Nutritious Meals for the Homeless Population: Challenges and Opportunities

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Abstract

Objective: Consuming a nutritionally adequate diet is extremely challenging for the homeless population. Though meals are available to the homeless population through soup kitchens and homeless shelters, these settings often do not serve meals that provide essential nutrients. The consumption of energy-dense, low-nutrient foods has led in part to high prevalence of obesity, heart disease, and chronic illnesses among the homeless. The purpose of this study was to (a) examine the challenges that homeless shelters face in providing nutritious meals to guests and (b) investigate the need and interest of nutrition education at homeless shelters.

Methods: Nine homeless shelter directors completed an anonymous online researcher-developed survey designed to examine the challenges that homeless shelters face in providing nutritious meals to guests and investigate the need and interest of nutrition education at homeless shelters.

Results: The most prevalent barriers to nutritious meals at homeless shelters were limited financial resources and limited availability of nutritious foods. The factor given the highest priority when planning meals was the foods available for preparation. None of the homeless shelters surveyed utilized a Registered Dietitian in meal planning or preparation processes, but over half of the homeless shelters indicated some interest in nutrition education for those preparing meals. When asked to prioritize nutrition education topics for this group, the topics of food safety and sanitation and safe food access were given the highest priority.

Conclusions: This study indicated that many factors interact when meals are planned at homeless shelters and that nutrition education is absent in the majority of shelters. There is potential for Registered Dietitian Nutritionists to have a positive influence on the nutritional adequacy of meals served at homeless shelters. Further research is needed on this topic.
Dedication

To my mother, who taught me to cook and helped me find my passion in nutrition and dietetics. Thank you for teaching me to trust in God and for providing unending wisdom and guidance. And thank you for motivating me to be active in the community and do good for those who do not have the same privileges that we have.

To my father, who has showed me that hard work really does pay off. Thank you for supporting me and encouraging me to believe in myself. And thank you for always making me laugh.

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CHAPTER 1

Introduction

Proper nutrition is essential for the prevention of many chronic diseases, such as heart disease, hypertension, diabetes, and several types of cancer. In addition, inadequate dietary intake and malnutrition, specifically undernutrition, can lead to decreased bone mass, impaired wound healing, reduced cognitive function, and many other ill effects (Ahmed & Haboubi, 2010; Wardlaw, Smith, & Collene, 2015). The Academy of Nutrition and Dietetics recognizes that all foods can fit into a healthy diet, but some must be consumed in moderation and in proper portion sizes (Freeland-Graves & Nitzke, 2013). In order to prevent chronic disease and promote optimal health, diet should include a wide variety of foods complete with fruits and vegetables, whole-grains, low-fat dairy, and lean protein (Chiuve et al., 2011; U.S. Department of Health and Human Services & U.S. Department of Agriculture, 2015). Therefore, these food groups should be emphasized over foods with a lower nutrient density, such as highly-processed foods, fried foods, candies, and sugary beverages. Unfortunately, research has shown that the food intake of the homeless population lacks in many of the essential components of a healthy diet and instead includes large amounts of high-calorie, high-starch, and high fat foods (Davis, Weller, Jadhav, & Holleman, 2008; Lyles, Drago-Ferguson, Lopez, & Seligman, 2013; Mello et al., 2010; Sprake, Russell, & Barker, 2014; Tse & Tarasuk, 2008). This lack of a nutritious diet within the homeless population can be due to food insecurity experienced among the homeless.

Food insecurity can be described as constrained or uncertain ability to acquire adequate foods through socially acceptable methods. Food insecurity, therefore, results in
disrupted eating patterns and reduced food intake (United States Department of Agriculture, 2016b). Critical resources to aid the food insecure population in meeting their nutritional needs have been identified by The Feeding America organization, a network of food banks across the United States. These resources include food pantries, soup kitchens, and homeless shelters (Mabli, J., Cohen & Potter, F., Zhao, 2010). One in seven Americans received some type of emergency food assistance in 2014, making it evident that a great percentage of the population relies on these resources. (Borger et al., 2014).

Throughout the homeless population, a large proportion of emergency food assistance occurs as meals consumed at soup kitchens and homeless shelters (Tsai & Rosenbeck, 2013). Homeless shelters, however, often experience budget constraints, shortage of healthy food options, and absence of food and nutrition education for kitchen staff, thus making the service of nutritious meals at homeless shelters more difficult (Koh, Bharel, & Henderson, 2015). Research has shown that prices of food are a significant barrier when trying to make healthy food choices on a budget (Drewnowski & Eichelsdoerfer, 2010). A survey of 30 shelters and soup kitchens in Boston recognized budget constraints as a significant barrier to nutritious meals and the average budget per meal as only $1.03 (Koh et al., 2015). The availability of healthy food for meal preparation is also a prevalent issue. Most homeless shelters regularly prepare meals from foods that are donated by the community or by local restaurants. This greatly limits the availability of fresh fruit, fresh vegetables, and fresh meats, and shelters rarely have financial resources to purchase the food groups that are lacking (Scouten, Lucia, Wunderlich, Uhley, & Afonso, 2016). In addition, kitchen staff at homeless shelters are
most often volunteers who do not receive education on preparation of nutritious meals. Meals are instead prepared by kitchen staff who desire to prepare comfort foods for the meal guests, which may not lead to the healthiest options. The overall goal of the majority of homeless shelters is to provide hospitality to guests, and providing nutritious meals is not considered to be a top priority (Koh et al., 2015; Scouten et al., 2016).

While there are over a dozen food assistance programs in the United States aimed at reducing hunger, only a few of these programs are applicable for the homeless population. The Emergency Food Assistance Program (TEFAP) is one such program, which aims to aid homeless shelters in providing adequate food for guests (Food and Nutrition Service, 2016; Mahan, Escott-Stump, & Raymond, 2012). Emergency Shelter Grants also assist with homeless shelter expenses and are available through the U.S. Department of Housing and Urban Development. However, allocation of these grants is based on the area's population and overcrowding in housing. This leads to the majority of grant funds being distributed in urban and metropolitan areas even when shelters in more rural areas may also be in need of funding (U.S. Department of Housing and Urban Development, 2017).

Statement of Problem

Homeless shelters and soup kitchens are crucial in sustaining the health of the homeless population (Tsai & Rosenheck, 2013). However, improper nutrient intake is highly prevalent in this setting (Tse & Tarasuk, 2008). The consumption of energy-dense, low-nutrient foods has led in part to high prevalence of obesity, heart disease, and chronic illnesses among the homeless (Berkowitz, Baggett, Wexler, Huskey, & Wee, 2013;
Holben & Taylor, 2015; Koh, Hoy, Jessica, O’Connell, & Montgomery, 2012; Martins et al., 2015). Homeless shelter administrators may face many challenges, including personal lack of nutrition knowledge, inadequate resources, and financial restraints, when attempting to prepare healthy meals for guests (Davis et al., 2008; L. Johnson, Myung, McCool, & Champaner, Elena, 2009; Koh et al., 2015; Scouten et al., 2016). By further defining and addressing the barriers that homeless shelters face in preparing nutritionally adequate meals, possibilities to improve food intake and overall health of the homeless population can be explored. Therefore, the purpose of this study was to (a) examine the challenges that homeless shelters face in providing nutritious meals to guests and (b) investigate the need and interest of nutrition education at homeless shelters. This was completed by surveying homeless shelter administrators throughout the state of Illinois.

Research Questions

Three research questions guided this research study:

1. What are the greatest challenges in serving nutritious meals at homeless shelters in Illinois?

2. What roles, if any, do Registered Dietitian Nutritionists provide at homeless shelters in Illinois?

3. What level of priority is placed on nutrition education for homeless shelter kitchen staff in Illinois?

Operational Definitions

The terms listed below have been defined for the purposes of this study:
**Energy dense food:** A food that has a high concentration of calories per gram. Nuts, cookies, and fried foods would be examples of energy dense foods (Wardlaw et al., 2015).

**Food bank:** A non-profit organization that stores food donations and distributes food to smaller agencies (such as food pantries and homeless shelters) that directly provide food to individuals suffering from hunger (Feeding America, 2017).

**Food insecurity:** The constrained or uncertain ability to acquire nutritionally adequate foods through socially appropriate methods (United States Department of Agriculture, 2016b).

**Homeless individual:** A person either (a) lacking a fixed, regular, or adequate nighttime residence or (b) having a primary nighttime residence that is:

1. a public or private shelter designed to provide temporary living accommodations (including hotels, congregate shelters, and transitional housing) or

2. a public or private place not designated for regular sleeping accommodations for a person (including car, abandoned building, and camp ground) (U.S. Code Collection, 2012)

**Homeless shelter:** An emergency assistance setting that provides short-term shelter and serves at least one meal a day to low-income individuals in need (Mabli, J., Cohen & Potter, F., Zhao, 2010).

**Malnutrition:** An imbalance of energy, protein, and other nutrients that leads to adverse effects on body form, function, and clinical outcomes (Ahmed & Haboubi, 2010).
Nutrient dense food: A food that provides a large amount of nutrients for a relatively small amount of calories. Lean meats, whole-grain bread, and fat-free milk would be examples of nutrient dense foods (Wardlaw et al., 2015).

Nutritionally-adequate diet: A balanced diet containing the necessary proportions of carbohydrates, fats, and proteins as well as the recommended daily allowances of all vitamins and minerals (Leitzmann, 2009).

Registered Dietitian Nutritionist (RDN): A food and nutrition expert who has met the following criteria to earn the RDN credential: completed a minimum of a bachelor’s degree in an accredited program, completed an accredited supervised practice program, passed a national examination, and completed continuing professional education requirements to maintain registration (Academy of Nutrition and Dietetics, 2017).

Assumptions

Assumptions in this study include honesty of participant answers on all survey questions. In addition, it is assumed that all individuals who consume meals at the homeless shelters included in the study fit within the definition of homeless individual and are potentially food insecure.

Summary

Consuming a nutritionally adequate diet is extremely challenging for the homeless population. Though meals are available to the homeless population through soup kitchens and homeless shelters, these settings often do not serve meals that provide essential
nutrients (Tsai & Rosenheck, 2013; Tse & Tarasuk, 2008). This study was designed to examine the challenges that homeless shelters face in providing nutritious meals to guests and investigate the need and interest of nutrition education at homeless shelters. The following chapter reviews the literature regarding homelessness, including prevalent health conditions in the homeless population, food insecurity among the homeless, the typical diet among the homeless, and food and nutrition assistance that is available to the homeless population.
CHAPTER 2

Literature Review

The homeless population faces challenges in maintaining a nutritionally adequate diet. Continuous intake of low-nutrient foods makes it difficult for the homeless population to preserve good health and maintain employment (Lee & Greif, 2008; Leung et al., 2013; Martins et al., 2015; Slusser et al., 2011; United States Department of Agriculture, 2016b). Homeless individuals consume a large portion of meals at homeless shelters, but these services have been shown to provide meals that are of low nutritional value (Freedman & Bartoli, 2013; Scouten et al., 2016). Since several barriers make it difficult to improve the nutritional content of meals at homeless shelters, the types of challenges experienced by homeless shelters and possible interventions to improve the nutritional adequacy of meals should be examined. This chapter will review a definition and description of the homeless population, housing options for homeless individuals, food insecurity among the homeless, health risks of homeless individuals, improving the food insecurity for the homeless population, and possibilities for nutrition education in homeless shelters.

Homelessness Defined & Described

In 1987, Congress passed the Homeless Assistance Act (Public Law 100-77, July 22, 1987), which defined a “homeless individual” as either (a) lacking a fixed, regular, or adequate nighttime residence or (b) having a primary nighttime residence that is:

1. a public or private shelter designed to provide temporary living accommodations (including hotels, congregate shelters, and transitional housing) or
2. a public or private place not designated for regular sleeping accommodations for a person (including car, abandoned building, and camp ground) (Stewart B. McKinney Homeless Assistance Act, 1987; U.S. Code Collection, 2012).

Additionally, the Homeless Assistance Act (Public Law 100-77, July 22, 1987) suggests that homelessness can have many causes and that there is no single or simple solution to the problem of homelessness (Shumsky, 2012). The condition of homelessness can be caused by a complex combination of economic, social, and cultural factors. Economic factors that can lead to homelessness include poverty, lack of affordable housing, and loss of employment (Tipple & Speak, 2009). Those living in poverty are at risk of becoming homeless because affordable housing options are limited, and low-income assistance programs continue to make spending cuts as a result of inadequate funding. Households with severe housing cost burdens may spend more than 50 percent of the household income on rent. With such a large portion of income going toward housing, an unexpected event, such as unemployment or a medical incident, can too easily result in homelessness (National Alliance to End Homelessness, 2016). The Corporation for Enterprise Development estimates that 43% of American households do not have enough money saved to endure an emergency financial situation. Unemployment is often a precursor to homelessness, for most Americans do not have enough “liquid assets” to carry on more than 3 months unemployed (Corporation for Enterprise Development, 2016; Tipple & Speak, 2009). When these incidences are combined with social and cultural factors, an individual or family losing their home can ensue.
Social and cultural factors that contribute to homelessness include mental abuse and substance abuse as well as lack of support systems. Divorce or relationship breakdown can be causes of homelessness, with women more vulnerable to homelessness because they are less likely to have full time employment and more likely to be caring for children when compared to men. In addition, individuals who do not have the support of family or friends during emergency situations are more likely to experience homelessness due to an unexpected event (Tipple & Speak, 2009).

Cities across the United States participate in point-in-time counts of their homeless populations every other year. In January 2015, an estimated 564,708 individuals across the United States would be homeless on any given night (National Alliance to End Homelessness, 2016). With an estimated 3.5 million people in the United States, 1.35 million of them children, experiencing homelessness at least once annually, homelessness is prevalent throughout the country. Though the homeless population has decreased by approximately 70,800 people (11%) since 2007, such a high occurrence continues to make homelessness a national issue (National Alliance to End Homelessness, 2016). In addition, an accurate estimation of the homeless population is extremely difficult because homeless individuals do not have a permanent residence and may be in a different location from day-to-day. Counting the homeless population has often been described as trying to “hit a moving target” and can also be very subjective at times (Andersen, 2000; Shumsky, 2012). Ashley Harrell, a reporter who has volunteered as an enumerator with the San Francisco point-in-time homeless population count described the process:
We were to automatically count people sleeping outside; vehicles with covered windows; and makeshift structures such as tents and boxes. We were not to automatically count people leaving bars or waiting for buses. And finally, we were to take factors like loitering, panhandling, shopping-cart pushing, recycling, inebriation, and dishevelry into consideration when deciding who was and wasn't homeless. Talk about subjective. Oh, and under no circumstance were we to actually ask a person whether or not they lived in a house. Perhaps that would make the survey a little too accurate? (Harrell, 2009).

Therefore, the actual homeless population is likely more numerous than measures indicate (National Center for Homeless Education at SERVE, 2015).

**Housing Options for Homeless Individuals**

Various types of shelter are available for those experiencing homelessness, including rapid re-housing, permanent supportive housing, emergency (homeless) shelters, and transitional housing. Individuals living in rapid re-housing and permanent supportive housing are no longer considered homeless when point-in-count estimates take place. Rapid re-housing provides assistance by helping the homeless find permanent housing and by helping cover move-in expenses (United States Interagency Council on Homelessness, 2015). Permanent supportive housing options consist of affordable and safe communities designed to help individuals exit homelessness. When individuals live in these communities, many voluntary supportive services, such as health care, treatment, and employment services, are available (United States Interagency Council on Homelessness, 2017). Much of the homeless population (69.3%) resides in emergency shelter or transitional housing, and the number of available beds in emergency shelter housing has increased by 25.1 percent since 2007. Though rates for utilization of shelter for the homeless vary by geographic region, above 90 percent of available beds have consistently been used since 2007 (National Alliance to End Homelessness, 2016).
A homeless shelter provides a place for individuals and families to temporarily sleep at night for free, and transitional housing provides residents with a small room or apartment for an extremely inexpensive and affordable rate (National Alliance to End Homelessness, 2014). Unfortunately, homeless shelters are often a very stressful environment for an individual to live. There are usually limited safe places to store medications, so health conditions such as diabetes, hypertension, and asthma can worsen. In addition, getting rest and recuperation is extremely difficult in an environment with complete strangers. This can worsen depression, alcoholism, or other behavioral health issues, especially if no solution is in sight (Johnson & Chamberlain, 2011).

During the January 2015 point-in-time count, 69 percent of the homeless population lived in some type of shelter or transitional housing and 31 percent lived in a place not meant for human habitation. About 63 percent of all homeless were individuals, and the remaining 37 percent were homeless families. Among the individual homeless population, 36,907 were unaccompanied youth and children. Approximately 96,275 of the overall homeless population were considered to be chronically homeless, meaning they have been continuously homeless for a year or more (National Alliance to End Homelessness, 2016). Despite these distinctions in subgroups of the homeless, individuals from each subgroup experience challenges in obtaining food and are at risk of food insecurity.

**Food Insecurity Among the Homeless**

Food insecurity describes the limited or uncertain ability to acquire nutritionally adequate foods through socially appropriate methods (Lee & Greif, 2008; United States Department of Agriculture, 2016b). Long term food insecurity can result in chronic
malnutrition, muscle wasting, and stunted growth in children (Barrett, 2010). The homeless population faces numerous challenges in obtaining food, including limited access and availability, lack of reliable transportation, inadequate cooking facilities, inadequate food storage space, and constrained financial resources (Barrett, 2010; Food Research & Action Center, 2015). The homeless are considered the most vulnerable subgroup of the food insecure population in the United States due to the lack of reliable income sources. Homeless are often unable to pay for housing, food, childcare, healthcare, and education and are forced to make difficult choices when limited resources only cover some of the necessities (Food Research & Action Center, 2015).

Of the food insecure individuals served by the Feeding America network, 55% reported using 3 or more “coping strategies” to feed their families within the past year. These strategies include purchasing inexpensive and unhealthy food, receiving help from family and friends, watering down food or drinks, selling or pawning personal property, and growing food in a garden (Borger et al., 2014). Researchers have hypothesized that the chronically homeless experience lower rates of food insecurity due to their learned ability to obtain adequate food. The greatest rates of food insecurity among the homeless, therefore, likely manifest among those who are homeless for short periods (Lee & Greif, 2008).

However, though the chronically homeless may be more apt at finding food to satisfy their hunger, high rates of obesity among the chronically homeless (57%) show that the food obtained is not of high nutritional value (Tsai & Rosenheck, 2013). Research has observed individuals who eat little or skip meals to stretch food are more likely to overeat when food does become available. This can eventually lead to weight
gain, disordered eating, and metabolic changes that promote fat storage (Bove & Olson, 2006; Bruening, MacLehose, Loth, Story, & Neumark-Sztainer, 2012; Olson, Bove, & Miller, 2007).

**Health Risks of Homeless Individuals**

Food insecurity of the homeless can lead to several health concerns, including obesity, diabetes, hypertension, dyslipidemia, inflammation, and poor metabolic control (Berkowitz et al., 2013; Gowda, Hadley, & Aiello, 2012; Irving, 2014; Koh et al., 2012; Martins et al., 2015; Metallinos-Katsaras, Must, & Gorman, 2012; Shin, Bautista, Walsh, Malecki, & Nieto, 2015). Obesity rates tend to be higher in food insecure households (35.1%) when compared to food secure households (25.2%) (Holben & Taylor, 2015; Pan, Sherry, Njai, & Blanck, 2012). A correlational study completed within a Rhode Island homeless population examined the relationship between incidence of food insecurity and presence of health risks. Of the 313 homeless participants, 94% of those who completed a Food Security Survey (n = 237) were classified as food insecure and 70% of the participants (n = 219) had an elevated BMI (> 25 kg/m²). The participants’ BMI and waist circumference were used to determine the level of disease risk, and 69.6% (n = 218) of the homeless participants were at elevated risk for chronic and acute diseases (Martins et al., 2015).

Individuals who have health conditions prior to becoming homeless generally experience decline of their health after leaving their home. The absence of housing, lack of quality health care, high stress environment, and inability to control food intake all contribute to worsening of health conditions. A survey based study analyzed prevalence of health care use among 966 homeless adults at 76 Health Care for the Homeless clinics
throughout the United States. The researchers used multivariable logistic regression to examine the relationship between food insufficiency and health care use among the homeless, and observed food insufficient individuals to use acute or emergency health services at rates approximately 5 times higher than the general U.S. population. The researchers predicted that food insufficient homeless individuals postpone treatment at earlier stages of an illness until medical care is completely necessary. In addition, this population may have to choose between purchasing food and purchasing medications (Baggett et al., 2011). Thus, the homeless population are often unable to treat significant health conditions.

With a greater prevalence of chronic health conditions and limited resources to control disease progression, the homeless population experiences a shortened lifespan. The average life expectancy of homeless individuals is 41 years, much lower than 79.3 years, the average national life expectancy in the United States (Morrison, 2009; Song et al., 2007; World Health Organization, 2016).

While health conditions occur at a much higher rate among the homeless population, this population tends to make health maintenance a lower priority. The needs to maintain safety and meet requirements to survive are prioritized higher than treating illness or taking measures to prevent poor health outcomes. Though a nutritionally adequate diet can prevent or delay chronic disease, the homeless population often does not make eating a nutritious diet a priority. Twenty-four hour recalls from 252 homeless individuals revealed a mean intake of 6.6 servings of grain, 2.6 servings of vegetables, 0.8 servings of fruit, 2.2 servings of meat and beans, and 17.5 servings of fat per day (Martins et al., 2015). Therefore, the typical diet of a homeless individual is higher in
calories, fat content, and cholesterol, but lower in essential vitamins and minerals than that recommended by the United States Department of Agriculture.

Hunger is often recognized as a prevalent "side effect" of homelessness. Maintaining a nutritious diet can be especially challenging for the homeless population due to a poor understanding of nutrition, inability to purchase food, inadequate food supplies, and a lack of refrigeration or cooking facilities (L. Johnson et al., 2009; Martins et al., 2015). Extreme hunger and nutrition-related health conditions will reduce energy and cognitive abilities, making it difficult for homeless individuals to find and hold a job. This ultimately makes it even harder to exit homelessness (Lee & Greif, 2008). The National Survey of Homeless Assisters, Providers, and Clients (NSHAPC) collects data on individuals who use homeless services across the United States. Data is collected through telephone interview (n = 6307), mail surveys (n = 5694), and personal interviews (n = 4207). When examining hunger among the homeless population, the NSHAPC found that 61 percent of the homeless reported problems with inadequate quantities of food, 40 percent reported fasting for an entire day during the month prior, and 12 percent reported consuming food from trash cans or handouts within the week previous (Lee & Greif, 2008).

Fruit and vegetable intake noticeably declines as food insecurity becomes more severe, and nutrition analyses of dietary intake within the homeless population revealed nutritional inadequacies in diet and lack of regulation over food choices (Davis et al., 2008; Lyles et al., 2013; Mello et al., 2010; Sprake et al., 2014; Tse & Tarasuk, 2008). Interviews with homeless individuals have created recognition that the homeless often aspire to eat nutritious foods, but constraints on food choice make doing so difficult.
(Sprake et al., 2014). Therefore, food preferences and nutritional content do not necessarily determine the diet of the food insecure population.

Research on the barriers to a healthy lifestyle in the food insecure population recognized that expense of healthy foods and limited access were the largest influences of food purchases (Leung et al., 2013; Slusser et al., 2011). A study comparing women living in food oases to women living in food desserts found that there is little relationship between food buying preferences and access to a supermarket. Women noted that the most influential aspects of food buying habits were availability of food, sale prices, and discount cards or bargains (Walker, Block, & Kawachi, 2012). Therefore, the food insecure and homeless populations are likely interested in nutrition. In fact, a 15-week nutrition education course implemented at family homeless shelters resulted in increased focus on nutrition within the population. The participants took significant interest in the topics and were very willing to try new foods. (Rodriguez, Applebaum, Stephenson-Hunter, Tinio, & Shapiro, 2013). The nutritional needs of homeless individuals are often not recognized as a public health problem, but evidence of such an inadequate diet and possible interventions indicate reason for action.

**Improving Food Insecurity for the Homeless Population**

Homeless shelters generally provide services to the community, and meals for the homeless are one of the most important provisions. Soup kitchens and homeless shelters are the primary food source for a large portion of the homeless population (Tsai & Rosenheck, 2013). Therefore, these facilities have great potential to impact the nutritional status and overall health of the homeless population.
Plate waste analysis (n = 797) and guest interviews (n = 121) were completed at two meal centers in California to measure the average total amount of each meal component consumed. This was compared to the FDA’s reference amount customarily consumed (RACC) serving sizes. Guests on average discarded 40 percent of the vegetables and 36 percent of the fruit they were served, resulting in a total waste of 49 pounds of food per day (2.5 tons per year). Since interviewed participants frequently stated that “too much was served”, the researchers predicted that this large amount of waste was due to guests filling up on protein, starches, and bread before consuming their fruits and vegetables. This not only increases waste, but also decreases the nutritional adequacy of the meal (Freedman & Bartoli, 2013).

There are not currently any nutrition standards in place for homeless shelters and soup kitchens, and the ability to offer nutritionally adequate foods is often constrained by lack of resources. Since financial resources are limited, meals are most often prepared simply from the food that is donated rather than based on the nutritional content. Fresh fruits, vegetables, and meats are the least commonly donated items to food pantries and meal centers, creating difficulties in preparing meals adequate in fiber, protein, vitamins, and minerals. Instead, meals generally contain excessive amounts of salt, sugar, and starch, which lack high nutritional value. Research on homeless shelters in the Boston area revealed that meals commonly consisted of pastries, pizza, and desserts that were leftover and donated by local restaurants (Koh et al., 2015). In addition, those preparing the meals are usually volunteers who may or may not know the nutritional needs of guests. (Davis et al., 2008). Of the feeding programs supported by Feeding America, 51% of the programs have no paid staff and rely heavily on volunteers (Borger et al., 2014).
An additional research study examined a meal program for homeless individuals that is run by 64 faith organizations. The faith organizations completed a survey to explore factors affecting meal services and the nutritional quality of the food served. The researchers determined that the overall goal for most of the organizations was hospitality, which resulted in preparation of large amounts of nutrient-poor, calorie-dense comfort foods. Of the faith organizations that responded to the survey, 80 percent were interested in programs to educate volunteers on preparing healthy and affordable meals. In addition, a common limitation was that food items were generally randomly donated. This identifies a necessity for asking for specific food items in order to create nutritious meals (Scouten et al., 2016).

Despite the commonly served “comfort foods” at homeless shelters, guests have expressed the desires to consume more nutritious meals. Johnson et al. (2009) examined the impact of nutrition education on the dietary habits of homeless women residing in a homeless shelter. Following multiple nutrition education sessions, women expressed the desire to consume a healthier diet, but were limited to the meals and snacks that they were offered, which were of low nutritional value. This points to the necessity for possible alterations in homeless shelter policies (L. Johnson et al., 2009).

Typical funding for a homeless shelter comes from a variety of sources, including local, state, and federal governments; individual contributions; corporate support; and donations. In 1981, the United States Department of Agriculture developed The Emergency Food Assistance Program (TFEP), which provides commodity foods to food banks, food pantries, and homeless shelters. In 2015, U.S. Congress spent $327 million on commodity foods to distribute through the program. TFEP provides each state with a
certain amount of food based on the poverty rates of that state. The state then distributes the foods to organizations that directly serve low-income populations (United States Department of Agriculture, 2016a). The majority of foods are distributed to food pantries, but homeless shelters can potentially receive commodity foods as well. The only criteria necessary for homeless shelters to receive commodity foods is that the population served must be “predominantly needy” (Fox, Hamilton, & Lin, 2004). Therefore, use of TFEP resources could potentially improve the nutritional adequacy of meals served at homeless shelters.

Homeless shelters may also receive food donations from food banks. Feeding America is a network of 200 food banks throughout the United States that distributes food donations to feeding programs that include food pantries, soup kitchens, emergency shelters, senior centers, and mobile programs that serve people in need. Of the 58,000 food programs that Feeding America supported in 2014, 33% of these programs served meals directly to the food-insecure population. These meal programs include meal programs targeting children, meal programs targeting seniors, community kitchens, residential programs, rehabilitation programs, transitional housing, soup kitchens, and homeless shelters. However, only 7% of the individuals served by the Feeding America network meet the definition of a “homeless individual” (Borger et al., 2014).

Despite these sources of possible funding or donations, many homeless shelters still struggle in adequately covering financial costs. A Just Harvest, a community soup kitchen in the Chicago Metro Area, feeds almost 200 individuals each night and struggles to cover the costs to do so. In addition to the costs of food, the organization must cover the cost of rent, staff, supplies, professional grade equipment, and insurance. This creates
a total cost of approximately $1,000 per night for A Just Harvest (Chicago Food Bank, 2013).

**Value of Nutrition Education in Homeless Shelters**

Though homeless shelters have been observed to serve nutritionally inadequate meals, nutrition education for those preparing the meals is often not a priority. Little (if any) nutrition education is provided to the individuals that prepare and serve meals at homeless shelters (Davis et al., 2008). Nutrition education by a Registered Dietitian Nutrition has shown to be effective in many different settings because of the link between theory, practice, and research. Nutrition education often comprises theory and research from social psychology, healthy education, anthropology, and economics (Contento, 2008). Therefore, nutrition education in homeless shelters has the potential to be successful because the education can be adapted for the homeless population.

**Conclusion**

This chapter provided insight on the definition and description of the homeless population, housing options for homeless individuals, food insecurity among the homeless, health risks of homeless individuals, improving the food insecurity for the homeless population, and possibilities for nutrition education in homeless shelters. While there is a plethora of research on the food and nutrition resources available to homeless individuals (Davis et al., 2008; Holben, 2010; Lyles et al., 2013; Richards & Smith, 2007; Sprake et al., 2014; Tse & Tarasuk, 2008; Yousey, Leake, Wdowik, & Janken, 2007), the challenges faced by services providing meals needs to be examined more thoroughly. Therefore, the purpose of this study was to (a) examine the challenges that homeless shelters face in providing nutritious meals to guests and (b) investigate the need and
interest of nutrition education at homeless shelters. This research has the potential to guide professionals in developing strategies to improve the quality, variety, energy content, and nutrient content of meals while staying within budget and donation constraints. With improvements in these meal services, the health of the homeless population could improve.
CHAPTER 3

Methodology

The purpose of this study was to (a) examine the challenges that homeless shelters face in providing nutritious meals to guests and (b) investigate the need and interest of nutrition education at homeless shelters. This was completed by surveying homeless shelter administrators throughout the state of Illinois. The following research questions guided this research study:

1. What are the greatest challenges in serving nutritious meals at homeless shelters in Illinois?
2. What roles, if any, do Registered Dietitian Nutritionists provide at homeless shelters in Illinois?
3. What level of priority is placed on nutrition education for homeless shelter kitchen staff in Illinois?

This study utilized a non-experimental, cross-sectional survey design with a questionnaire as the data collection tool. The questionnaire was designed to measure the extent that homeless shelters face particular challenges in preparing and providing nutritious meals. The questionnaire also measured the level of priority that each homeless shelter places on nutrition education topics. Previous research has indicated that homeless shelter guests are often not served meals that are nutritionally adequate (L. Johnson et al., 2009; Koh et al., 2015). In addition, little (if any) nutrition education is provided to the individuals that prepare and serve meals at homeless shelters (Davis et al., 2008). Therefore, this study expanded on existing research so that possibilities to improve the nutrient intake of the homeless population can be explored.
Participants

The participants in this study were homeless shelter directors in the state of Illinois selected by purposive sampling (n = 9). A total of 63 homeless shelter directors had the opportunity to participate in the study. Eligibility for homeless shelter directors was based on inclusion on the list of homeless shelters developed by the U.S. Department of Health and Urban Development (Appendix A). This list is available at www.hud.gov, and all homeless shelter directors were given the opportunity to participate in the study. The questionnaire was available for a total of two weeks, and the cover letter and link to the questionnaire were emailed to homeless shelters a total of 4 times. Emails were sent the day the questionnaire opened, one week prior to the questionnaire closing, 3 days prior to the questionnaire closing, and the day that the questionnaire was set to close. Of the 63 homeless shelters that were contacted for data collection, a total of 12 homeless shelters responded to the survey. After review of responses, 3 respondents were excluded due to failure to complete the entire survey or lack of a kitchen serving meals. Therefore, a total of 9 homeless shelters were included in data analysis for this research study. Such a small response rate could be due to incorrect email addresses for homeless shelters and limited time by homeless shelter volunteers or employees.

Pilot Study

Prior to data collection from Illinois homeless shelters, the questionnaire was distributed to 10 homeless shelter directors in the state of Indiana (Appendix B). The homeless shelters included were randomly chosen from the list of Indiana shelters provided on the U.S. Department of Housing and Urban Development website.
Of the 10 homeless shelters chosen, 6 chose to complete the survey. This allowed for determination that the questionnaire was user-friendly and that correct terminology was used. From the homeless shelters that responded, there were no suggestions provided for survey improvement. In addition, statistics from the completed questionnaire were analyzed to determine the average amount of time needed to complete all questions. A panel of experts analyzed the questionnaire for external reliability to ensure that responses would be consistent across participants when similar behaviors and situations are present. Lastly, the questionnaire was analyzed by the expert panel for face validity. This ensured that the questionnaire was measuring the concepts for which it was designed. (Furlong, Lovelace, & Lovelace, 2000).

**Data Collection**

Data was collected through an online questionnaire sent to homeless shelter directors through email. Participants gave their consent to participate by reading and accepting a cover letter included in the email (Appendix C) and informed consent agreement at the beginning of the survey. The methods of data collection were reviewed and approved by the Eastern Illinois University Institutional Review Board (IRB #17-095).

**Survey.** A survey was developed by the researcher based on previous research outlined in the literature review (Appendix D). The survey assessed challenges at each shelter. The survey was divided into 4 sections: Resource Availability, Meal Planning, Meal Service, and Nutrition Education. Each section was designed to assess possible effects on choices for meals served. Other questions included in the survey were the
counties served by the homeless shelter, the maximum capacity of the homeless shelter, the frequency of meals served, the average number of guests served at meals, and the population served at the homeless shelter. The survey was to be completed by the director at each homeless shelter participating.

Data Analysis

Research Question 1: What are the greatest challenges in serving nutritious meals at homeless shelters in Illinois?

This question was answered utilizing descriptive statistics from the Meal Planning section of the survey. This allowed for determination of which variable(s) have the most effect on the nutritional adequacy of meals served at the homeless shelters.

Research Question 2: What roles, if any, do Registered Dietitian Nutritionists provide at homeless shelters in Illinois?

This question was answered utilizing descriptive statistics from questions in the Meal Planning section of the survey. This allowed for determination of the percentage of homeless shelters that include of Registered Dietitian in meal planning and preparation.

Research Question 3: What level of priority is placed on nutrition education for homeless shelter kitchen staff in Illinois?

This question was answered utilizing descriptive statistics with data from the Nutrition Education section of the survey. This allowed for determination of the most prioritized nutrition education topic within the homeless shelters.
Summary

This study was designed to (a) examine the challenges that homeless shelters face in providing nutritious meals to guests and (b) investigate the need and interest of nutrition education at homeless shelters. The participants were homeless shelters located in the state of Illinois as identified by the U.S. Department of Housing and Urban Development. Directors at each homeless shelter completed a survey in regards to meals served at the shelter. Statistical analysis was then completed to answer research questions and discuss possible interventions that can improve nutritional adequacy of meals at homeless shelters. The following chapter will present and discuss results from this research study.
CHAPTER 4

Results and Discussion

The following research questions guided this research study:

1. What are the greatest challenges in serving nutritious meals at homeless shelters in Illinois?
2. What roles, if any, do Registered Dietitian Nutritionists provide at homeless shelters in Illinois?
3. What level of priority is placed on nutrition education for homeless shelter kitchen staff in Illinois.

Description of Sample

The homeless shelters included in the study indicated that they served a total of 17 counties in Illinois (Figure 1). Of these 17 counties, 4 (23.5%) are classified as urban and 13 (76.5%) are classified as rural by the Illinois Department of Public Health. A rural country is defined as a county not part of a metropolitan statistical area as defined by the U.S. Census Bureau, or a county that is part of a metropolitan statistical area but has a population less than 60,000 (Center for Rural Health & Illinois Department of Public Health, 2013). Five of the homeless shelters (55.6%) indicated that they serve more than one county.
Table 1 lists characteristics of homeless shelters included in this survey. The maximum capacity of the homeless shelters that responded to the survey ranged from 16 to 220 individuals. The average capacity of shelters was 75.8 individuals. Eight of the homeless shelters (89%) serve 3 meals per day, and one homeless shelter (11%) serves 2 meals per day (breakfast and dinner). One of the homeless shelters serving 3 meals per day also provides bagged lunches if needed. The number of guests served at breakfast meals ranged from 8 to 85 individuals, with the average number of breakfast guests being 40.5 individuals. The number of guests served at lunch meals ranged from 10 to 120 individuals, with the average number of lunch guests being 56.4 individuals. The number
of guests served at dinner meals ranged from 10 to 85 individuals, with the average number of dinner guests being 43.1 individuals.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum capacity of shelter</td>
<td>75.8</td>
<td>20.7</td>
</tr>
<tr>
<td>Meals served per day</td>
<td>2.9</td>
<td>0.1</td>
</tr>
<tr>
<td>Number of breakfast meal guests</td>
<td>40.5</td>
<td>10.4</td>
</tr>
<tr>
<td>Number of lunch meal guests</td>
<td>56.4</td>
<td>18.2</td>
</tr>
<tr>
<td>Number of dinner meal guests</td>
<td>43.1</td>
<td>9.5</td>
</tr>
</tbody>
</table>

Six homeless shelters indicated planning meals 1-2 days in advance, two homeless shelters indicated planning meals 2 weeks in advance, and one homeless shelter indicated not planning meals in advance. Five of the homeless shelters (55.65%) indicated that meals are served buffet style with the volunteers or staff serving the portions. The remaining four homeless shelters indicated that meals are served by volunteers or staff preparing pre-portioned plates. Six of the homeless shelters (66.7%) indicated that portion sizes are controlled, with the methods of control including estimation by volunteers and staff and measurement with specific serving utensils. When shelters were asked to select which food group results in the greatest amount of food waste by guests, vegetables was most commonly selected. The food groups of dairy and protein were not selected by any shelters as the greatest amount of food waste (Figure 2).
The number of helpings that guests were allowed per meal ranged from one to as many as they would like (Figure 3).

![Figure 2. Greatest Amount of Food Waste](image)

Participants were asked which food group has the greatest estimate waste by meal guests.

![Figure 3. Servings Allowed Per Guest](image)

Participants were asked how many helpings are guests allowed per meal.

Homeless shelters indicated that resources were acquired from a variety of contributors. The greatest contributor of food items was donations from individuals and/or families, with an average of 40.00% of food items received from this category. The smallest contributor of food items was food manufacturers and anonymous donations, with an average of 1.00% of food items received from these sources. Figure 4 shows the distribution of food items received by the shelter. Seven of the nine homeless shelters (77.8%) indicated that food resources were either somewhat adequate or completely adequate to provide nutritious meals to guests.
The greatest contributor of monetary support for the homeless shelters was donations from individuals and/or families, with 41.11% of monetary support coming from this source. The smallest contributor of monetary support was food banks, with 0.00% of monetary support coming from this source. Six of the homeless shelters (66.7%) indicated that the level of monetary support was somewhat or completely adequate to provide nutritious meals to guests (Figure 5).
The greatest contributor of nonfood items for homeless shelters was donation from individuals and/or families, with an average of 33.89% of nonfood items coming from this source. The smallest contributor of nonfood items was other sources, none of which were identified specifically. An average of 0.56% of nonfood items were acquired from this category. Four of the homeless shelters (44.4%) indicated that the shelter’s supply of nonfood items was somewhat or completely adequate to meet shelter needs (Figure 6).

Figure 6. Contributors of Nonfood Resources
Research Question Analysis

Research Question 1: What are the greatest challenges in serving nutritious meals at homeless shelters in Illinois? Homeless shelters indicated level of priority for 12 different factors when planning meals. Figure 7 shows the percentage of shelters that gave low priority, the percentage of shelters that gave high priority, and the percentage of shelters that were neutral for each factor. The factors given the highest priority when planning meals were foods available for preparation, inclusion of fresh fruits and vegetables, satisfying meal guests, and serving well balanced meals. The factors given the lowest priority when planning meals were food allergies, food preferences, inclusion of whole grains, and avoidance of processed foods.

Figure 7. Factors Given Priority When Meals are Planned
Participants rated each factor as Very Low Priority, Little Priority, Neutral Priority, Some Priority, or Very High Priority.
Shelters were asked to select all barriers that may prevent the preparation of nutritious meals. The most frequently selected answered were limited financial resources and limited availability of nutritious foods. Table 2 shows the percentage of homeless shelters that selected each possible barrier.

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Percentage of homeless shelters challenged with barrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited financial resources</td>
<td>88.80%</td>
</tr>
<tr>
<td>Limited availability of nutritious foods</td>
<td>77.78%</td>
</tr>
<tr>
<td>Lack of access to a Registered Dietitian Nutritionist</td>
<td>44.44%</td>
</tr>
<tr>
<td>Desire to serve comfort foods to guests</td>
<td>44.44%</td>
</tr>
<tr>
<td>Limited nutrition knowledge of individuals preparing meals</td>
<td>33.33%</td>
</tr>
<tr>
<td>Inadequate cooking facilities</td>
<td>11.11%</td>
</tr>
<tr>
<td>Limited nutrition knowledge of individuals planning meals</td>
<td>11.11%</td>
</tr>
</tbody>
</table>

Homeless shelters were additionally asked to list any aspects that make it difficult to consistently provide healthy options to meal guests. Common answers related to lack of consistency in the individuals preparing meals and lack of control of the meals volunteers choose to prepare. Table 3 shows answers that were provided to this question.
Table 3

*Description of Barriers to Nutritious Meals*

"Limited time and lack of volunteers"

"Availability of healthy food options"

"Time and resources to prepare non-processed foods"

"Donated food items are usually not healthy"

"All meals are prepared by volunteers"

"Various staff members prepare meals differently"

"Volunteer turnover"

"Volunteers prepare meals at home with their own finances and bring it to the shelter to serve"

"Lack of control with what churches and volunteer groups bring for meals"

"Some volunteers lack the budget and just want to make the guests happy"

When homeless shelters were asked to list any resources or materials that would help improve the nutritional quality of meals served to guests, various forms of nutrition education were mentioned. Homeless shelters also mentioned the necessity for food of higher nutritional quality. Table 4 lists the answers that were provided for this question.

Table 4

*Desired Resources and Materials*

"Access to more fruits and vegetables"

"Classes and information about healthy eating"

"Posters to hang in the kitchen"

"More spending dollars for fresh fruits and salad ingredients"
Lack of access to fresh or nutritious food items was a common theme expressed by homeless shelters. Previous research on nutritional quality of meals at homeless shelters has indicated that additional resources are necessary if meals at homeless shelters are to be improved. A study examining free meal programs in San Francisco found that meals provided adequate protein, but inadequate fiber and micronutrients. (Lyles, Drago-Ferguson, Lopez, & Seligman, 2013). Another study assessed meals served through community programs for homeless individuals and found that meals did not provide adequate amounts of protein and micronutrients for individuals to meet their daily requirements. Authors noted that simply increasing portion sizes within this study would not achieve these nutrient goals. Therefore, changes in food selection, particularly inclusion of more nutrient-dense foods is necessary to provide adequate amounts of these nutrients (Tse & Tarasuk, 2008).

One solution to include more nutrient-dense foods at homeless shelters is the implementation of nutrition standards or policies for that setting. The creation of nutrition standards for homeless shelter kitchens can be controversial. However, when examining the role that meals from homeless shelters provide, it should be recognized that these programs are providing meals to extremely vulnerable individuals. The individuals consuming these meals are unlikely to meet micronutrient and protein needs from other foods or beverages consumed within the course of a day. Therefore, programs that provide one or two meals a day to this vulnerable population should strive to prepare nutritious meals. A common theme throughout the survey was lack of control of the meals prepared by kitchen staff and volunteers. However, if each shelter were to create
nutrition standards that kitchen staff and volunteers are required to follow, nutritional adequacy of meals could be greatly improved.

Guests at homeless shelters have been shown to respond favorably to healthier options at homeless shelters, but preparation of nutritious meals can become difficult at homeless shelters when food donations are the largest source of food (Koh, Bharel, & Henderson, 2015; Rodriguez, Applebaum, Stephenson-Hunter, Tinio, & Shapiro, 2013). Homeless shelters surveyed in this study indicated that an average of 40.00% of food is supplied through donations by individuals and families. An additional 26.22% of food is supplied through donations from stores or restaurants. A focus group examining a charitable meal program for homeless individuals also identified abundance of donations of unhealthy foods as a constraint to providing healthy meals (Scouten, Lucia, Wunderlich, Ulsley, & Afonso, 2016). This may appeal to the need for homeless shelters to ask for donations of specific food items like fresh fruits and vegetables and lean protein sources. In addition, homeless shelters could work with community organizations, grocery stores, or churches to secure weekly donations of fresh fruits and vegetables.

**Research Question 2: What roles, if any, do Registered Dietitian Nutritionists provide at homeless shelters in Illinois?** All nine homeless shelters indicated that a Registered Dietitian Nutritionist is not involved in the meal planning process. Similarly, a Registered Dietitian Nutritionist was not identified as being involved in the meal preparation process at any of the homeless shelters.

A previous study showed that two homeless shelters working with a nutritionist were able to improve quality while on a limited budget (Koh et al., 2015). Registered
Dietitian Nutritionists are trained to provide individualized education and therefore have the potential to positively influence the nutritional quality of meals served at homeless shelters. RDNs could work with the shelters on simple substitutions to improve the nutritional content of meals. For example, whole-grain bread can be substituted for white bread and 1% low-fat milk can be substituted for 2% or whole milk. RDNs could additionally work with homeless shelter staff in developing lists for desired donations and how these donations can be used to prepare nutritious meals.

**Research Question 3: What level of priority is placed on nutrition education for homeless shelter kitchen staff in Illinois?** Three homeless shelters indicated that they were extremely interested in nutrition education for those planning or preparing meals. Two homeless shelters indicated some interest, and one shelter indicated no interest. Homeless shelters were asked to rate the level of priority for seven different nutrition education topics if nutrition education were to be provided to those preparing meals. The topics of food safety and sanitation and safe food access were given the highest levels of priority. Portion control was given the lowest priority among the nutrition education topics (Figure 8).
The lack of access to nutrition education for those preparing meals was a prevalent trend identified in this research study. Educational materials developed specifically for homeless shelters could be beneficial for those preparing meals. In 2009, The Food and Nutrition Information Center (FNIC) of the National Agricultural Library published a *Food and Nutrition Resources Guide for Homeless Shelters, Soup Kitchens, and Food Banks*. The guide was developed in order to provide nutrition education materials for clients as well as staff and volunteers at homeless shelters. The educational topics within the guide include general nutrition, pregnancy, infant and child feeding, nutrition for older adults, managing food resources, food safety, and food security research (National Agriculture Library, 2009). This resource could be very useful for homeless shelters and should be made easily accessible to homeless shelter directors and staff. One homeless shelter that participated in this research study indicated the desire for educational posters to hang in the kitchen. Development of posters on the topics of food
safety and sanitation and the creation of healthy balanced meals could be successful in improving nutritional adequacy of meals that are served.

Another homeless shelter participating in this study indicated the desire for classes about healthy eating. Previous studies have shown nutrition education programs in homeless shelters to be effective (Koh, Bharel, & Henderson, 2015; Rodriguez, Applebaum, Stephenson-Hunter, Tinio, & Shapiro, 2013; Yousey, Leake, Wdowik, & Janken, 2007). However, all researched nutrition education programs in these settings have focused on education for the meal guests and residents. Though education for that population is important, providing nutrition education specifically to the individuals preparing the meals may have a greater impact on the dietary intake of meal guests.

Results from this study indicate limited availability of nutritious foods and limited financial resources. In addition, a lack of nutrition education throughout homeless shelters was prevalent. The following chapter will summarize this study, state conclusions based on results, and present future implications for practice and research.
CHAPTER 5

Summary, Conclusions, and Recommendations

Summary

The purpose of this study was to (a) examine the challenges that homeless shelters face in providing nutritious meals to guests and (b) investigate the need and interest of nutrition education at homeless shelters. This study utilized a non-experimental, cross-sectional survey design with a researcher-developed questionnaire as the data collection tool. Following pilot testing, the questionnaire was sent to homeless shelter administrators throughout the state of Illinois, and 9 homeless shelter directors completed the survey. Descriptive statistics were utilized to answer research questions and identify common barriers to serving nutritious meals within homeless shelters.

The homeless shelters surveyed encompassed a total of 17 counties throughout the state. The average capacity of homeless shelters surveyed was 75.8 individuals and the average number of meals served per day was 2.9 meals. Of the nine homeless shelters surveyed, the most prevalent barriers to nutritious meals were limited financial resources and limited availability of nutritious foods. The factor given the highest priority when planning meals was the foods available for preparation. None of the homeless shelters surveyed utilized a Registered Dietitian in meal planning or preparation processes. Over half of the homeless shelters indicated some interest in nutrition education for those preparing meals. When asked to prioritize nutrition education topics for this group, the topics of food safety and sanitation and safe food access were given the highest priority.
Conclusions

Research Question 1: What are the greatest challenges in serving nutritious meals at homeless shelters in Illinois?

The factors given the highest priority when planning meals were foods available for preparation, inclusion of fresh fruits and vegetables, satisfying meal guests, and serving well balanced meals. The factors given the lowest priority when planning meals were food allergies, food preferences, inclusion of whole grains, and avoidance of processed foods. When homeless shelters were asked to select all barriers that may prevent the preparation of nutritious meals, the most frequently selected answers were limited financial resources and limited availability of nutritious foods. Homeless shelters were additionally asked to list any aspects that make it difficult to consistently provide healthy options to meal guests. Common answers related to lack of consistency in the individuals preparing meals and lack of control of the meals volunteers choose to prepare.

Research Question 2: What roles, if any, do Registered Dietitian Nutritionists provide at homeless shelters in Illinois?

All nine homeless shelters indicated that a Registered Dietitian Nutritionist is not involved in the meal planning process. Similarly, a Registered Dietitian Nutritionist was not identified as being involved in the meal preparation process at any of the homeless shelters.

Research Question 3: What level of priority is placed on nutrition education for homeless shelter kitchen staff in Illinois?

Over half of the homeless shelters indicated some interest of nutrition education for those planning or preparing meals. Homeless shelters rated food safety and sanitation
and safe food access as highest priority and portion control as lowest priority of nutrition education topics.

**Limitations**

Several limitations make it difficult to generalize results to all homeless shelters. This study utilized a very small sample size due to a low response rate. Only 17 of the 102 counties in Illinois are represented in this study, which indicates that the homeless shelters that completed the survey only represent a very small percentage of the homeless shelters throughout the state. Reasons for such a small response are unknown, but may be due to lack of time for homeless shelters to complete the survey or lack of email use among homeless shelter directors. Future research may require contacting homeless shelter directors through a different method of communication.

Another limitation for this study is that the nutritional content of meals at homeless shelters was not measured in this study. Though previous research has shown that homeless shelters generally serve nutritionally inadequate meals, the level of nutritional adequacy at the homeless shelters actually surveyed is unknown.

Lastly, a neutral category for nominal questions on the survey created a level of ambiguity in the survey results. Excluding the neutral category would have likely provided a better representation for the level of priority given to factors when meal planning as well as the priority given to nutrition education topics. The neutral category is not necessary between little priority and some priority.
Implications & Recommendations

The purpose of this study was to (a) examine the challenges that homeless shelters face in providing nutritious meals to guests and (b) investigate the need and interest of nutrition education at homeless shelters. Despite the low response rate and small sample size, implications and recommendations can be noted from the results of this research study. This study indicated that many factors interact when meals are planned at homeless shelters and that nutrition education is absent in the majority of shelters. There is potential for Registered Dietitian Nutritionists to have a positive influence on the nutritional adequacy of meals served at homeless shelters. Though homeless shelters may lack the budget to hire Registered Dietitian Nutritionists, RDNs employed at grocery stores, food banks, or governmental agencies could provide guidance for preparation of healthy meals. In addition, RDNs could develop educational materials to guide homeless shelter volunteers and staff in preparation of healthy meals. Overall, this study points to the need for future research on the lack of access to nutritious food, the lack of access to a Registered Dietitian Nutritionist, and the lack of nutrition education at homeless shelters. In addition, possible interventions to increase the nutritional adequacy of meals served at homeless shelters should be researched. These interventions could include creation of nutrition standards for homeless shelters, request for specific donations, consultation from a Registered Dietitian Nutritionist, creation of educational materials, or nutrition education classes for those preparing meals.
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different food buying preferences compared to residents of food oases? A mixed-


Appendix A

Illinois Homeless Shelters

American Red Cross – 727 N. Church St., Rockford, IL 61103
(217) 963-8471 Lisa.LaSala@redcross.org

American Red Cross Second Chance Shelter – 240 N. 6th St., E. St. Louis, IL 62201
(618) 482-5662 rlpboy25@yahoo.com

Booth House – 525 Alby St., P.O. box 524, Alton, IL 62002
(618) 465-7764 Randy-Tooley@usc.salvationarmy.org

BCMW Community Services, Inc. – 909 E. Rexford, Centralia, IL 62801
(618) 532-7143 tchmielewski.bcmw@gmail.com

Beds Plus – P.O. Box 2035, LaGrange, IL 60525
(708) 354-0858 rounds@beds-plus.org

Catholic Charities of North Chicago – 671 S. Lewis Ave, Waukegan, IL 60085
(847) 782-4000 mmason@catholiccharities.net

Catholic Charities, Diocese of Joliet – 611 E. Cass St., Joliet, IL 60432
(815) 774-4663 gvancura@cc-do j.org

Catholic Urban Programs Holy Angel Shelter – 1410 N. 37th, E. St. Louis, IL 62401
(618) 874-4079 ghasenstab@diobelle.org

CEFS Economic Oppor. Corp. – P.O. Box 928, 1805 S Banker, Effingham, IL 62401
(217) 342-4701 cefs@cefsocc.org

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Central Illinois Economic Development Corp. – 1800 5th St., Lincoln, IL 62656
(217) 732-2159 arumler-gomez@capcil.org

Chicago Community Service Centers amy.henry@cityofchicago.org
Englewood Center – 1140 W 79th St, Chicago, IL 60620
(312) 747-0200
Garfield Center – 10 S Kedzie Ave, Chicago, IL 60612
(312) 746-5400
King Center – 4314 S. Cottage Grove, Chicago, IL 60653
(312) 747-2300
North Area – 845 W. Wilson Ave., Chicago, IL 60640
(312) 744-2580
South Chicago – 8650 S. Commercial Ave., Chicago, IL 60617
(312) 747-0500
Trina Davila – 4300 W. North Ave., Chicago, IL 60639
(312) 744-2014

Community Crisis Center, Inc. – P.O. Box 1390, 37 S Geneva, Elgin, IL 60121
(847) 697-2380 kschellinroot@crisiscenter.org; cclark@crisiscenter.org

Connection Resource Service, Inc. – 3001 Green Bay Rd., N Chicago, IL 60064
(847) 689-4357 jwilliams@padslakecountry.org

Connections for the Homeless: Hilda’s Place – 1458 Chicago Ave, Evanston, IL 60201
(847) 424-0945 bbogg@cifhinc.org

Contact Ministries – 1100 East Adams St., Springfield, IL 62703
(217) 753-3939 executiveassistant@contactministries.com
Crisis Center for South Suburbia – Tinley Park, IL 60477
(708) 429-7233 dholford@crisisctr.org

Danville Rescue Mission – P.O. Box 1485, 834 Bowman, Danville, IL 61832
(217) 446-7223 drm3150@gmail.com

Daybreak Family Support Center – 611 East Cass St., Joliet, IL 60432
(815) 774-4663 csuchor@cc-doj.org

DuPage P.A.D.S. – 705 W. Liberty, Wheaton, IL 60187
(630) 469-5650 sswiston@dupagepads.org

Family Shelter Service – P.O. Box 3404, Glen Ellyn, IL 60138
(630) 469-5650 mail@familyshelterservice.net

F.A.C.C. – 514 S. Chicago Ave, Freeport, IL 61032
(217) 233-0435 hwilliams@haec.us

Good Samaritan House – 1825 Delmar, Granite City, IL 62040
(618) 876-0607 goodsamaritanhouse@cshofgc.org

Good Samaritan Ministries – 701 S. Marion, Carbondale, IL 62901
(618) 457-5794 goodsam@mchsi.com

Grace House – 851 E. Cantrell, P.O. Box 1215, Decatur, IL 62525
(217) 422-8064 dcrm.mission@gmail.com
Groundwork – 1550 Plainfield Rd, Joliet, IL 60435  
(815) 729-1228 ikutlesa@gacsprograms.org

Hesed House, Inc. – 659 S. River St, Aurora, IL 60506  
(630) 897-2156 donate@hesedhouse.org

Helping Hands of Springfield, Inc. – 200 S 11th St., Springfield, IL 62703  
(217) 522-0048 helpinghandsofspringfield@comcast.net

Home of the Sparrow, Inc. – 5342 W Elm St, McHenry, IL 60050  
(815) 271-5444 GSalvadalenak@hosparrow.org

Home Sweet Home Mission, Inc. – 303 E. Oakland Ave, Bloomington, IL 62701  
(309) 828-7356 hshinfo@hshministries.org

Hope Haven – 1145 Rushmoore Dr., DeKalb, IL 60115  
(815) 758-3166 info@hopehavendekalb.com

Hope in Christ Ministries – 1515 S. 14th, Mt. Vernon, IL 62864  
(618) 241-9307 lifeboatalliance@gmail.com

Illinois Valley Public Action to Deliver Shelter – Ottawa, IL 61350  
(815) 433-1292 Ottawapads@gmail.com  
- Peru, IL 61354  
(815) 224-3047 Perupads@gmail.com

Journeys from PADS to HOPE – 1140 E. Northwest Highway, Palatine, IL 60074  
(847) 963-9163 a.schnoor@journeytheroadhome.org
Lazarus House – 214 Walnut St, St. Charles, IL 60174
(630) 587-2144 lize@lazarushouseonline.com

Madonna House – P.O. Box 246, 405 S 12th St., Quincy, IL 62306
(217) 224-7771 jdedert@madonnahouse.net

Mattoon Area P.A.D.S. – 2017 Broadway Ave, Mattoon, IL 61938
(217) 234-7237 mstopka@Mattoonareapads.org

McHenry County P.A.D.S. – 14411 Kishwaukee Valley Rd., Woodstock, IL 60098
(815) 338-5231 lbivona@pioneercenter.org

Morning Star Missions – 350 E Washington St, Joliet, IL 60433
(815) 722-5780 marilyn@morningstarmission.org

Mutual Ground, Inc. – P.O. Box 843, Aurora, IL 60507
(630) 897-0080 jiudd@mutualground.org

Outreach Community Ministries, Inc. – 122 W Liberty Dr., Wheaton, IL 60187
(630) 682-1910 info@outreachcommmin.org

P.A.D.S. Crisis Services – 3001 Green Bay Rd, N Chicago, IL 60064
(847) 689-4357 sstephens@padslakecounty.org

P.A.D.S. of Elgin Inc. – 1730 Berkley St., Elgin, IL 60120
(847) 608-9744 info@padsofelgin.org

Peoria Citizens Committee for Econ. Opportunity Inc. – 711 W. McBean, Peoria, IL 61605
(309) 671-3900 info@pcceo.org
Respond Now – 1439 Emerald Ave, Chicago Heights, IL 60411
(708) 755-4357 info@respondnow.org

The Salvation Army
Central Illinois and Eastern Iowa rich.dreger@usc.salvationarmy.org
Missouri and Southern Illinois salarmystl@usc.salvationarmy.org

Shelter Care Ministries – 412 Church St., Rockford, IL 61103
(815) 964-5520 sparker@shelter-care.org

South Suburban Family Shelter, Inc. – P.O. Box 937, Homewood, IL 60430
(708) 335-3028 info@ssisl.org

Southern Seven Health Dept. - #37 Rustic Campus Dr., Ullin, IL 62992
(618) 392-3556 nholt@s7hd.org

Stopping Woman Abuse Now – P.O. Box 176, Olney, IL 62450
(618) 392-3556 bookwalter@swandyhl.org

The Lighthouse Shelter – P.O. Box 732, Marion, IL 62959
(618) 993-8180 Admin@TheLighthouseShelter.com

Tri-County Opportunities Council – P.O. Box 610, 405 Emmons Ave., Rock Falls, IL 61071
(217) 625-7830 tcoc@tcohelps.org

Two Rivers Regional Council of Public Officials – Franklin Square, Quincy, IL 62301
(217) 224-8171 m14.mclaughlin@trrcopo.org
Wabash Area Development, Inc. – P.O. Box 70, 100 N Latham, Enfield, IL 62835
(618) 963-2387  acozart@wadi-inc.com

West Suburban P.A.D.S. – P.O. Box 797, Oak Park, IL 60303
(708) 338-1724  adminassist@housingforward.org

YWCA Shelter for Battered Women and Their Children – Evanston, IL
(877) 418-1868  YWCA@ywcae-ns.org

Williamson County Family Crisis Center – 514 N 18th St., P.O. Box 2066, Herrin, IL 62948
(618) 988-8020  homeless@mchs.com
Appendix B
Indiana Homeless Shelters
Pilot Study

Interfaith Hospitality – 2605 Gay St., PO Box 13326, Ft. Wayne, IN 46803
(260) 458-9772  terry@ihnfw.org

Emmaus Mission Center – 850 Spencer St., Logansport, IN
(574) 739-0107  info@logan-emmaus.org

Muncie Mission – 520 S. High St., Muncie, IN
(765) 288-9112  fbaldwin@munciemission.org

Grant County Rescue Mission – 423 Gallatin St., Marion, IN
(765) 662-0988  gcrm@sbcglobal.net

Christian Love Help Center – 418 S. 18th St., New Castle, IN 47362
(765) 529-1709  info@clhc.com

Anchor House – 250 S. Vine St., PO Box 765, Seymour, IN 47274
(812) 522-9308  ahshelter@anchorhouseshelter.org

Serenity House – Warsaw, IN
(574) 267-6699  serenityhouseinc@gmail.com

Hope House – 275 Grove Rd., Richmond, IN 47375
(765) 935-3000  hopehouse@richmondhopehouse.org
House of Bread and Peace – 250 E. Chandler, Evansville, IN 47713
(812) 425-6754  hbpeaceexdir@aol.com

Turning Point Shelter – 600 North Williams Street, Angola, IN 46703
(260) 665-9191  director@turningpointsteuben.org
Appendix C

Dear Homeless Shelter Director,

Hello, my name is Kayla Albrecht and I am currently a Graduate Student at Eastern Illinois University pursuing a Master's Degree in Nutrition and Dietetics. I am conducting research to complete my thesis titled Nutritious Meals for the Homeless: Challenges and Opportunities. I am very passionate about the homeless population and I am hoping to explore the nutritional adequacy of this population’s dietary intake. You have been chosen to participate in this research study because of your listing on the U.S. Department of Housing and Urban Development website (www.hud.gov) for homeless shelters in the state of Illinois.

The purpose of this research is to (1) examine the challenges that homeless shelters face in providing nutritious meals to guests and (2) investigate the need and interest of nutrition education at homeless shelters. There are no foreseeable risks included with this research and it is completely confidential. Completing this survey can contribute to knowledge on the current needs at homeless shelters. The survey can be accessed at http://eiu.co_ol_qualtrics.com/jfe/form/SV_0xmqpGmXquRNtxr, and the results are anonymous. The survey will include sections on Resource Availability, Meal Planning, Meal Service, and Nutrition. The survey will take approximately 10-15 minutes.

For any questions or comments, do not hesitate to contact me at kaalbrecht2@eiu.edu. I thank you very much for taking the time to read this and complete the survey. Also, if you are not currently the director of a homeless shelter, feel free to pass this survey on to the appropriate contact.
Appendix D

Nutrition Barrier Survey

The purpose of this research study is to (1) examine the challenges that homeless shelters face in providing nutritious meals to guests and (2) investigate the need and interest of nutrition education at homeless shelters. This survey is to be completed by the homeless shelter director. Please answer all questions as accurately as possible. The survey should take 10-15 minutes to complete.

Please describe your homeless shelter by completing the following questions:

What county does your homeless shelter serve? ____________________________

Maximum capacity of homeless shelter: __________

Frequency of meals served:
   a) 3 meals per day
   b) 2 meals per day
   c) 1 meal per day
   d) 3-5 meals per week
   e) 1-2 meals per week
   f) Other – please specify ____________________________

If a, b, or c is selected:
On an average day, how many guests are served at each of the following meals?
If not applicable, type N/A.
   Breakfast: _______
   Lunch: _______
   Dinner: _______

If d or e is selected:
What time of day are your meals served?
   a) Breakfast
   b) Lunch
   c) Dinner
   d) Other – please specify ____________________________

On an average day, how many guests are served per meal? _______

Are the meals you serve limited to a specific population? Please select all that apply:
   ☐ Men
   ☐ Women
   ☐ Children
   ☐ Families
   ☐ Age: _______
   ☐ Domestically abused
   ☐ Other: _______
   ☐ Open to everyone
Resources

Indicate the percentage of food items acquired by each of these sources:
1. Donations from individuals and/or families (churches and food drives included) ___% 
2. Donations from grocery stores or restaurants ___% 
3. Food banks ___% 
4. Purchased by the shelter ___% 
5. Donations by private and/or public foundations ___% 
6. Other – please specify ____________________________ ___%  

To what extent is the shelter’s food supply adequate to provide nutritious meals to guests?

<table>
<thead>
<tr>
<th>Completely Inadequate</th>
<th>Somewhat Inadequate</th>
<th>Neutral</th>
<th>Somewhat Adequate</th>
<th>Completely Adequate</th>
</tr>
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</table>

Indicate the percentage of monetary support acquired by each of these sources:
1. Donations from individuals and/or families (churches and food drives included) ___% 
2. Donations from grocery stores or restaurants ___% 
3. Food banks ___% 
4. Provided by the shelter ___% 
5. Donations by private and/or public foundations ___% 
6. Other – please specify ____________________________ ___% 

To what extent is the shelter’s monetary support adequate to provide nutritious meals to guests?

<table>
<thead>
<tr>
<th>Completely Inadequate</th>
<th>Somewhat Inadequate</th>
<th>Neutral</th>
<th>Somewhat Adequate</th>
<th>Completely Adequate</th>
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</table>
Indicate the percentage of nonfood items acquired by each of these sources:
1. Donations from individuals and/or families (churches and food drives included) ____%
2. Donations from grocery stores or restaurants ____%
3. Food banks ____%
4. Purchased by the shelter ____%
5. Donations by private and/or public foundations ____%
6. Other – please specify ____________________________ ____

To what extent are the shelter’s nonfood items adequate to meet shelter needs?

<table>
<thead>
<tr>
<th>Completely Inadequate</th>
<th>Somewhat Inadequate</th>
<th>Neutral</th>
<th>Somewhat Adequate</th>
<th>Completely Adequate</th>
</tr>
</thead>
</table>

Please select all barriers that may prevent your shelter from preparing nutritious meals:

- [ ] Limited availability of nutritious foods
- [ ] Inadequate cooking facilities
- [ ] Limited nutrition knowledge of individuals planning meals
- [ ] Limited nutrition knowledge of individuals preparing meals
- [ ] Lack of access to a Registered Dietitian Nutritionist
- [ ] Limited financial resources
- [ ] Desire to serve comfort foods to guests
- [ ] Other ____________________
Meal planning

How far in advance are meals planned?
- a) 1-2 days
- b) 3-5 days
- c) One week
- d) More than one week
- e) Meals are not planned in advance

Does a Registered Dietitian Nutritionist play an active role in menu planning?
- a) Yes
- b) No
- c) Unsure

Does a Registered Dietitian Nutritionist play an active role in meal preparation?
- a) Yes
- b) No
- c) Unsure

Rate the level of priority for each of the following considerations for when meals are planned:

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Very Low Priority</th>
<th>Little Priority</th>
<th>Neutral</th>
<th>Some Priority</th>
<th>Very High Priority</th>
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</thead>
<tbody>
<tr>
<td>Price of food</td>
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<tr>
<td>Ease of preparation</td>
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<tr>
<td>Portion sizes</td>
<td></td>
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<tr>
<td>Inclusion of fresh fruits &amp; vegetables</td>
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<tr>
<td>Inclusion of whole grains</td>
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<tr>
<td>Avoidance of processed food</td>
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<tr>
<td>Serving well balanced meals (i.e. variety of foods served from several of the food groups)</td>
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<tr>
<td>Satisfying meal guests</td>
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<tr>
<td>Foods available for preparation</td>
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<tr>
<td>Food allergies</td>
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<tr>
<td>Food preferences</td>
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<tr>
<td>Waste of Food</td>
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</table>
Meal Service

How are meals served to guests?
   a) Buffet style with staff serving portions
   b) Buffet style with guests serving themselves portions
   c) Pre-portioned plates
   d) Other – Please specify ________________________________

Are portion sizes controlled?
   a) Yes
   b) No

   If yes is selected:
   How are portion sizes of meal components measured?
   a) Estimated by volunteers/cooks
   b) Measured with specific serving utensils
   c) Measured based on pre-determined portion sizes
   d) Other – Please specify ________________________________

How many helpings are guests allowed per meal? ________

Which food group has the greatest estimated waste by meal guests (i.e. thrown away without eating)?
   a) Fruit
   b) Vegetables
   c) Dairy
   d) Protein
   e) Grains
Nutrition

How interested would you be in nutrition education for those planning or preparing meals?

a) Extremely interested
b) Somewhat interested
c) Not interested
d) Nutrition education is already provided or available

If nutrition education were provided to volunteers, indicate the priority level you would give for each of the following topics:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Very Low Priority</th>
<th>Little Priority</th>
<th>Neutral</th>
<th>Some Priority</th>
<th>Very High Priority</th>
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</thead>
<tbody>
<tr>
<td>Food safety &amp; sanitation</td>
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<tr>
<td>Providing well balanced meals</td>
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<tr>
<td>Portion control</td>
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<tr>
<td>Inclusion of fresh fruits &amp; vegetables</td>
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<tr>
<td>Inclusion of whole grains</td>
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<tr>
<td>Healthy cooking techniques</td>
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<tr>
<td>Safe food access</td>
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</table>
Comments

Please list any aspects that make it difficult to consistently provide healthy options to meal guests:

________________________________________________________________________

________________________________________________________________________

Please list any resources or materials that would be beneficial in improving the nutritional quality of meals served to guests:

________________________________________________________________________

________________________________________________________________________