because of lack of money and other resources" (Andrews, Carlson, & Nord, 2006). Many families rely heavily on food stamps and school cafeteria lunches to survive, and some go days without eating at all in order to feed their children. The affordable food options are usually foods that are high in sodium, saturated fat, trans fat, and cholesterol. Many of the people with low socioeconomic status have no options but to eat the unhealthy food options they can afford. Because of this, we see an increase in preventable chronic illnesses, associated with these eating habits.

Food insecure people are put at a higher risk for chronic illnesses. Because of a poor diet, the health of these individuals is low leading to an increase in healthcare costs which is increasing the disparities between the food insecure and secure patients. Research has shown that in addition to the psychological distress that food insecurities puts on families, the rates of chronic medical conditions such as diabetes, obesity, and cardiovascular disease increase (Decker, Flynn, 2018). Many of these chronic illnesses are preventable, which makes us wonder why these illnesses are so prevalent in low income families.

Research Question

Does food insecurities lead to chronic illnesses?

How does low socioeconomic status relate to chronic illnesses?

Literature Review

The thesis literature explored six articles relating to food insecurities, chronic illness, and how it relates to low socioeconomic status. The research was found through the Dominican University of California Iceberg database. Other sites were used, such as PubMed and Google Scholar, but Iceberg was the most successful. Six articles were found and used in this research. The research was chosen based on the relevance to the intended question, the quality of the studies, and how reliable the studies were. Some key words used when searching for articles were food insecurities, chronic illnesses, low socioeconomic status, food security, BMI, and food pantry. The literature review section of this paper will be divided into two categories, these categories are based on where the studies had taken place, studies in the United States and studies that are international.

Studies Conducted in United States:

The researchers, Liu, Zhang, Remley, and Eicher-Miller, studied the association between food pantry use or household food insecurity, Body Mass Index (BMI), self-reported chronic disease and related conditions and diet quality among the food pantry users in Central Indiana (Liu, Zhang, Remley, Eicher-Miller, 2019). The study looked at 270 adult food pantry users chosen from food pantries in Central Indiana, these people were between the ages of 21 to 80 years old. Each participant was surveyed and asked questions pertaining to their sociodemographic characteristics, food assistance participation, how often they use food pantries, self-reported chronic diseases and related conditions, and the interviewer also gave the

participants the “18-item US Household Food Security Survey Model” (Liu, Zhang, Remley, Eicher-Miller, 2019).

What the researchers found was that the more frequently people visit food pantries is associated with a better diet quality as evidenced by a higher Healthy Eating Index (HEI), however the difference between scores is not a significant margin. Another interesting finding was that the BMI between food pantry users and household food groups was not different. However, it was found that “household food insecurity was associated with higher odds of reporting heart disease” compared to those who are food secure in households (Liu, Zhang, Remley, Eicher-Miller, 2019). The results of a poor diet quality and higher prevalence of chronic diseases among the food pantry users shows the researchers that there is a need for an increase in interventions to help improve the nutrition and health among subpopulations.

The researchers, Robaina and Martin, “examine the relationship between food security, diet quality, and BMI among food pantry users” (Rabaina, Martin, 2013). In 2009, Hartford Connecticut was the “second poorest medium-sized city in the country , with a poverty rate of 31.9%” (Rabaina, Martin, 2013). 212 food pantry users were recruited while waiting in one of the two food pantry lines that the researchers chose to focus on. The surveys were given in about 25 minutes and they measured how much food assistance they use, the demographic information of the participants, the food security, BMI, diet quality, and self reported health (Rabaina, Martin, 2013). To measure the food security status, the researchers used the 18-item US Department of Agriculture Household Food Security Module. Food security status was categorized as being high, marginal, low, and very low. For the diet quality the researchers used the Block Food Frequency Screener. The participants were asked 10 questions that were aimed at their diet intake, specifically asking about fruits, vegetables, and fiber.

The results showed that 62.5% of the respondents visited the food pantry on a chronic basis. About “16% of the sample was food secure, 33.5% had low food security, and the remaining 50.5% had very low food security” (Rabaina, Martin, 2013). It was also found that many of the pantry users had consumed very small amounts of fruits, vegetables, and fiber. Another important finding was that out of the 212 respondents, 143 of those people disclosed that they had high blood pressure, and 56 people reported having diabetes. The study shows the importance of strengthening the community's resources to nutrition, and eradicating food insecurities and obesity.

The researchers, Gregory and Coleman-Jensen, documented the “strong correlation between food security status and chronic health conditions among working-aged adults living at or below 200 percent of the federal poverty line” (Gregory, Coleman-Jensen, 2017). The study was conducted using 5 years worth of data from the National Health Interview Survey (NHIS). The study focused on adults from the ages of 19-64 in households below the 200 percent of the federal poverty line, about 41,854 people total (Gregory, Coleman-Jensen, 2017). The study looked into chronic diseases, specifically “hypertension, coronary heart disease, hepatitis, stroke, cancer, asthma, diabetes, arthritis, chronic obstructive pulmonary disease, and chronic kidney disease” (Gregory, Coleman-Jensen, 2017).

The study found that a low food security is associated with a higher probability of each of the chronic diseases that were examined in the study (Gregory, Coleman-Jensen, 2017). They observed that the food security status is related to the likelihood of chronic disease, as well as to the number of chronic diseases reported and the self-assessed health (Gregory, Coleman-Jensen, 2017). However, income is only a significant factor associated with hepatitis, arthritis, and COPD. Those three are compared to all ten being impacted when associated with food insecurity.

A person with health insurance is more likely to be diagnosed with a chronic disease than someone without health insurance. This result was assumed that because they have health insurance, it was associated with having a higher income. This is also associated with people who are employed, people who are employed are more likely to seek medical help and be diagnosed with a chronic disease (Gregory, Coleman-Jensen, 2017).

The researchers, Bartfeld and Men, explore the correlation of “geographic and temporal variation in food insecurity from 2002 to 2014” (Bartfeld, Men, 2017). They do this by using the contextual factors that are varied across states, and seeing which, and how, do those factors contribute to the risk of food insecurities. In this study, they focused on three domains: economic characteristics, employment-linked policies and other programs that affect incomes of vulnerable households, and federal food assistant programs (Bartfeld, Men, 2017). The data collected is from the Current Population Survey’s Food Security Supplements (CPS-FSS) from 2002-2014. The primary sample that the researchers chose to study was focused on households with minor children, this ended up being 190,554 households. To measure the accessibility of federal food assistance programs, the research looks at SNAP and the SBP. Household characteristics that the research looks at are characteristics often linked to food insecurities, but not including those that are more so influenced by economic and policy variables.

The study found that there are “strong associations for several of the variables, with odds ratios usually the same across severity thresholds” (Bartfeld, Men, 2017). This shows that food hardships are proportional among the different severities. It was apparent that economics and policy environments have a strong influence on the food insecurity placed on the households with children over the observed period. “Each percentage point increase in unemployment rate increases the odds of food insecurity by almost 7% at all thresholds” (Bartfeld, Men, 2017).

Many of the policies that give food assistance to families in need, such as SNAP, are linked to a decrease in food insecurity overall but especially in the economically vulnerable households.

Studies Conducted Internationally:

The researchers, Camargo, Belon, Marín-León, Souza, Pérez-Escamilla, and Segall-Corrêa (2019), look into the residents of the South, Southwest, and Northwest of Brazil, and look to compare the availability of foods in those different areas based on the impact of their socioeconomic status. The data used was from a previous study done in those areas of Brazil, while also gaining new information in a survey given. The survey was conducted by twelve graduate students that had been trained in health-care fields. The graduate students interviewed 694 people from the age of 18 years old or older. The information gathered focused on their BMI, household income, sex, age, education background, race, and number of people living in the household. They found 12 census tracts based on the obesity prevalence and geographic proximity and put them into clusters. A software called AutoCAD was used to make clusters that were defined by a radius of 500 meters. There were six clusters obtained, “two with low obesity prevalence, two with high obesity prevalence, and two clusters with mixed low and high obesity prevalence” (Camargo, Belon, Marín-León, Souza, Pérez-Escamilla, Segall-Corrêa, 2019). Trained researchers drove through the four clusters determined and classified based on the type stores the researchers found. The stores were classified into three categories: natural or minimally processed foods, processed or ultra-processed foods, or food outlets selling fruits and vegetables (Camargo, Belon, Marín-León, Souza, Pérez-Escamilla, Segall-Corrêa, 2019).

An important finding that this study found was that supermarkets were most frequently placed in areas where there was low obesity prevalence. There is more availability of ultra-processed foods at low prices in low income areas. While it was found that stores that sold the

more processed and ultra-processed foods were seen being more prevalent in areas with a lower obesity prevalence (Camargo, Belon, Marín-León, Souza, Pérez-Escamilla, Segall-Corrêa, 2019). This was found to be an unexpected result since a higher availability of fruits and vegetables with lower price should indicate a higher consumption, however the data does not reflect that. The research shows that factors other than accessibility, such as variety, affordability, and individual taste and preferences, also have a great impact. The outlets with availability and low prices for fruits and vegetables also sell ultra-processed foods as well. The study revealed the importance of understanding the food behaviors and health problems associated with diet resulting from both environmental and environmental factors (Camargo, Belon, Marín-León, Souza, Pérez-Escamilla, Segall-Corrêa, 2019).

The researchers, Speed, Hanning, Meyers, and Moajowicz (2017), conducted a qualitative descriptive study that explores the ways in which the community food security efforts and the food safety practices may intersect in British Columbia, Canada, and understand how to improve the food environment (Speed, Hanning, Meyers, Moajowicz, 2017). The study interviewed 14 individuals working in public health with a community food security or food safety focus. 6 of the 14 working in food security, 5 out of 14 worked in food safety, and the remaining 3 worked in both. The participants had been recruited via email and were interviewed over telephone.

From the interviews, it was found that there were four key ways that food safety and food security intersected. First being that their daily practices of promoting healthy and safe food can be helped or hindered by food security. Second, some policies that do not consider the multiple health outcomes that relate to food, that may complicate the interrelationship. Third, the relationship between food safety and food security is affected by the fact that certain foods such

as fresh produce can be seen as beneficial and risky. And finally, both food security and safety work towards improving the health of the population but from different perspectives (Speed, Hanning, Meyers, Moajowicz, 2017). The study emphasizes the importance of collaboration when trying to improve the health of a community.

Overall Findings

The overall findings in the research articles shows that having a low socioeconomic status correlates to higher numbers of food insecurities. It was also found that many of the people seeking food assistance because of socioeconomic status and food insecurities are often seen having chronic illnesses. However, many people with low socioeconomic status are less likely to be diagnosed because low socioeconomic status could be associated with a lack of healthcare which makes those less likely to go to a doctor to be diagnosed. Some of the limitations for a few of the studies included data from years back that may not be as relatable to today. Some of the studies gave small sample sizes that may not be generalizable. Some of the strengths were that a couple of the studies were innovative, as they had designed the study in ways others have never tried before. It was also good that many of the interviews conducted in the studies were in depth and personal and were able to get a lot of data and information to examine the study. It was more difficult to find studies that focused on chronic illnesses caused or increased by food insecurity or low socioeconomic status. Some of the studies reviewed looked at chronic illnesses as a small portion of their study, making it more difficult to draw definitive conclusions about the relationships

Single mothers and their families represent a population of people who may be at high risk for low income and food insecurity. However, their situation was not adequately addressed

in the research literature that was reviewed. Therefore, a study that focuses on the relationship between single mothers and the probability of experiencing food insecurity will be proposed.

Proposal for Future Study

Overall Research Question:

Does being a single mother impact the probability of facing food insecurities?

Rationale for Proposed Study:

Food insecurities are very common in people with low socioeconomic status. These households lack access to healthy or adequate food options to maintain a healthy lifestyle. These statistics could be heightened when there are children involved. With more mouths to feed, there is an increased need for more food and other resources. For single mothers, who are taking care of not only themselves, but a child as well, or sometimes more than one child, obtaining food can become increasingly difficult, especially when they have only one source of income.

Theoretical Framework:

The Syndemic Theory (ST) was developed by a medical anthropologist named Merrill Singer in the 1990's. This theory is used generally for addressing two or more sequential epidemics in a population. "The interaction between food insecurity and diet-related chronic diseases suggests a potential syndemic, as limited access and availability of food can result in compromised diets and diet-related chronic diseases (Himmelgreen, Romero-Daza, Heuer, Lucas, Salinas-Miranda, Stoddard, 2020)." In the past, the Syndemic Theory has only been used when referring to communicable diseases, but recently has been applied to more non-communicable diseases. Food insecurities stem from social inequalities and inequities, but there is a strong connection with biological processes where the diseases interact.

The Life History Theory (LHT) is a framework that looks at how variations in a person's life history affects stages of a person's life, this theory is shaped from natural selection. In different stages in a person's life, there can be different inequalities that a person experiences. In these different moments, food insecurities could be more detrimental to a person's life and well being. With Life Health Theory, it can be utilized in these moments to narrow down the negative effects of the syndemics in each of the life stages (Himmelgreen, Romero-Daza, Heuer, Lucas, Salinas-Miranda, Stoddard, 2020). These two theories are better used together to have a clearer understanding of diet-related chronic diseases and food insecurities. Using both we are able to see the synergetic and biological systems involved in diet-related chronic diseases and food insecurities along with the time, trajectory, and life stages involved.

These theories relate to the study by focusing on the causes of food insecurities and the reasoning behind why it happens at a certain time in someone's life, along with knowing what the critical periods are that food insecurities can occur in a person's life. There is also a focus on how food insecurities affect a person because of the diet-related chronic diseases that can come with being food insecure.

Primary Research Aim:

The primary aims of this proposed study will be an examination of food insecurity among single mothers:

- To get determine who is being affected the most
- To find solutions to help those in need by providing them with resources needed.

Ethical Considerations:

Important ethical considerations in the study will focus on privacy for everyone involved. Prior to participating in an interview, potential participants will have the study explained to them

and will be asked to sign a consent form. If a person is under the age of 18, an assent form confirming that the study has been explained to the minor, and a signed consent form from the parent or guardian will need to be obtained. The findings in the study are not being used to harm anyone, it is only to bring awareness and better understand the communities to help manage and protect. The people interviewed or surveyed in the study will have full confidentiality, no names or identifiers will be used in the study. No information will be used without the consent of the person involved. The safety and health of the people involved are of utmost importance. Participants can pass on any questions they feel uncomfortable answering. Data will only be collected after approval from the Institutional Review Board (IRB).

Research method:

The proposed study would be to conduct a cross-sectional, mixed-method, descriptive research by using surveys and interviews to better understand the living situation and conditions that the people interviewed are experiencing. The survey will include questions that can be coded quantitatively, and will include qualitative, open-ended questions to better hear and understand the perspectives of participants themselves. The population will focus on single mothers in low-income households in the Marin County area. A proposed sample size would be 100 single mothers of all ages, races, and socioeconomic backgrounds.

The final question in the survey, will ask participants if they would like to be interviewed and those who answer “yes” will be provided with contact information for the researcher. The potential participants will need to contact the researcher, and a half-hour interview, using a semi-constructed interview guide with open-ended questions, will be arranged at a mutually convenient time in a private, secure phone call.

The survey would first begin with basic demographic questions: age, race, ethnicity, income, education, and employment. Because the study looks into food insecurities, it is also important to gather the person's body mass index (BMI). Some more specific questions would go further into their nutritional needs. Important questions with this topic include, do they receive any food assistance such as food stamps, do they go to food banks, and if so, how often do they go, are there days where sometimes they do not eat anything at all, how often do they go to bed hungry, how many household members do they have, do they face struggles/barriers when buying food, do they have markets near them, and any chronic illnesses or health struggles. The interview will go further into the questions asked in the survey. They will ask the participants to expand on the questions asked, specifically what struggles/barriers do they face when buying food, what specific chronic illnesses or other health problems do they face, and what do they think would be beneficial in helping them maintain their nutritional needs?

To recruit people to participate in the study, there will be flyers put up around food banks, stores, and restaurants in the Marin County area, posting on social media, and there will also be an advertisement in the newspaper asking for 100 single mothers of all ages to participate. The web address for accessing the survey will be provided and the survey will be all online.

Data Analysis:

The data collected from the surveys and interviews will be based on the answers given from the participants. The data would be used to analyze the living situations and difficulties faced due to the low socioeconomic status. With this information, it is hoped that the specific areas needing more resources will come to light so more help can be focused on those

communities. It will be useful to see what demographic is being affected the most by food insecurities. ANOVA will be used to analyze the quantitative data.

The perception of people will be analyzed from qualitative research questions and interviews using content analysis. We would expect to find that a low socioeconomic status does negatively impact a person's food security. From the food insecurities it is likely those people have a higher chance of living with a chronic illness.

Conclusion

The original questions proposed for the literature review asked if having a low socioeconomic status and food insecurities impacts a person's chances of having a chronic illness. Much of the research supports the premise that people with low socioeconomic status are more prone to having food insecurities. Many of the people studied in the research proved to be of low socioeconomic. These people have limited access to resources and healthy-affordable food options in the areas they live in. This leads to people buying the cheap unhealthy food options for them and their families. We also see an increase in chronic illnesses in these people such as diabetes, high blood pressure, and coronary artery disease.

We can use this research in community health and other clinical settings by being mindful and aware of these preventable chronic illnesses. With the proper resources and necessities, the number of patients with chronic illnesses such as diabetes and coronary artery disease could be reduced significantly. Teaching patients the benefits of changing their diets and lifestyle choices is an important part of a nurses job. Giving patients resources to know the healthy food options, know where to find affordable fruits and vegetables can stop the disease before it begins. This research will help advance the profession of nursing by utilizing the new

knowledge to bring more focus towards creating the resources necessary to help these people in need. Having basic knowledge and an understanding of how these chronic illnesses develop will allow nurses to provide the best care for their patients.

From here, the proposed research has the potential to help nurses and other healthcare providers learn more about how single mothers and their families are affected by food insecurities. Because of the extra mouths single mothers must provide for, the need for food goes up, while the income from only one person makes it difficult to provide. There is a lack of research that focuses on the single mother, or single parents in general, and the study proposal aims to help fill that gap.

It is vitally important for nurses and other healthcare providers to understand more about the relationship between risk for chronic illnesses, food insecurities, and low income in order to better address the problem. New research needs to focus on early identification of risk and development of appropriate interventions in order to give the best possible care for these members of our community.

References

- Andrews, M., Carlson, S., & Nord, M. (2006). *Household Food Security in the United States, 2005 Measuring Food Security in the United States Mark Nord*. Retrieved from https://www.ers.usda.gov/webdocs/publications/45655/29206_err29_002.pdf?v=41334
- Bartfeld, J., & Men, F. (2017). Food Insecurity among Households with Children: The Role of the State Economic and Policy Context. *Social Service Review, 91*(4), 691–732. <https://doi-org.dominican.idm.oclc.org/10.1086/695328>
- Camargo, D., Belon, A. P., Marín-León, L., Souza, B., Pérez-Escamilla, R., & Segall-Corrêa, A. M. (2019). Comparing food environment and food purchase in areas with low and high prevalence of obesity: data from a mapping, in-store audit, and population-based survey. *Cadernos de saude publica, 35*(9), e00247218. <https://doi.org/10.1590/0102-311X00247218>
- Decker, D., & Flynn, M. (2018). Food Insecurity and Chronic Disease: Addressing Food Access as a Healthcare Issue. *Rhode Island Medical Journal, 101*(4), 28–30.
- Food Insecurity | Healthy People 2020. (2020, October 8). Retrieved from [www.healthypeople.gov website: https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/food-insecurity#1](https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health/interventions-resources/food-insecurity#1)

Food Security and Nutrition Assistance. (2019, September 12). Retrieved September 05, 2020, from <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/food-security-and-nutrition-assistance/>

Gregory, C. A., & Coleman-Jensen, A. (2017). Food insecurity, chronic disease, and health among working-age adults / Christian A. Gregory and Alisha Coleman-Jensen.

Himmelgreen, D., Romero-Daza, N., Heuer, J., Lucas, W., Salinas-Miranda, A. A., & Stoddard, T. (2020). Using syndemic theory to understand food insecurity and diet-related chronic diseases. *Social Science & Medicine*. <https://doi-org.dominican.idm.oclc.org/10.1016/j.socscimed.2020.113124>

Liu, Y., Zhang, Y., Remley, D. T., & Eicher-Miller, H. A. (2019). Frequency of Food Pantry Use Is Associated with Diet Quality among Indiana Food Pantry Clients. *Journal of the Academy of Nutrition & Dietetics*, 119(10), 1703–1712. <https://doi-org.dominican.idm.oclc.org/10.1016/j.jand.2019.02.015>

Robaina, K. A., & Martin, K. S. (2013). Food Insecurity, Poor Diet Quality, and Obesity among Food Pantry Participants in Hartford, CT. *Journal of Nutrition Education and Behavior*, 45(2), 159–164. <https://doi-org.dominican.idm.oclc.org/10.1016/j.jneb.2012.07.00>

Speed, K. A., Meyer, S. B., Hanning, R. M., & Majowicz, S. E. (2017). “Highly processed, highly packaged, very unhealthy. But they are low risk”: exploring intersections between community food security and food safety. *Maladies Chroniques et Blessures Au Canada*, 37(10), 323–332. <https://doi-org.dominican.idm.oclc.org/10.24095/hpcdp.37.10.02>

Yang, Q., Yuan, T., Yang, L., Zou, J., Ji, M., Zhang, Y., Deng, J., & Lin, Q. (2019). Household Food Insecurity, Dietary Diversity, Stunting, and Anaemia among Left-Behind Children in Poor Rural Areas of China. *International journal of environmental research and public health*, 16(23), 4778. <https://doi.org/10.3390/ijerph16234778>

Appendix

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design/methods	Major Finding(s)	limitations	strengths
<p>Camargo, D., Belon, A. P., Marín-León, L., Souza, B., Pérez-Escamilla, R., & Segall-Corrêa, A. M. (2019). Comparing food environment and food purchase in areas with low and high prevalence of obesity: data from a mapping, in-store audit, and population-based survey. <i>Cadernos de saude publica</i>, 35(9), e00247218. https://doi.org/10.1590/0102-311X00247218</p>	<p>- To compare the availability of certain foods in different areas with different socioeconomic statuses. -To acknowledge and understand the interventions needed in low-income areas and the diverse environments that play part in it. -To observe the shopping behaviors in the different areas.</p>	<p>-Residents of the South, Southwest, and Northwest of Brazil. The areas were chosen based on obesity prevalence (<25%) and high prevalence (>45%).</p>	<p>Design: Comparative, quantitative Method: Survey was conducted; 12 graduate students interviewed 694 people ages 18 years or over -tests used were chi-square, fisher’s exact test, and t-tests - compared areas of low and high obesity prevalence.</p>	<p>- Supermarkets were seen more frequently in areas with a lower obesity prevalence. - Outlets selling the processed and ultra-processed foods were seen more in areas with the lower obesity prevalence</p>	<p>Limitations: Data from cross-sectional studies were used. No causal inference could be made due to temporal association between risk factors and health outcomes were not determined in this study design. The data used from the mapping and in-store audit had been collected three years later than the survey data. Also the radius of 500 meters used in the study may not be the most accurate based on where people usually buy their groceries.</p>	<p>Strengths: Innovative- Most studies on the food environment examine the differences between low and high socioeconomic areas, but this study incorporated obesity levels in different low income areas when doing this study. It shows heterogeneity of the poorer areas regarding the food environment and shopping behaviors. The inclusion of in-store audit precisely identified the availability of fruits and vegetables that would otherwise mislead if it were only conducting remote mapping. Using the in-store audit, mapping, and the survey helped portray environmental influences on people's food shopping.</p>

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design/methods	Major Finding(s)	limitations	strengths
<p>Liu, Y., Zhang, Y., Remley, D. T., & Eicher-Miller, H. A. (2019). Frequency of Food Pantry Use Is Associated with Diet Quality among Indiana Food Pantry Clients. <i>Journal of the Academy of Nutrition & Dietetics</i>, 119(10), 1703–1712. https://doi.org/10.1016/j.jand.2019.02.015</p>	<p>- Looks at the association among food pantry use, household food security, BMI, self reported chronic disease and related conditions, and diet quality among food pantry users</p>	<p>-Total of 293 adults eligible, 285 enrolled in the study, 270 participants for household food security status were present in the analysis -from age 21-80 years old - Data collected from June 2014-december 2015 - Sample size of 194 low-income women between the ages of 15 and 40 years old - Participants sampled from food pantries in central Indiana, being 16 counties in the area</p>	<p>- Quantitative - Cross-sectional study - Surveyed for sociodemographic characteristics, food pantry use frequency, household food security, diet quality, and chronic disease and related conditions - Healthy eating index (HEI) -2010 total score, component scores, and body mass index were analyzed across food pantry use and household food security groups using multiple linear regressions</p>	<p>-Findings imply that people using food pantries multiple times per month are associated with having a better quality diet; however, the difference between them is minimal. With poor diet quality and high prevalence of chronic illnesses and conditions being associated with the food pantry users shows a need for improvements regarding the health and nutrition</p>	<p>- The cross sectional study design causing the onset of chronic disease and contains preceding food insecurity and food pantry use or vice versa cannot be determined - The HEI scores were based on one recall - The diet variation by day changed and may not reflect normal diet - The infrequent pantry users were grouped together with those that use the pantry once per month</p>	<p>- uses the food insecurity of the household along with the frequency of food pantry visits to assess how it relates to the participants diet quality, BMI, and any self-reported chronic health status - Use of HEI score, a reliable and well-validated tool, provided by U.S. Department of Agriculture</p>

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design/methods	Major Finding(s)	limitations	strengths
<p>Robaina, K. A., & Martin, K. S. (2013). Food Insecurity, Poor Diet Quality, and Obesity among Food Pantry Participants in Hartford, CT. <i>Journal of Nutrition Education and Behavior</i>, 45(2), 159–164. https://doi-org.dominican.idm.oclc.org/10.1016/j.jneb.2012.07.00</p>	<p>-Examines relationships between the participants food security, their diet quality, and their BMI among the food pantry users</p>	<ul style="list-style-type: none"> - 212 food pantry clients from Hartford, CT. - Mainly in the North end neighborhood where the poverty rate was high at 32.5% - 85% African American, 14% Hispanic, 1% Asian and Caucasian 	<ul style="list-style-type: none"> - Quantitative, Descriptive - Participants were recruited from 2 food pantries in the area - Took a survey to narrow down participants (in person interview) - Survey measured food assistance used, demographics, their food security, BMI, diet quality, self reported health - Asked frequencies of their food pantry visits, and if they received SNAP, WIC, and go to any soup kitchens. - Asked about any household members having diabetes or high BP 	<ul style="list-style-type: none"> - Pantry users were predominantly black, then female and west Indian - 62.5% of participants went to the food banks at least once per week - Over half the people studied received SNAP - Almost half the participants ate meals at soup kitchens - Approximately 16% of the sample was food secure, while 33.5% had low food security, and the remaining 50.5% were experiencing food insecurity with hunger. - Pantry users consumed limited amounts of fruits and foods with fiber 	<ul style="list-style-type: none"> - The survey itself was never tested for reliability or validity - Lack of variability. - Population examined was predominantly black, overweight, and experienced food insecurities, - May not be generalizable to other pantries 	<ul style="list-style-type: none"> - Shows a picture of the food scarcity, poor dietary qualities, and high prevalence of chronic diseases among the food pantry users

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design/methods	Major Finding(s)	limitations	strengths
<p>Speed, K. A., Meyer, S. B., Hanning, R. M., & Majowicz, S. E. (2017). "Highly processed, highly packaged, very unhealthy. But they are low risk": exploring intersections between community food security and food safety. <i>Maladies Chroniques et Blessures Au Canada</i>, 37(10), 323–332. https://doi-org.dominican.idm.oclc.org/10.24095/hpcdp.37.10.02</p>	<p>- How community food security and food safety come together in public health practice in British Columbia (BC).</p>	<p>-Individuals working in public health in BC,with either a focus in community food security for food safety, and who had experience working with practitioners from other sectors. - 19 individuals were invited to participate and 14 people agreed</p>	<p>- Qualitative descriptive analysis - 14 key informant interviews with practitioners - used qualitative descriptive analysis to identify any examples of intersections between the sectors. - Participants recruited via email - all provided verbal informed consent at the beginning of their phone interview.</p>	<p>- Both food borne diseases and food safety activities are impacting the environment of healthy Canadian food. - Specific types of food products can be risky and also beneficial to the population's health.</p>	<p>-Experience of the individuals may differ based on the sector they were familiar with - Small sample size of 14</p>	<p>- Interviews allowed for more in-depth understanding of food security and food safety intersections - The study can guide for a wider range of practitioners and provinces in other comprehensive assessments</p>

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design/methods	Major Finding(s)	limitations	strengths
<p>Gregory, C. A., & Coleman-Jensen, A. (2017). Food insecurity, chronic disease, and health among working-age adults / Christian A. Gregory and Alisha Coleman-Jensen.</p>	<ul style="list-style-type: none"> - Looks at the correlation between the food security status and any chronic conditions among the working-age adults living at or below 200 percent of the federal poverty line. - Focus is on how food security can help predict health among working-age adults and how the health outcomes differ across different household food security. - Focuses on the probability of hypertension, CHD, hepatitis, stroke, cancer, asthma, diabetes, arthritis, COPD, and kidney disease 	<ul style="list-style-type: none"> - Sample included adults between the ages of 12 and 64, in households below 200 percent of the federal poverty line. - Estimates are regression-adjusted for age, gender, marital status, employment status, number of children (below age 18) in the household, total size of household, race, education, health insurance, and income 	<p>Author used 5 years of data from NHIS food security. Food security is measured using a series of 10 questions about experiences and behaviors of household adults indicating food security in the 30 days prior to taking the survey</p> <ul style="list-style-type: none"> - Estimate logistic regressions to determine conditional association of food insecurity with each of the chronic conditions examined - Estimate logistic regression of the conditional association of food insecurity with the presence of any chronic conditions 	<ul style="list-style-type: none"> - Lower food security is associated with a higher probability of having each of the chronic diseases examined in the study - Food security status is strongly linked to the likelihood of having a chronic disease - In some cases, food security is better at predicting chronic illness than observing income - Looking at the entire range of food security is important for understanding chronic illness and potential economic hardship 	<p>-Only looks at ages 12 to 64</p>	<p>-Most studies only focus on two chronic illnesses but this study looks at 10 of them.</p>

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design/methods	Major Finding(s)	limitations	strengths
<p>Bartfeld, J., & Men, F. (2017). Food Insecurity among Households with Children: The Role of the State Economic and Policy Context. <i>Social Service Review</i>, 91(4), 691–732. https://doi-org.dominican.idm.oclc.org/10.1086/695328</p>	<p>- Explores the correlation between geographic and temporal variations in food insecurity from 2002-2014.</p>	<ul style="list-style-type: none"> - Focus on households with children - Consider 2 household level food security measures - Limit primary sample to households with minor children (190,554 households) 	<ul style="list-style-type: none"> - Quantitative data from population survey's food security supplements from 2002-2014 - Research is building off of earlier work from 1996-2001 that had examined similar questions - CPS-FSS was administered in December during each of the survey years 	<ul style="list-style-type: none"> - Results reveal effects on food hardships are going to be proportional across a range of severities. - "Each percentage point increase in unemployment rate increases the odds of food insecurity by almost 7% at all thresholds" 	<ul style="list-style-type: none"> - Limited subset - Does not rule out the policy influences that are correlated with the ones included 	<ul style="list-style-type: none"> - Used more varied measures of food insecurity considering both a shorter-duration measure in addition to the conventional annual measure and also a measure that captures a fuller spectrum of food hardships. - Shows importance of the safety net