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THE FOOD RESOURCE MANAGEMENT STRATEGIES EMPLOYED BY
LOW-INCOME ADULTS IN NEW JERSEY

by

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ABSTRACT OF THE THESIS

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Food insecurity is a major public health issue by which low-income individuals are disproportionately affected. Food and nutrition assistance programs, such as the Supplemental Nutrition Assistance Program (SNAP), were created in an attempt to lower food insecurity prevalence among those with limited incomes. However, many low-income individuals that receive nutrition assistance remain food insecure. Employing food resource management (FRM) skills may help low-income people stretch their food budgets and ultimately increase their food security. But, if nutrition educators are to provide impactful education regarding FRM, they must be familiar with the spectrum of practices that can effectively be used by their target audience. To date, no research has

been conducted to catalogue the FRM strategies employed by low-income people, nor to determine which strategies contribute to monetary savings and increased food security. This investigation was designed to learn what FRM behaviors low-income individuals employ, as a preliminary step towards determining optimal FRM practices for this audience. Face to face interviews (n=201) were conducted at agencies that serve this target audience throughout New Jersey. The results from this study demonstrated that there is a large gap between the FRM behaviors taught in nutrition education for low-income people to those that are actually employed, most notably among individuals with children who use multiple strategies to reduce their children's influences on their food purchases. Use of a combination of FRM nutrition education and nutrition assistance may decrease the high rates of food insecurity among low-income people. Further research should be conducted to examine the relative contribution of FRM behaviors in helping low-income people save money and increase their food security. Research of that type may be rigorous and timely, hence, in the interim nutrition educators should consider teaching the FRM behaviors identified in this work that they feel will be beneficial to their target population.

Acknowledgements and Dedication

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CHAPTER 1: INTRODUCTION

With approximately 15% of the U.S. population experiencing food insecurity, clearly food insecurity is a major public health problem.¹ Low-income individuals disproportionately experience food insecurity; some researchers believe that practicing food resource management (FRM) skills can help them extend their food dollars, and ultimately increase their food security.²⁻⁵ This introduction provides a brief overview of food insecurity and FRM, followed by the rationale and research aims of this study.

Food insecurity refers to the limited or uncertain availability of foods that are nutritious and safe to eat, or the limited or uncertain ability to obtain safe to eat foods in socially acceptable ways.¹ Approximately 17.6 million U.S. households are food insecure and have limited access to foods.¹ Low-income households are disproportionately affected by food insecurity, where the prevalence for households with incomes at or below 130% and 185% of the poverty level are 38.2% and 34.3%, respectively.¹

Nutrition assistance and nutrition education programs, such as the Supplemental Nutrition Assistance Program (SNAP (formerly known as the Food Stamp Program)) and the Supplemental Nutrition Assistance Program-Education (SNAP-Ed) were created to assist with decreasing the prevalence of food insecurity. The Food Research and Action Center reported that participation in the Supplemental Nutrition Assistance Program (SNAP) substantially contributes to the improvement of low-income individuals'

economic well-being and health by lifting them up out of poverty and providing access to nutritious foods.⁶ However, as will be further discussed in Chapter 2, food insecurity rates remain high among those who participate in SNAP and other nutrition assistance programs.¹ Evidently, solely participating in nutrition assistance programs does not ameliorate food insecurity.¹

According to Hersey et al., while people with limited incomes confront many constraints that negatively impact their food resources and access to foods, the use of food resource management (FRM) skills may be particularly important in overcoming those constraints.⁵ FRM is the efficient handling of all available food resources. It not only includes smart purchasing techniques, such as comparing prices and using coupons, but also includes techniques such as budgeting, planning meals, and storing foods in a manner that prevents food-waste and food spoilage.^{2,5} Hersey et al.'s belief that improved FRM skills contribute to low-income individual's well-being is echoed by the stated aims for nutrition education in programs such as SNAP-Ed,⁷ and Cooperative Extension's Expanded Food and Nutrition Education Program.⁸ Additionally, a study conducted by Olson et al. confirmed Hersey et al.'s notion where families that employed more FRM skills were shown to experience greater food security in comparison to families that didn't utilize FRM practices.⁹

A relatively small number of FRM practices has been taught and assessed in nutrition education programs.^{2-4,10-13} Further, no work has been done to catalogue the FRM practices used by low-income individuals, or to determine what practices yield substantial

savings or result in decreased food insecurity. This descriptive research was a first step towards meeting these research needs, in that its aim was to catalogue the FRM behaviors used by limited-resource individuals in New Jersey, and to compare them to practices identified in the literature that have been taught and evaluated in nutrition education for limited-resource audiences. The results from this investigation will aid in the future development of FRM education, as well as provide a foundation for quantitatively assessing the FRM practices low-income individuals employ. It is hypothesized that a greater number of FRM practices will be employed in comparison to those that are taught and assessed in nutrition education for low-income individuals.

Rutgers Graduate School-New Brunswick accepts thesis formats with data chapters written in manuscript form ready for submission to peer reviewed journals. In this case, the introduction and concluding chapter (Chapters 1-3 and 5) of this thesis are written and referenced separately from the stand-alone data chapter, Chapter 4. The reference list for Chapter 4 is formatted according to the guidelines of the intended journal.

CHAPTER 2: LITERATURE REVIEW

This chapter summarizes an examination of the literature on food purchasing behaviors of low-income households, food security in low-income households, and the barriers that low-income individuals face when trying to shop for food. It also presents information on the coping strategies individuals have used to combat the barriers they face when shopping for food, and interventions and educational programs geared towards helping low-income individuals that include food resource management (FRM) in their curricula.

Food Security and Food Insecurity in Low-Income Households

According to the Economic Research Service, which is the branch of the United States Department of Agriculture that is responsible for the collection and dissemination of national food security data, food security for a household is defined as:

“...access by all members at all times to enough food for an active, healthy life. Food security includes at a minimum:

1. The ready availability of nutritionally adequate and safe foods.
2. Assured ability to acquire acceptable foods in socially acceptable ways (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).”^{1,14}

Food security has been defined at two levels: high food security and marginal food security.¹⁴ High food security is when members in a household have no problems, or

anxiety about being able to access adequate food all the time.¹⁵ Marginal food security refers to households that had problems at times or were anxious about accessing enough food, but the quality, variety, and quantity of their food intake did not decrease significantly.¹⁵ In 2012, 85.5% of U.S. households were food secure.¹⁴

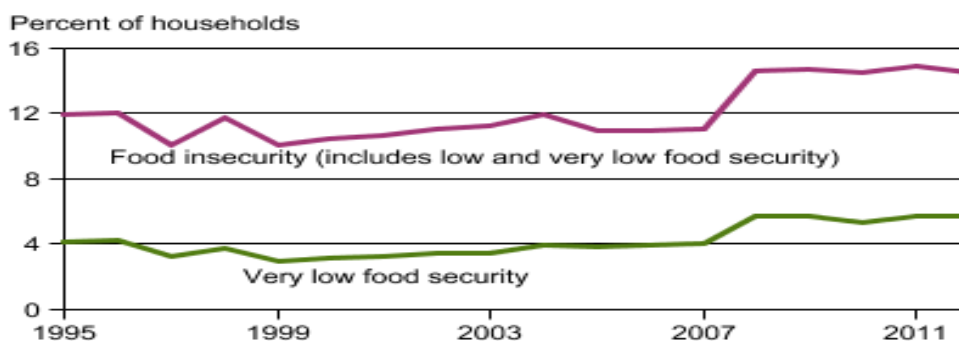
Conversely, as mentioned in Chapter 1, food insecurity refers to the:

“limited or uncertain availability of nutritionally adequate and safe foods, or the limited or uncertain ability to acquire acceptable foods in socially acceptable ways”.¹⁵

The most recent food insecurity statistics at the time this thesis was written, illustrated that 14.5% of U.S. households were food insecure.¹

Food insecurity has also been defined in two levels: low food security, formerly known as food insecurity without hunger, and very low food security.¹⁵ Low food security refers to households where dietary quality and food variety are affected but there is little reduction in food intake.¹ Very low food security is the more severe of the two, and includes households in which the food intake of one or more household members is reduced and eating patterns are altered due to the lack of resources for food.¹⁵ Of the 14.9% food insecure households, 5.7% experience very low food security.¹ As can be seen in Figure 2.1, over the years food insecurity and very low food security have continued to rise.

Figure 2.1 Trends in the Prevalence of Food Security Status in U.S. Households, 1995-2012¹



Derived from: Household Food Security in the United States in 2012¹

How Levels of Food Security are Determined/Measured

Food security and food insecurity are determined by individuals' responses to a series of 18 questions that are included on the Current Population Survey.¹ The Current Population survey is distributed annually by the U.S. Census Bureau. Its results are drawn from 53,000 U.S. households that are representative of the civilian, noninstitutionalized population at both state and national levels.¹

Oversampling is done with particular sub-samples, including low-income households.¹⁶

Each question asks whether a certain behavior occurred in the past year and whether lack of money or resources to obtain food is the cause when hunger or potential food insecurity is noted; thereby excluding voluntary fasting, dieting, or weight loss as possible causes for performance of the behaviors. The question series includes:

1. Three questions about food conditions of the household, e.g., "We worried whether our food would run out before we got money to buy more? Yes or no.";

2. Seven questions about food conditions of adults in the household; and of children if they are present in the household; e.g., “In the last 12 month did you or other adults in the household ever cut the size of your meals or skip meals because there wasn’t enough money for food? Yes or no.” and;
3. Eight additional questions about the child’s/children’s food conditions: e.g., “In the last 12 months, did you ever cut the size of any of the children’s meals because there wasn’t enough money for food? Yes or no.” (See Appendix I for the entire list of questions.)

Households are categorized as food secure if they report engaging in less than three food insecure conditions. Households without children are classified as having very low food security if they report engaging in six or more food insecure conditions. Households with children are deemed very low food insecure if they report the use of at least eight food-insecure conditions by adults or children who live in the household.¹

Population Sub-Groups with Food Insecurity Rates Higher Than The National Average

In 2012 the Economic Research Service reported that for a number of sub-populations food insecurity prevalence was above the national level (Table 2.1).¹ In interpreting Table 2.1 it should be noted that the “poverty level” is determined by a set of poverty income thresholds and/or poverty guidelines that differ by family size and composition.^{17,18} The poverty thresholds and poverty guidelines are updated every year by the Census Bureau and the Department of Health and Human Services, respectively.¹⁷ If a family’s total income is lower than the threshold, every member of that family is

considered to be impoverished.¹⁸ A family of four living in the 48 contiguous states (all states excluding Hawaii and Alaska) and Washington D.C. is considered to be living below the poverty level if the household income is less than \$23,550.¹⁹

Table 2.1: Population Sub-groups with Food Insecurity Rates Above the National Average¹			
Category	Food Insecurity Rate	Low Food Security	Very Low- Food Insecurity Rate
National Rates	14.5%	8.8%	5.7%
Households with Children			
Households with children	20.0%	14.0%	6.0%
Households with children < 6 years old	20.5%	15.1%	N/A
Households with children headed a by single women	35.4%	22.7%	12.7%
Households with children headed a by single men	23.6%	17.3%	6.3%
With No Children < 18 Years Old			
Men living alone	14.7%	N/A	7.3%
Women living alone	15.3%	N/A	7.9%
Race/Ethnicity			
Black, non-Hispanic	24.6%	14.3%	10.4%
Hispanic	23.3%	15.8%	7.4%
Household Income-to-Poverty Ratio			
Under 1.00	40.9%	22.7%	18.2%
Under 1.30	38.2%	21.5%	16.7%
Under 1.85	34.3%	19.8%	14.5%
Area of Residence			
In principal city	16.9%	10.2%	6.7%
Outside metropolitan area	15.5%	9.3%	6.2%
Census Geographic Region²⁰			
South [*]	16.0%	10.2%	5.8%
West ^{**}	14.4%	8.5%	5.9%
[*] South: Delaware, District of Columbia, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Alabama, Kentucky, Mississippi, Tennessee, Arkansas, Louisiana, Oklahoma, or Texas ^{**} West: Arizona, Colorado, Idaho, New Mexico, Montana, Utah, Nevada, Wyoming, Alaska, California, Hawaii, Oregon, and Washington			

Factors that Contribute to Food-Insecurity in Low-income Households

The primary factors that contribute to food-insecurity in low-income households are:

- Income Level

Food insecurity status has a very strong relationship with income level.^{1,9,20} The 2012 Household Food Security report illustrated that people who had incomes below the official poverty line were more likely to live in a household that was food insecure compared to those who had incomes 185% above the poverty line.²¹ The rates of food insecurity in groups below the official poverty level and 185% above the poverty line were approximately 41% and 7%, respectively.¹

- Chronic Health Conditions

Chronic conditions, such as diabetes, asthma, hypertension, depression, and obesity, negatively impact food security, particularly among low-income individuals.^{9,22-25}

Chronic illnesses are associated with increased medical costs and many people with limited incomes do not have health insurance.^{9,24,25} The increased medical costs may cut into the household food budget, which as a result, can promote food-insecurity in low-income households.^{24,25} In a study conducted with 316 rural, low-income households, households in which the mother had more than one health condition were significantly ($p < 0.05$) more likely to be food insecure compared to those who lived in households where the mother had fewer health conditions.⁹ In the same study, having trouble paying medical expenses and experiencing symptoms of depression were significant predictors ($p < 0.05$) of household food insecurity.⁹ Depression was also illustrated as a contributor to food insecurity in a study published in *Pediatrics*.²⁶ The study, which was conducted with 2,886 mothers, illustrated that the level of household food insecurity increased with Major Depressive Episode and Generalized Anxiety Disorder.²⁶

- Home Ownership

Not owning a home has been shown to be a significant predictor ($p < 0.05$) of food insecurity among low-income households.⁹ Researchers posited that fewer finances were reserved for the food budget because they were allocated for rent, which as a result, contributed to household food insecurity.⁹

- Education Level

In a study conducted with low-income families, minorities who had less than a high school education were more likely to be food insecure compared to those who had beyond a high school education.⁹ Similarly, in a study conducted with low-income elderly adults, having less than a high school education was also associated with increased food insecurity.²⁷

- Food and Financial Management Skills

Utilizing food and financial management skills such as: managing bills, stretching groceries until the end of the month, preparing well balanced meals, and making a family budget were associated with food security in an Olson et al. investigation.⁹ Out of a study sample of 316 households, 72% were classified as employing the highest food and financial skill level, and 10% was classified as employing the lowest food and financial skill level.⁹ The rates of food insecurity were 42% versus 83% in the different groups respectively, illustrating that food and financial management were associated with household food security status.⁹

Other factors that have been cited as contributing to increased risk for food insecurity among low-income households are the limited availability of supermarkets/foods,^{9,28,29}

higher costs of foods in low-income neighborhoods,^{9,28-31} lack of transportation,^{9,28,31} and household size.⁹

Food Insecurity Among People Who Participate In Food & Nutrition Assistance Programs

Of the current 15 domestic food and nutrition assistance programs the three largest federal nutrition assistance programs are: The Special Supplemental Nutrition Program for Women Infants and Children (WIC), The National School Lunch Program (NSLP), and the Supplemental Nutrition Assistance Program (SNAP, formerly known as the Food Stamp Program).¹⁵ These programs provide access to food, nutrition education, and a healthful diet to limited-resource adults and children.¹⁵

Households that turn to food and nutrition assistance programs usually do so because they are having difficulties meeting their households' food needs,^{1,15,21,32,33} and as households continue to face tough economic times, participation in these programs have continued to rise.^{29,30,33,34} Figures 2.2-2.4 illustrate the national program participation statistics for SNAP, WIC, and NSLP participation from 2000-2012. As is revealed on the graphs, participation trends have fluctuated over the years.^{1,35-37}

Figure 2.2: Supplemental Nutrition Assistance Program (SNAP) Participation, 2000-2012³⁷

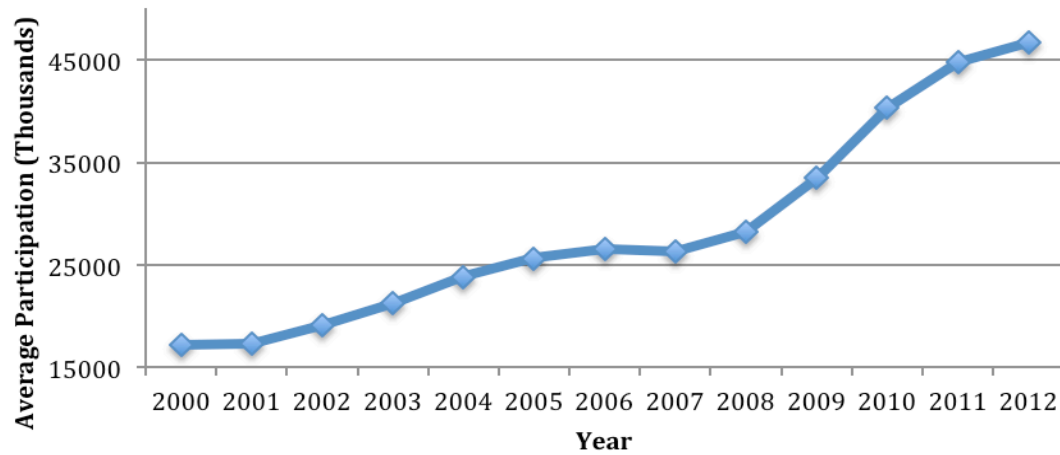


Figure 2.3: The Special Supplemental Nutrition Assistance Program for Women, Infants, and Children (WIC) Participation, 2000-2012³⁵

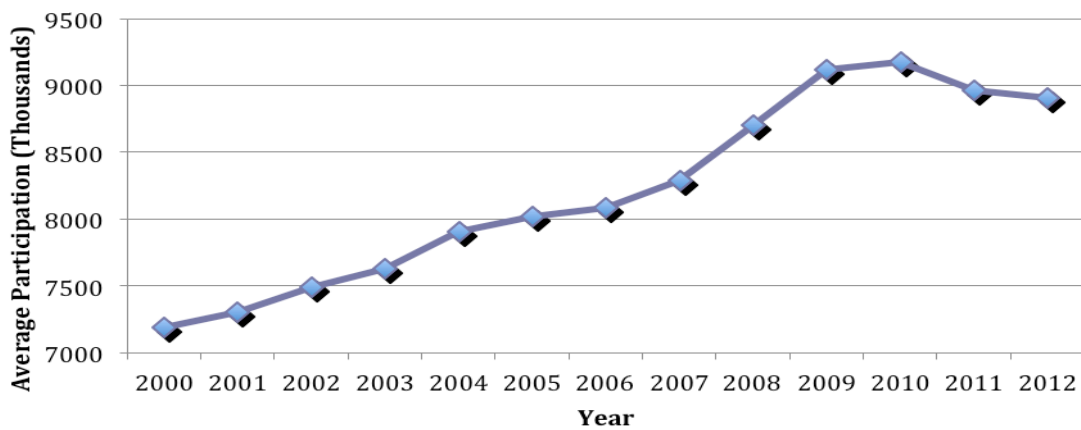
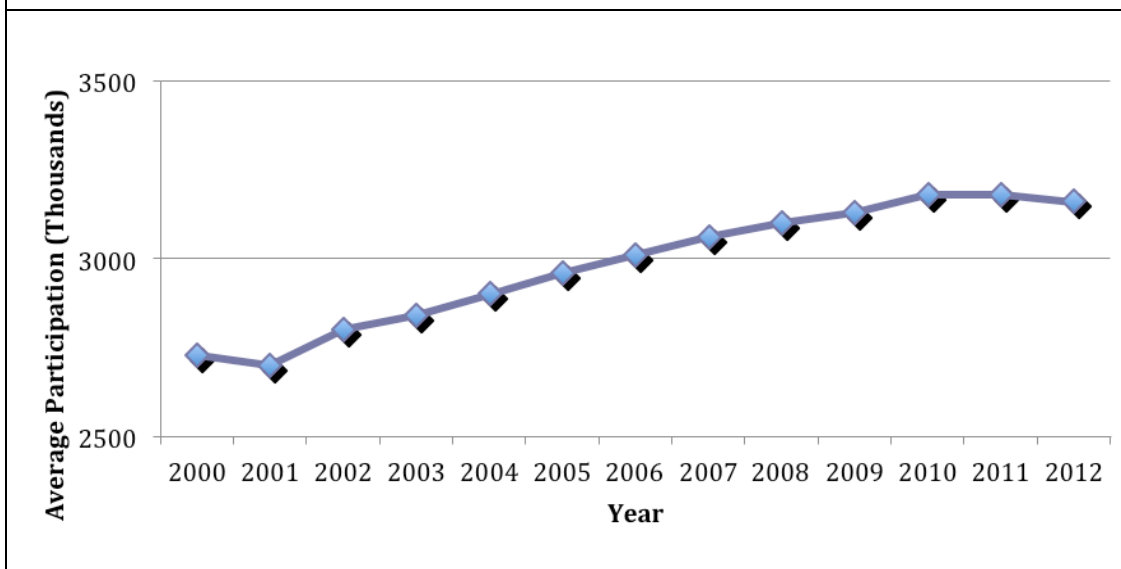


Figure 2.4: National School Lunch Program (NSLP) Participation, 2000-2012³⁶

In terms of food assistance program participants' food security levels, one would expect that their food security would be higher compared to other low-income groups,¹ however, the relationship between food security and the use of food and nutrition assistance program is complex.^{1,38} The relationship is challenging to analyze because many confounding factors prevent researchers from making inferences about the impact of the food and nutrition assistance programs on food security status. The main confounding factor is that households that are food insecure are more likely to qualify for and participate in food assistance programs, which prohibits ethical random experiments to investigate the program's impact from being conducted.^{38,39}

Although it is difficult to experimentally examine the impact of food assistance programs on food security status through the examination of food security rates among those who do and do not participate in the programs, it can be seen that increased rates of food security exist among those who participate in WIC (Table 2.2). Thus, one might infer

that improved food security may be associated with food and nutrition assistance program (i.e., SNAP, NSLP, and WIC) participation.

Table 2.2: Food Security Status by Participation in Select Food and Nutrition Assistance Programs¹				
Program	Food Secure	Food Insecure	Low Food Security	Very Low Food Security
NSLP	52.7%	47.3%	30.0%	17.3%
SNAP	50.1%	49.9%	26.8%	23.1%
WIC	60.5%	39.5%	28.1%	11.4%
NSLP - National School Lunch Program SNAP - The Supplemental Nutrition Assistance Program WIC - The Special Supplemental Nutrition Assistance Program for Women, Infants, and Children				

Emergency Food Assistance Systems and Food Insecurity

Besides participation in federal food and nutrition assistance programs, households with limited resources can also turn to various emergency food assistance systems.^{15,40,41} Food banks usually distribute nonperishable foods to emergency kitchens and food pantries, who then pass them along to those in need; they also provide goods to other charitable organizations and food service organizations such as day cares and hospitals.⁴² Most of the food banks in the U.S. are operated by private non-profit organizations such as America's Second Harvest, and approximately 9% are run by faith-based organizations.^{42,43} Food rescue organizations are similar to food banks because they also disperse foods to emergency kitchen and food pantries; however, they focus more on the distribution of perishable foods.³⁴

Community food assistance programs include food pantries and soup kitchens. Food pantries and emergency kitchens are the main direct suppliers of foods during

emergencies. Approximately 65% of soup kitchens and 67% of food pantries are operated by faith-based organizations.³⁴ Food pantries directly aid low-income individuals and households by providing them with a variety of food and household items (i.e. toiletries, baby pampers etc.). Some of the food items distributed are ready-to-eat, but most items usually require at-home preparation.⁴² Emergency/soup kitchens are emergency food assistance systems where patrons can get hot meals. People who visit soup kitchens tend to be those who are the poorest of the low-income population in the U.S.³⁴

The most recent reports on food pantry use available at the writing of this thesis stated that 4.8% (approximately 5.6 million) of all U.S. households received food from food pantries.⁴¹ The households included 10.5 million adults and 5.7 million children.⁴¹ The use of emergency/soup kitchens was much lower where only 0.5% or 625,000 of U.S. households had members that received meals at an emergency/soup kitchen.¹⁵

Reports also indicated that the use of food pantries and emergency kitchens were strongly associated with food insecurity.⁴¹ Food insecure households were 15 times more likely than food secure households to receive food from a food pantry, and 19 times more likely than food secure households to have eaten a meal at an emergency/soup kitchen.⁴¹ Table 2.3 illustrates the most recent statistics at the time this thesis was written of the percentage of households that received emergency food from food pantries and emergency soup kitchens, and their food security status.⁴¹

Table 2.3: Percentage of Households by Food Security Status and Receiving Food From Food Pantries and Emergency Kitchens⁴¹				
Category	Food secure	Food Insecure		
		All	With Low Food Security	With Very Low Food Security
Received food from food pantry in last 12 months*	28.5%	71.5%	33.0%	38.5%
Did not receive food from food pantry in last 12 months*	71.4%	28.6%	18.3%	10.3%
Ate meals at emergency kitchen in last 12 months*	23.1%	76.9%	22.2%	54.7%
Did not eat meat at emergency kitchen in last 12 months*	65.9%	34.1%	20.4%	13.7%
* Income less than 185 percent of poverty line				

Overall, about 75% of people who received emergency food from emergency kitchens or food pantries were food insecure.⁴¹ Households that received emergency food from either an emergency kitchen or food pantry in the last 12 months were less food secure compared to households that did not.⁴¹ Additionally, very low food security was most prevalent in households that ate a meal at a soup kitchen within the last 12 months.⁴¹

Barriers and Challenges Low-income Individuals Face When Food Shopping and When Trying to Improve Their Food Security

Utilizing “smart” shopping practices is an important aspect of FRM for people with limited incomes, but there are many barriers that prevent them from purchasing foods and

practicing “smart” shopping behaviors.^{5,28,31,32,44} Issues such as living in food deserts and lack of transportation decrease their ability to food shop efficiently.

Food Deserts

Approximately 11.5 million people, or 4.1% of the U.S. population, live in low-income areas that are more than a mile from a supermarket or large grocery store.²⁸ This notion becomes more alarming with findings suggesting that about 34% of people living in households that participate in SNAP live four or more miles away from the store where they do most of their shopping.²⁸ The lack of nearby stores in low-income areas brings up the issue of Food Deserts. According to Title VI, Sec. 7527 of the 2008 Farm Bill, Food Deserts are defined as areas in the United States with limited access to foods that are needed for a healthy diet.^{31,45,46} Food deserts are found predominantly in lower income neighborhoods which usually have a lot of fast food restaurants.^{31,45,46} The widespread nature of food deserts further promotes barriers for low-income individuals being able to have access to food and utilize FRM skills. When a group of SNAP participants were surveyed regarding why they do not shop in their neighborhood for foods, more than 50% stated that there was no food stores in proximity of their dwelling.²⁸

Lack of Transportation

Reports from the United States Department of Agriculture’s Economic Research Service state that 3.6% or 0.9 million households in low-income areas do not have access to a vehicle and are located more than a mile away from a supermarket.³¹ Furthermore, 6.4%

or 1.6 million households located 0.5-1.0 mile away from the nearest supermarket do not have access to a vehicle.³¹ Transportation, both in terms of getting to and from stores, and to carry grocery bags, is a barrier to food shopping among the low-income population.^{5,28,31,44,47}

One mother in a focus group study recalled:

“There are certain things I buy at certain food stores. I can buy certain foods at Store A, but there are certain foods I can’t get at Store A, I have to go somewhere for them, and now you gotta talk about transportation to this store, you got to carry 3-4 bags, and I’m by myself.”⁴⁴

Having insufficient means of transportation to travel to the store forces some low-income individuals to depend on smaller, higher priced grocery or convenience stores that carry fewer options and lesser quality foods. These stores usually have higher prices than those found in suburban supermarkets.³⁰ Data from a case study done in Austin, Texas suggested that, low-income individuals who have their own transportation are more likely to make fewer shopping trips, travel to different stores to get the best deals, travel to stores outside their neighborhoods to purchase quality foods, and purchase foods in bulk.⁴⁷

In a 1996 National Food Stamp Program Survey, 44.5% of low-income households that received Food Stamps reported that they used an automobile to get to the store, while another 31% reported that they usually got rides from friends or relatives.²⁸ Low-income individuals interviewed have expressed concerns regarding escalating gas prices and coinciding hikes in food prices.⁴⁴ Table 2.4 depicts that many low-income households do not have access to vehicles, which suggests that they must rely on other means of transportation such as walking.^{28,31} However, between 2.3% and 5.5% of all low-income

U.S. households may be outside of a walking distance to a supermarket and lack access to a vehicle, which may cause them to have to rely on more costly methods of transportation, such as buses, or taxis, to get to and from the grocery store.^{28,31} Twenty percent of SNAP participants reported that they had out-of-pocket costs for transportation to get to the store and 17% of those individuals had out-of-pocket costs of \$4.00 per shopping trip.²⁸

Table 2.4: Low-Income Households' Vehicle Access and Proximity to Supermarkets³¹					
Geographic area	Total households ¹	Households without access to a vehicle			
		Between 1/2 to 1 mile from a supermarket		More than 1 mile from a supermarket	
		Number	Percent	Number	Percent
	<i>Millions</i>	<i>Millions</i>		<i>Millions</i>	
Total U.S.	104.9	3.4	3.2	2.4	2.3
Low-income areas	25.1	1.6	6.4	0.9	3.8
Urban areas	69.9	2.9	4.1	1.1	1.5
Low-income areas	15.6	1.3	8.3	0.4	2.5
Urban clusters	9.7	0.4	4.1	0.2	2.5
Low-income areas	3.6	0.2	5.6	0.1	3.3
Rural areas	25.3	0.2	0.8	1.1	4.4
Low-income areas	5.9	0.1	1.7	0.4	7.4

¹ This column shows the total number of households regardless of vehicle access
Derived from: Access to Affordable and Nutrition Foods: Measuring and Understanding Food Deserts and Their Consequences.³¹

Economic Considerations

As previously discussed, having lower incomes results in having a lower food security level and a lesser ability to purchase foods. Multiple other finance-related factors, such as fluctuations in when benefits are disbursed and the effect of additional income on benefits, are food shopping barriers.^{28,32,48-51}

The timing of grocery shopping for low-income individuals is often dictated by when they receive their employment wages, SNAP, and/or other benefits.^{44,52-55} SNAP benefits

are usually distributed between the 1st and 23rd day of the month,⁵⁶ and employment wages are usually distributed weekly, biweekly, half-monthly, or monthly. Usually at the beginning of the month, when resources are more available, low-income individuals are able to buy a greater amount of food.^{32,53} Towards the end of the month, because of lack of resources, their diets are often restricted and they rely more on inexpensive carbohydrate-rich, canned, and packaged foods, or their households' existing food supply.^{32,44,52-55} In regards to fluctuating household food availability, one focus group participant stated:

“The difference is more right when we’ve got paid versus right before the next paycheck when there is nothing left in your budget. I think I probably make healthier choice(s) once we got paid because it’s like, oh we can get fruit juice, vegetables, stock-up on things. At the end of the month . . . well I have a dollar so I’m going to waste it at the dollar store on junk. You think you can’t afford it . . . you just go more to your food storage, which . . . is more canned and packaged.”³²

In addition to the difficulties low-income individuals experience at the end of the month, not being eligible for SNAP benefits and other food assistance programs impacts their ability to feed their families, as well.³² One mother’s SNAP benefits were cut off because she received \$30 over the cut-off limit for SNAP inclusion.³² Others complained that certain food assistance programs, such as The Special Supplemental Nutrition Assistance Program for Women Infants and Children (WIC) did not give sufficient benefits for their families.³²

Health Issues

Health issues such as diabetes and celiac disease, can negatively impact food cost savings.³² Low-income individuals are disproportionately affected by chronic illnesses,

such as diabetes, and some have been found to express opinions that their special diets are expensive.^{22,24}

A woman in one focus group study mentioned:

“It’s really hard to eat packaged food and stuff. I’ve actually let my diabetes go because of having to eat like on food stamps and, I mean, it’s really expensive to eat like a diabetic should ‘cause we have to have a lot of protein. We have to have less carbs, lots of vegetables, and then vegetables are expensive and sugar-free. My sugar that I am allowed to have is 8 bucks for a little thing, and that’s ridiculous, so I don’t eat like a diabetic because my sugar’s skyrocketed because I can’t afford to eat like I should.”³²

This study, along with others, shows that some low-income individuals forgo purchasing foods that are beneficial for their health because they are too costly.^{32,57-59} Similarly, studies have shown that low-income individuals sacrifice purchasing foods in order to afford high-cost medications necessary for their health.^{58,60,61} Studies have also illustrated that low-income individuals purchased lesser amounts than what is prescribed, sought free samples, or ingested less than the prescribed dosage in order to lessen the burden of drug costs.⁵⁷⁻⁵⁹

Food Preferences

Although this is not a barrier specific to low-income people, individual preferences impact low-income people’s ability to shop “smart”.³² Regardless of cost, if there is an inclination to eat certain foods, they will be purchased.^{32,44,48} A woman in a focus group study stated:

“The hard thing for us is I don’t buy anything with trans fat, I don’t buy anything with high-fructose corn syrup, no cereal, no granola bars, nothing that has those in it, so that leaves us with choices that are very expensive. It would be cheaper for us to buy microwave meals, but I’m not going to.”³²

Factors Associated with Having Children

The effect of children on making "smart" purchases is also not a barrier specific to low-income households, but it is certainly one that impacts them. As mentioned earlier, taking children along on the food shopping trip can promote more grocery expenses, in that they may sneak items into the cart without their parents' knowledge.⁴⁴ They may even coerce their parents into buying foods that they originally had not planned on buying.⁴⁴ Additional factors associated with having children such as lack of childcare, children that are picky eaters, or conversely, children that have large appetites have been noted to negatively impact food cost savings.^{5,32,44,55}

One mother in a focus group study stated:

"I have a child that is like a human garbage disposal . . . she'll eat any and everything."⁴⁴

Summary

Low-income individuals face many barriers when trying to shop for food, making the utilization of FRM strategies difficult. Economic constraints are a major barrier that low-income individuals face when trying to shop for food because they do not have enough money allocated in their budgets for food.^{28,32,44,48-51} Some of the barriers are so severe that people with limited incomes have to choose between buying foods or buying medications for their illness.^{32,57-59} Other barriers such as the lack of supermarkets and the lack of transportation, force low-income individuals to have to settle for the foods in their neighborhood that are usually higher priced and lack quality.^{28,30-32,44,51} Some of the

barriers such as food preferences are not specific to people with limited incomes, however they are still impactful.

Coping Strategies Used by Low-Income Individuals When Faced with Food-Purchasing Barriers

Literature has shown that low-income individuals employ various strategies to deal with the barriers and challenges they face when trying to buy food and increase their food security.^{32,44,47,51,55} Coping strategies have been employed by people with limited incomes to counter the food costs, fluctuations in their abilities/inabilities to afford food, and transportation barriers.

Coping With Economic Barriers

People with limited incomes have stated that participating in food assistance programs, such as WIC, SNAP, NSLP, and Temporary Assistance for Needy Families (TANF), and receiving food from soup kitchens and/or food banks/pantries lessened their economic barriers to purchasing and obtaining foods.^{32,44,51,55} Tactics such as skipping meals,⁵⁵ shopping with others to lessen gas costs,⁵⁵ eating less expensive foods such as ramen noodles and hot dogs,^{32,51} making foods from scratch,^{32,62} avoiding wasting foods,^{32,44} purchasing priority items,^{32,44,51} and limiting restaurant visits have also been used to combat economic barriers.⁵¹

In a study conducted by Ahluwalia and others, social support was a major coping strategy for families experiencing food insufficiency.⁵⁵ Study participants who had family nearby

stated that they usually turned to them, especially their parents and grandparents, when they lacked food or the resources to purchase foods.⁵⁵ The provision of resources, such as food, money for household expenses, and/or childcare, helped them appear “normal” and fulfill their roles as parents and providers for their households.⁵⁵ One participant recalled:

“I thank God for my parents...I know if I need them for anything all I have to do is ask. [My mom has] taken me to the grocery store and gotten some things that she knew would get me by until I could get a paycheck, or she knew that we didn’t have much at the house. She would ask us over for dinner, she is still calling at least once a week. Come over, we’re having this for dinner.”⁵⁵

Family members have not only been found to provide tangible resources, but they have also provided information on how to access and apply for social and food resource services, budget money, and how to efficiently manage household food items to increase and stretch resources.⁵⁵ Friends and neighbors have also been identified as having provided assistance when needed.⁵⁵

During times of food scarcity, low-income individuals have also coped with economic barriers by feeding their child(ren) ahead of themselves.^{32,51,55} Some parents forgo their meals or eat less to ensure that their child(ren) had enough to eat.⁵¹ Parents have mentioned that they have sent their child(ren) to the homes of friends or relatives in order to get meals;⁵⁵ and have indicated that sometimes the child(ren) would stay for extended periods of time so that they would have steady meals.⁵⁵

Coping with Transportation Barriers

To combat transportation barriers associated with food shopping, low-income individuals use many strategies such as: getting rides to the store from friends or family,⁵⁵ taking public transit,⁴⁴ shopping with others to lessen gas costs,^{44,55} making multiple trips to the store,⁴⁷ walking to the store,⁴⁷ taking a taxi,⁴⁷ and borrowing someone else's car to get to the stores.⁴⁷

Other Coping Strategies Mentioned in the Literature

Some other coping strategies that people with limited incomes have used to maintain their food security are: staggering bills to accommodate for food costs,⁵⁵ eating out less,⁵¹ preparing less expensive foods,³² using student loan money and credit cards to buy foods,³² frequenting food pantries and soup kitchens,^{55,63,64} begging/panhandling,^{63,64} participating in research projects for money,⁶⁵ hunting and fishing to lower food costs,⁶³ and having faith in God to provide them with resources for food.^{55,64,65}

People interviewed have also indicated that on occasion, they have engaged in practices that were unsafe, either in terms of personal safety or food safety.^{55,63-65} For example, skipping meals/going without food,^{55,64} amending and eating rotten foods,⁶⁴ looking for/eating road-kill, eating discarded foods,⁶³ buying expired foods,⁶³ drinking lots of water to keep satiated,⁵¹ purchasing foods in dented cans,⁶³ putting locks on the fridge and cabinets to maintain food rations among family members,^{55,64} selling their blood,⁶³ limiting the amount of food eaten,⁵⁵ removing bugs from cereals,⁶⁴ and diluting soups, stews, juice, milk and infant formula.^{64,65}

Some low-income individuals have even purposely engaged in illegal activities to help them cope with not being able to afford foods.^{55,64} In a study that investigated the coping strategies used by low-income North Carolinian adults during periods where they experienced food insufficiency, some stated that they committed petty crimes such as breaking a window to get arrested because their arrest guaranteed the promise of food and shelter.⁵⁵ Other illegal documented coping strategies include engaging in prostitution,⁶³ gambling,^{63,64} stealing foods,⁶³ switching price tags on food items,⁶³ selling drugs,⁶³ and writing bad checks.⁶³

Summary

Individuals with limited incomes employ a variety of techniques to cope with the barriers they face when trying to buy food and improve their food security. Coping strategies include utilizing FRM skills, such as avoiding wasting foods,⁴⁴ performing illegal activities such as prostitution,⁶⁴ stealing,⁶⁴ selling drugs,⁶³ and relying on strong social support networks.⁵⁵ Most of the coping strategies mentioned are either harmful or illegal.

FRM Behaviors Used by Low-Income Individuals

Because of their limited income and high risk for food insecurity, some people in low-income households utilize “smart” food purchasing and FRM behaviors to increase their food security levels.^{5,44,49} Food purchasing behaviors of low-income individuals often include having to compromise between their needs and wants, in order to stay within their spending constraints.^{5,32,44} An analysis of data obtained from a national sample of

40,000 households led Leibtag and Kaufman to suggest that, in comparison to higher income groups, low-income individuals reduce their food spending by: (1) purchasing a greater portion of discounted or sale items, (2) purchasing more private-labeled or generic products than name brand products, and (3) buying the least expensive food within a product group.⁴⁹ However, they were less likely than other income groups to purchase products in larger packages as a money saving strategy. They hypothesized that this strategy may not be used because of (1) difficulties associated with carrying larger packages if public transportation is used to travel to and from the store, (2) budget constraints, and (3) storage constraints. The authors posit that low-income individuals can use a combination of FRM practices to maximize savings.⁴⁹

Literature on the topic has shown that people with limited incomes not only utilize the savvy shopping tips suggested by Leibtag and Kaufman, but they also employ other savvy shopping and FRM skills that enable them to stretch their food dollars. Strategies that have been identified include:

- Using Coupons

Coupons are widely available in newspapers, in-stores, in store circulars, on the Internet and even through cellular phone applications. Using coupons allows low-income households or households on strict budgets to save money when food shopping,^{5,32,44,51} and play a role in homemakers' decision of products that should be purchased.⁶⁶ In the 1996 National Food Stamp Program Survey, 40.5% of program participants (n=2,142) used coupons "pretty much every time" they

shopped.⁵ On the other hand, some low-income individuals believed that clipping coupons were not cost effective.³² In a focus group investigation conducted by Darko et al. to determine the shopping behaviors of low-income women during a one month period of time, some women said that cutting coupons were too time consuming and using them did not save a great deal of money.³²

- **Buying Items On Sale/ Buying Store Specials**

Buying items on sale or purchasing grocery store specials is a tactic low-income individuals use to lessen their food costs.^{5,32,44,49-51} In one focus group study, some low-income mothers mentioned that they would buy an item if it were on sale, even if they did not intend to buy it before entering the store.⁴⁴ They were especially keen to buying the item if it was something commonly used in their households.³² Some even mentioned stocking up on “buy one get one free” and “10 for \$10” sale items.⁴⁴ In the 1996 National Food Stamp Program Survey, 51.4% of Food Stamp Program participants (n=2,142) looked for grocery specials “pretty much every time” they shopped, whereas all U.S. households did so only 31% of the time.⁵

- **Price-Matching**

Price-matching entails a store matching their price of an item with another store’s lower price. A woman in a study conducted by Darko et al. frequented Walmart because they price-matched items.³² Shopping at stores that matches prices may

enable low-income individuals to save money on transportation due to them not having to visit different stores for the cheapest prices.³²

- Planning Meals

Planning meals for the week is another tactic that people with limited incomes use to help them save money while shopping.^{32,55} In one focus group study done with low-income parents in Utah, the majority of participants indicated that planning meals before shopping helped them stay on track with their food budgets, because by doing so they already knew what meals they were going to eat throughout the week.³²

- Purchasing the Least Expensive Item in a Food Category

Two studies suggested that rather than purchasing higher quality/high cost items, low-income individuals selected the lower cost items. This was found to be the case with regards to meats, fruits, and vegetables.^{32,49,51}

- Buying in Bulk/Stocking Up On Bargains

Studies have shown that buying in bulk is a money saving tactic that can promote immediate and long-term savings.^{51,66} Buying in bulk also allows low-income households to build up their food storage supply so that they can rely on those foods during times of economic hardship or when they are unable to get to the grocery store.^{32,44,55} Approximately 42% of Food Stamp Program participants' households have been found to stock up on bargains when they are on sale.⁵

- Shopping At the Store With the Best Deals/Shopping At Different Stores for Specials

Four studies have shown that low-income individuals either shop at stores that usually have the best deals or travel to different stores for the best deals.^{32,44,51,55}

A good example of this is found in a statement made by a low-income focus group participant:

“We went to Store B yesterday and what I noticed is like their canned goods were more expensive and if I go to Store C I could get like two cans of corn for \$0.88 versus \$0.69 for one can, so we didn’t get any canned goods at Store B...we’ll go across the street to Store C and get the canned goods over there.”⁴⁴

Another study also showed that low-income individuals receiving Food Stamps were more likely to shop at different stores for specials compared to all U.S. households, 17.6% versus 6%.⁵

- Using a Shopping List

Using a shopping list is a tactic that people with limited incomes use to prevent them from overspending on food.^{5,32,55} According to the 1996 National Food Stamp Program Survey, approximately half (50.1%) of Food.⁵

- Comparing Prices/Comparing Unit Prices

Comparing prices and unit prices of like items is another savvy shopping strategy that is used more frequently by low-income people than the general public.^{44,49,50}

In an investigation done by Chase and others to examine the factors influencing

the purchase of bread and cereals by low-income African American women, one woman stated that she compared prices and used coupons to try and get the best deals:

“I’m looking at who has the wheat bread. And then I go back and look at the prices and I compare every one and then I go through all my coupons to see which one I have coupons for.”⁵⁰

In the 1996 National Food Stamp Program Survey, 41.1% of Food Stamp Participants compared prices when shopping.⁵

- Purchasing Generic/Private-Label/Store Brands

Generic, private-label, and store brands are terms that can be used interchangeably.^{48,49} Generic brands are created, owned, and controlled by private retailers, and are often sold at cheaper prices than national or name brands.^{48,49,67,68} Because of their cheaper prices, the purchase of store brands is often beneficial for low-income households.^{48,49,51,55} Store brands are usually 10-30% cheaper than national brands in the same product classes.⁶⁸ In two different investigations, lower-income groups were more likely to purchase store brands in comparison to those in higher income groups.^{48,49} In fact in one of the studies, a significant ($p<.05$) inverse relationship was seen between income level and the choice of store brands over private label items purchased in six of the nine product categories studied, i.e., breakfast cereal, fluid milk, mayonnaise, pasta, salad dressing, and salty snacks.⁴⁸

- Not Taking Children on Food Shopping Trips

When children accompany adults on shopping trips, it has been noted that expenditures are higher. For example, in a focus group study conducted by Wiig and Smith, many of the participants stated that their grocery bills would be higher, their Food Stamps wouldn't last as long, and they often shopped more carelessly when they took their children grocery shopping with them.⁴⁴ Sometimes the child(ren) even snuck things into the shopping cart without their parents' knowledge.⁴⁴ One woman from the same focus group study stated:

“I don't take my kids shopping because I spend twice as much money as I would [laughter] 'cause they want the chips, the pop, the gum, the candy, the ice cream.”⁴⁴

On a positive note, some mothers from the same Wiig and Smith investigation indicated that their child(ren) were helpful during the shopping trips and that they aided in retrieving items off the shopping list and carrying bags of groceries home.⁴⁴

- Other FRM Behaviors Employed by Low-income Individuals

Other shopping behaviors utilized by people living in low-income households identified in the literature were: shopping on the days when the most sales are offered,³² looking at store weekly ads for sales,^{32,44,51} buying more energy dense and inexpensive foods,^{32,51} setting a food budget,^{32,55} going food shopping only once a month,⁵⁵ purchasing managers specials (foods sold at a discounted price

that are either close to their expiration date or expired),⁵¹ and prioritizing their food purchases.^{32,44,51}

Interventions and Programs Aimed at Low-Income Individuals that Included FRM Education, and Their Effects

Researchers have suggested that FRM contributes to dietary quality and food security.^{5,32,44} Because low-income individuals are financially constrained, education on FRM may help them improve their finances, as well as their ability to feed their families. This section discusses studies that have aimed to improve the FRM skills of people with limited income.

After an extensive review of the literature, using the terms and databases shown in Appendix II, only two interventions were identified that strongly focused on FRM and “smart” shopping with low-income individuals.^{12,69} One was in the form of grocery store tours called Smart Shopping Tours and the second was a single three-hour workshop called *Spend Less. Eat Well. Feel Better*. Both of these interventions included topics on nutrition, health, and FRM, and were conducted over two decades ago.

Three studies and one report published between 2000-2012, examined the impact of SNAP-Ed and/or the Expanded Food, and Nutrition Education Program (EFNEP) on participants’ food shopping and FRM behaviors.^{2-4,13} SNAP-Ed and EFNEP are United States Department of Agriculture programs that provide nutrition education to low-income people.^{70,71} Both programs include savvy shopping and FRM as part of their

overall aims, but neither of these programs have curricula specifically devoted to the topic alone. All of the studies used the EFNEP Behavior Checklist to assess participants' behaviors at program entry, graduation, and follow-up.⁷² Only one study solely evaluated EFNEP,⁴ and SNAP-Ed.¹³

Two other programs outside EFNEP and SNAP-Ed that included FRM as a part of its curricula were found.^{10,11} One of the studies was an Australian study, the *Food Cent\$ Project*;¹⁰ and the other, *Eating Right*.¹¹ The goal of the *Food Cent\$ Project* was to help low-income individuals efficiently stretch their food budget for the month. The goal of *Eating Right* was to teach limited resource adults “smart” shopping, food safety skills, and how to plan nutritious and balanced meals.

Tables 2.5-2.9 present the impact that the studies mentioned above had on specific FRM variables and outcomes. The results are represented as changes in means scores on a scale unless stated otherwise. Variables and/or outcomes are grouped together in tables based on overarching themes e.g., practices performed while shopping to help reduce spending, etc. Included in the tables are study size, intervention intensity and duration, follow-up period, and changes throughout the various data collection periods.

Intervention Impact on FRM, Meal Practices Performed by Low-income Individuals that Influence Spending

Planning meals ahead of time, making meals from scratch, trying new low-cost recipes, and assessing available resources for food (e.g., time, kitchen equipment, food preparation skills) have been recognized and taught as FRM skills, and when assessed, have shown behavior changes in SNAP-Ed and EFNEP studies (Table 2.5).^{2-4,13} Making foods from scratch or consuming homemade foods is considered a FRM technique because it can help save money.^{2,73} Stressing the financial benefits of making foods from scratch to low-income individuals is important because convenience and fast foods are huge portion of their diets.^{2,73} Presented in Table 2.5 are the results for programs that evaluated their impact on making foods from scratch, assessing available resources for food, trying new low-cost recipes, and planning meals ahead of time.

Table 2.5: Intervention Impact on Meal Practices Performed by Low-Income Individuals That Influence Spending

Food Resource Management Variables Assessed	Study Population	Intervention Intensity and Duration	Follow-up Period	Pre to Post Intervention	Pre-intervention to Follow-up	Post-intervention to Follow-up
Assessing available resources for food e.g., time, kitchen equipment, and food preparation skills ¹³						
SNAP-Ed ^Δ	N=26,093	8.5 lessons 8-10 weeks	N/A	5%	N/A	N/A
Making food from scratch ^{2,4,13}						
EFNEP ^a	N=59	≥ 6 lessons	1 year	+ ^{**}	+	- [*]
SNAP-Ed ^Δ	N=2,707	8.5 lessons 8-10 weeks	N/A	69%	N/A	N/A
SNAP-Ed & EFNEP (Wardlaw & Baker) ^b	N=493	8.5 lessons 8-10 weeks	1-4 years	+	+	-
Planning meals ahead of time ^{2-4,13}						
EFNEP ^c	N=59	8.5 lessons 8-10 weeks	1 year	+ ^{**}	+	+ ^{**}
SNAP-Ed ^Δ	N=106,836	8.5 lessons 8-10 weeks	37%	+	N/A	N/A
SNAP-Ed & EFNEP (Koszewski et al.) ^b	N=1,100	8.5 lessons 8-10 weeks	6 months	+ ^{**}	+ ^{**}	+ ^{**}
SNAP-Ed & EFNEP (Wardlaw & Baker)	N=493	8.5 lessons 8-10 weeks	1-4 years after program completion	+	+	-
Trying new low cost recipes ¹³						
SNAP-Ed ^Δ	N=100,911	8.5 lessons 8-10 weeks	N/A	78%	N/A	N/A

* p<.05, **p<.001
+ Improved, - Declined
^Δ Behavior change reported in percent increases
^a Answers based on scale 1 =almost never, 2 = seldom, 3 = often, 4 = almost always
^b Answers based on a scale 1 = never, 2 = seldom, 3 = sometimes, 4 = most of the time, 5 = almost always
^c Answers based on a scale 1 = just before you make it, 2 = sometime during the day, 3 = a day or more ahead, 4 = each family member makes own decision
Note: All interventions included both nutrition and food resource management lessons

Making food from scratch increased pre to post-intervention in the three studies that examined it,^{2,4,13} but in terms of longer-term change, a significant increase ($p<.05$) was only seen in the EFNEP investigation.⁴ Planning meals ahead of time increased pre to post intervention in all of the studies that assessed it,²⁻⁴ but only significantly ($p<.05$) in the Koszewski et al. and Wardlaw & Baker investigations.^{2,3} Trying new meals, as well as assessing available resources for food, improved post implementation for a select group of SNAP-Ed participants.¹³

In addition to improved outcomes regarding planning meals ahead of time, Koszewski et al. also found that SNAP-Ed and EFNEP participants demonstrated decreased use of community food resources, both post intervention and six months thereafter, however, this decrease was not statistically significant.³ Because the aims of the programs were to encourage participants to efficiently use their food to ensure that it lasts through the month, using community food resources i.e., food pantry or soup kitchens, was a behavior that Koszewski et al. expected to see decrease after participants completed the SNAP-Ed and EFNEP programs. The decreased use of these resources supports the notion that the interventions improved FRM skills; however, this conclusion would have been more convincing had results been statistically significant.

Intervention Impact on FRM Practices Performed by Low-Income Individuals While Shopping that Influence Spending

Six investigations examined program impacts on behaviors that influence spending while food shopping (Table 2.6). These behaviors included: comparing unit prices/costs, shopping with a grocery list, comparing the cost of foods at different food outlets, and purchasing advertised foods.^{2-4,10,11,13} Purchasing advertised foods was considered a negative practice because it suggested that participants were more influenced by advertising rather than health information, and that they were more likely to purchase foods on impulse rather than based on need.⁴

Pre-survey data were not collected in the *Food Cent\$ Project* led by Foley & Pollard, hence, the results from the study are self-reported responses illustrated in percentages. Furthermore in the Foley & Pollard investigation, follow-up surveys were only conducted with a subsample of educators, four years after program completion (Table 2.6).¹⁰ Also included in Table 2.6 are results from the *Eating Right* investigation where the follow-up was conducted at two different time periods, three and six months, with different parts of the study sample.¹¹ Because the variables, “shopping with a grocery list” and “comparing prices” were combined and reported on a scale in the *Eating Right* investigation, the researchers were contacted for the individual-item mean scores for pre and post intervention and follow-up, but only the mean scores for post intervention and follow-up were provided, and are illustrated in Table 2.6.

Eating Right participants demonstrated an increase in comparing prices pre-intervention to follow-up, and participants in the SNAP-Ed/EFNEP evaluation conducted by Koszewski et al. demonstrated a significant increase in comparing prices pre to post intervention, pre-intervention to follow-up, and post-intervention to follow-up.³ The different follow-up periods endorsed in the *Eating Right* program did not seem to have an impact in the performance of comparing prices since significant increases were seen at both follow-up periods (Table 2.6). Comparing the cost of foods at different food outlets was assessed by the SNAP-Ed investigation, where an increase in behavior change was noted among participants post implementation.¹³

Shopping with a grocery list was examined in all the EFNEP and/or SNAP-Ed evaluation studies, as well as the *Eating Right* study. Significant increases were only noted in *Eating Right* pre-intervention to follow up, and the EFNEP evaluation pre to post intervention, and post-intervention to follow-up. Interestingly, shopping with a grocery list significantly increased in the EFNEP evaluation study and not in the combination SNAP-Ed/EFNEP evaluation studies, which suggests that EFNEP may be more influential in getting its participants to shop with a grocery list.

Intervention Impact on Food Safety FRM Practices Performed by Low-Income Individuals

Food safety includes practicing techniques that maintain the safeness of food for consumption.³ Food safety practices such as not leaving foods unrefrigerated and not thawing foods at room temperature are considered FRM strategies because they prevent food spoilage and the unnecessary spending of money to replace the food(s) that were ruined. A study conducted by Derrickson et al. where the control group received food safety education, supports the premise of practicing food safety as a FRM strategy.¹² In that study, similar to the intervention group which received FRM and nutrition education, the control group was successful in cutting back on unnecessary spending and keeping track of how their money was spent, post implementation.¹² Table 2.7 displays the results of interventions that included food safety, and FRM practices in its curricula.

Four studies examined program's impact on participants leaving foods unrefrigerated;^{2-4,11} one of the studies specifically examined if participants left meat and dairy items unrefrigerated for more than two hours (Table 2.7).³ A significant ($p < .05$) decrease in the performance of leaving foods unrefrigerated was seen in three studies pre to post intervention.^{3,4,11} Four studies also examined its program's impact on participants thawing food at room temperature.^{2-4,11} *Eating Right* was the only investigation where its participants did not exhibit any behavioral change pre to post intervention, pre-intervention to follow-up, or post-intervention to follow-up. Because it is expected that mean scores of thawing foods at room temperature should decrease pre-post intervention, it was interesting that the mean scores of the *Eating Right* participants that received the 3-month follow-up increased (not significant).¹¹

Intervention Impact on Practices Performed by Low-income Individuals to Aid in Managing Their Money/Money for Food

Three studies examined variables associated with managing money/money for food (Table 2.8).^{3,10,13} The variables presented in Table 2.8 are creating a spending plan/budget and using a shopping record to help keep track and curb spending.

Table 2.8: Intervention Impact on Practices Performed by Low-Income Individuals to Aid in Managing Money/Money For Food

Food Resource Management Variables Assessed	Study Population	Intervention Intensity and Duration	Follow-up Period	Pre to Post Intervention	Pre-intervention to Follow-up	Post-intervention to Follow-up
Creating a spending plan/budget ^{3,13}						
SNAP-Ed ^Δ	N=26,093	8.5 lessons 8-10 weeks	N/A	5%	N/A	N/A
SNAP-Ed & EFNEP (Koszewski et al.) ^a	N=1,100	8.5 lessons 8-10 weeks	6 months	+	+	+
Use a shopping record to keep track and help curb spending ¹⁰						
Food Cent\$ Project [¥] (E= educators, P=Participants)	N=63, E N=133, P	Four 1½ hour sessions	4 years	N/A	62%, E 51%, P	34%, E
+ Improved, - Declined ^Δ Behavior change reported in percent increases and not means ^a Answers based on a scale 1 = never, 2 = seldom, 3 = sometimes, 4 = most of the time, 5 = almost always [¥] This study did not collect baseline data for behaviors. Pre-intervention data was collected 6 weeks after program completion. Follow-up was only conducted with educators and collected 4 years after program completion Note: All interventions included both nutrition and food resource management lessons.						

Both SNAP-Ed and a combination of SNAP-Ed and EFNEP were increased the frequency that the participants used a spending plan during pre to post intervention, pre-intervention to follow-up, and post-intervention to follow-up, however, changes were not statistically significant.^{3,13} Further, although no statistically significant changes were reported during pre-intervention to follow-up, more of the *Food Cent\$ Projects* educators used a shopping record to help keep track of and help curb their spending compared to its participants, 51% versus 62% respectively (Table 2.8).¹⁰

Intervention Impact on Money Managing Outcomes

Table 2.9 discusses some of the outcomes of being able to properly manage your money and/or money for food for the month such as, choosing between rent and food, paying rent on time, and running out of food/money for food before the end of the month. Four studies evaluated programs' impact on variables related to money managing outcomes.^{2-4,12} Three of them were SNAP-Ed and/or EFNEP evaluations and other was the Hawaiian investigation, *Spend Less. Eat Well. Feel Better.*

Table 2.9: Intervention Impact on the Money Managing Outcomes of Low-Income Individuals

[illegible]

The *Spend Less. Eat Well. Feel Better.* program was successful in significantly ($p < .05$) impacting its participants ability to pay rent on time and not having to choose between paying rent and buying food (Table 2.9).¹² However, the follow-up period was only a month long which questions the long-term impact of the program. Running out of food/money for food was examined in the SNAP-Ed and/or EFNEP studies, where the outcome significantly decreased in all of the studies pre to post intervention and pre-intervention to follow-up, but the outcome significantly decreased ($p < .01$) in only two of the studies at all of the data collection periods.^{3,4}

FRM Behaviors Taught in Nutrition Education that Have Not Been Evaluated

Other FRM practices such as increasing food access options (i.e., gardening and hunting), building and use of a personal food storage system, and purchasing/preparing/preserving/storing foods for later use (including canning) have been taught in SNAP-Ed programs, but they were not assessed; hence, behavior changes were not reported for those variables.¹³

Summary

Regardless of program length, intensity, and follow-up period, all the programs/interventions discussed above positively impacted the FRM skills of low-income individuals in some manner. The review of the literature shows that including nutrition, food safety, and FRM education into programs are successful in impacting the FRM skills of people with limited incomes. A review of the literature also demonstrated that the only two interventions that focused largely on FRM were conducted over two

decades ago,^{12,69} and that a lot of other FRM practices have not been taught and evaluated. Furthermore, a review of the literature illustrated that the only FRM practices taught and evaluated are: comparing prices/unit costs, shopping with a grocery list, not purchasing advertised foods, making foods from scratch, planning meals ahead of time, not thawing foods at room temperature, not leaving food unrefrigerated, using shopping records to keep track of spending, trying new low cost recipes, assessing available resources for food, and creating a food budget. None of the aforementioned FRM tactics have been assessed to determine whether their performance promotes savings.

Literature Review Conclusion

This literature review demonstrated that the prevalence of food insecurity among low-income households is great, and the barriers faced when trying to shop for food are many. Further, this review illustrated that a small number of FRM techniques are taught and evaluated within the low-income population; and the savings that can be attributed to the use of these skills has not been examined. The aforementioned supports the need for research to determine if additional, culturally relevant FRM skills exist that should be taught. This thesis constitutes the first step in such a pursuit through surveys that are used to catalogue all the behaviors a sample of low-income individuals in New Jersey use to reduce their food costs.

CHAPTER 3: METHODS

The goal of this project was to examine what Food Resource Management (FRM) techniques low-income adults utilize. The Food Resource Management Survey (FRMS), which was developed by the author of this thesis and her graduate advisor, was the tool used to catalogue participants' self-reported behaviors. This chapter includes an explanation regarding the methods used in this research, including the development of the survey, the study sample, recruitment, and the data analyses used. The research protocol for this investigation and its amendments were approved by Rutgers Office of Research and Sponsored Programs Institutional Review Board (#E12-769).

The Survey

After a thorough literature review using the search terms listed in Appendix II, it was revealed that this survey was the first of its kind, hence, most of the items on the FRMS were collectively developed by the author of this thesis, author who directed this project, and her graduate advisor. Survey development meetings were held with the graduate student and advisor where findings in the literature that pertained to the FRM skills used in low-income households were discussed, and questions were developed. Four studies contributed to the development of these questions.^{44,63-65} When the FRMS was created, feedback from colleagues was garnered for content and delivery, and the appropriate revisions were made. Thereafter, the survey was piloted with three people from the target

population and additional changes were made to enhance the clarity and delivery of the final survey, which appears in Appendix III.

Survey Components

The various components and types of questions included in the survey are explained below.

Demographic Questions

This section contained questions that assessed each participant's age, gender, race, education level, food security status, the number of children they had, and the age of their child(ren). Participation in the Supplemental Nutrition Assistance Program (SNAP) and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) was also assessed. For those receiving SNAP, a follow-up question queried how long SNAP benefits lasted throughout the month. Additionally, emergency food use was assessed by asking participants how many times they received food from a food pantry in the past month. Food security status was assessed using the Six Item Short Form of the Food Security Module developed by the USDA.⁷⁴ The short form was used instead of the traditional 18 item U.S. Household Food Security Module to lessen response burden.

Food Stores Frequented

One question was included in the survey to determine the different type of food stores the target population frequented, i.e. wholesale stores, retail grocery stores, discount stores,

and meat markets. An additional question was asked to determine which food store was frequented the most.

Food Shopping Considerations

In a study conducted by Wiig & Smith with low-income mothers, it had been shown that factors i.e. freshness of food, distance, if the store accepts public assistance etc., impacted where people chose to shop;⁴⁴ a question was added to the FRMS to investigate the same. The participants responded to this question based on a checklist of twelve responses and/or “factors” that were adopted from the Wiig and Smith investigation.⁴⁴ The interviewees were instructed to choose as many of the 12 responses/factors as they wished. A follow-up question examined the three most important factors that impacted where each participant shopped.

Transportation and Transportation Barriers

Since transportation has been shown to impact the food access of low-income individuals,^{5,28,30,31,44,47} a dichotomous question was included to determine if lack of transportation affected the frequency of food shopping. Another question investigated the study population’s primary mode of transportation to the store. These questions were also developed based on a study conducted by Wiig and Smith.⁴⁴

Food Shopping Frequency and Prioritization

Major food shopping entails the purchase of most of the food items that a household needs for the month. The frequency of major food shopping was examined using a

categorical response scheme such as 1x/week, 2-3x/month etc. Another question inquired how participants prioritized their food purchases e.g., by their cost, based on how healthy they are etc. Responses to this question were adopted from a Wiig and Smith investigation and participants were allowed to choose up to all six of the potential responses.⁴⁴

FRM Behaviors Known and Employed

To investigate knowledge and employment of FRM behaviors, participants were asked to think of the person that they knew who managed their food resources most efficiently. Subsequently, they were asked to name all the behaviors that the person performed that helped them efficiently manage his/her food resources. Following participants' initial response(s) to the aforementioned question, three additional open-ended questions were asked to examine the specific behaviors that were performed before, during, and after they shopped.

This section also included a question that examined the tactics the survey population with children used to prohibit their child(ren) from influencing unintended purchases when they accompanied them on shopping trips.

To lessen interview time and the amount of writing the interviewer had to do, answers for the above questions were recorded on a checklist of potential responses. The checklist was devised based off of the literature on the topic and via brainstorming sessions with New Jersey's SNAP-Ed staff. Additional responses were added to the checklist after the

survey pilot. Unique answers that were not on the checklist were recorded in a space provided for “other” responses.

Because unpublished research with the New Jersey SNAP-Ed population had illustrated that many did not know what a unit price is and where it can be found, two dichotomous questions investigated whether the participant knew what a unit price was and where it could be located. Furthermore, this section included questions regarding participant use of specific FRM practices, some of which have previously been identified in the literature. The FRM practices include:

- Price comparisons:^{2,3,10,11,13,69} A dichotomous question examined whether participants compared unit prices.
- Doubling coupons: A dichotomous question investigated whether participants shopped at stores that doubled coupons, and a question with a Likert-type response option assessed how often participants doubled coupons.
- Performing coupon strategies: Questions with Likert-type response options examined the frequency of performing coupon strategies such as: using coupons, matching coupons to on-sale items, looking for coupons before food shopping, using more than one coupon on a single item, and keeping coupons in an organizer/safe place.
- Checking weekly ads: one question with Likert-type response options assessed the regularity of checking weekly ads for items on sale before shopping.

- Making a shopping list:^{2-4,11,13} one question with Likert-type response options investigated the occurrence of making a shopping list before going on a shopping trip.
- Planning meals:^{2-4,13} one question with Likert-type response options examined the frequency of planning meals before shopping.
- Impulse buying: one question with Likert-type response options assessed the frequency of buying things on impulse while food shopping.

Barriers, Perceived Importance, and Perceived Confidence/Self-Efficacy in Practicing FRM Skills

One open-ended question assessed the barriers that hindered participants from performing FRM skills. Questions with Likert-type response options assessed participants' perceived importance of using FRM skills, and perceived confidence in employing FRM skills.

Internet Usage and Ownership of an Internet Connecting Device

To investigate if internet education would be feasible with the target population in the future, a series of questions assessed internet usage. More specifically, one dichotomous question examined if participants regularly used the internet. If participants affirmed to the aforementioned question, they were asked how they accessed the internet, i.e., wireless, cable, DSL, or dial-up, and what they used to access the internet i.e., a computer, smartphone, etc. A follow-up question examined where the participants usually connected to the internet i.e., at home, at the library, etc.

Research Protocol/Study Design

This research was a descriptive and exploratory study that employed face-to-face, semi-structured interviews with a convenience sample of low-income individuals. Data were collected using the FRMS. The FRMS was piloted in the early Fall of 2012. Data collection took place in the late Fall and early Winter of 2012 at sites located in New Jersey that are known to provide services to low-income adults and families.

The Research Team

In addition to the author of this thesis and her advisor, ten New Jersey SNAP-ED project supervisors were a part of the research team. The ten New Jersey SNAP-ED project supervisors along with the graduate student comprised the data collection portion of the research team. The project supervisors had a minimum of a Bachelor's degree in nutrition or nutrition-related fields, e.g., Family and Consumer Sciences; had extensive experience in working in low-income, minority and underserved populations; and had passed the Humans Subjects Certification exam offered by Rutgers University's Office of Research and Sponsored Programs.

Prior to administering the survey, the project supervisors were given the FRMS to review, were briefed on the survey protocol, and were also trained over the phone and/or in person on survey delivery. Subsequently, they were required to observe the graduate student administer surveys until they felt comfortable with facilitating it themselves. The graduate student then observed them doing the surveys, and if needed, prompted them on how to correctly do them, until they were deemed competent.

Research Sites

An email was sent to project supervisors to inquire for leads to sites where the target population, low-income and limited-resource adults who did the major shopping for their households, was accessible. In the email, the project supervisors were informed that the recruitment sites had to serve predominantly low-income individuals. After the leads were given, the site was contacted and informed of the project and asked for participation. If the site's representative agreed to participate, site authorization (see Appendix IV) was obtained before data collection commenced. Research settings included SNAP offices, SNAP-Ed classes, job training facilities, WIC offices, and Board of Social Services offices located in New Jersey. In an attempt to garner a representative sample of the target population, surveys were collected at sites located throughout New Jersey.

Participant Recruitment

Individuals were randomly approached at the research sites and asked if they would like to participate in a survey that examined the FRM tactics they used. If they agreed, they were asked questions to see if they fit the study inclusion criteria. People recruited for the FRMS were required to be:

1. Over 18 years of age;
2. A major food shopper for their household;
3. Able to understand and speak English

If the inclusion criteria were met, a Script for Oral Assent (Appendix V) was read, and

the participant was given an information sheet pertaining to the research (Appendix VI). If an individual did not meet the inclusion criteria for the survey, s/he was thanked for her/his time and told that s/he could not participate in the study.

Survey Administration

To maintain the confidentiality of the survey interview and to prevent potential interviewees from skewing their survey answers based on the responses they overheard, surveys were either conducted in a separate room in the facility where only the researcher(s) and the participant (and his/her child(ren)) were present, or out of earshot from where others could hear the participant's responses. The survey interview took between 10-20 minutes to complete. Because many of the surveys were done at facilities where participants were waiting to be attended to, i.e., WIC offices and Board of Social Services, many started the survey but did not complete it. Those individuals were not included in the final analyses.

Incentives

Initially no incentives were offered. However, after conducting the survey with approximately 50 participants, it was decided that incentives should be offered because the survey was lengthy and it was believed that offering an incentive would garner more participation. Thus, low-impact exercise DVDs were distributed as incentives to the rest of the participants

Study Limitations

Before the development of the FRMS, the leaders of this project were not aware of all the FRM practices performed by low-income adults; hence the utilization of many FRM tactics were not specifically assessed for the members of the study population that did not identify themselves as the person they knew who managed their food resources the most efficiently.

Interview bias and social desirability were concerns since this study was a face-to-face survey interview.

The use of the Six-Item Short Form of the Food Security Module is a limitation because it is not as precise in measuring food security as the 18-item questionnaire. The Six-Item Short Form also does not take into account the children that are in the household and does not measure the most severe levels of food insecurity, which tends to affect children, and therefore, this module may not always be suitable for households with children

Study incentives were not initially given when data collection began; this likely resulted in a smaller sample than would have otherwise been obtained. Further, because the survey took between 10-20 minutes to administer, response burden may have contributed to the fact that many participants started the survey but did not complete it.

Finally, although the project supervisors were trained prior to being granted permission to independently administer surveys, during data analysis, the number of missing values

found illustrated that more in depth training should have been conducted. Also during data analysis, it was noted that the research team should have probed more in order to clarify open-ended responses.

Data analysis

Descriptive statistics were used to assess all survey measures. All of the other survey data were analyzed using SAS for Windows version 9.2 (SAS Institute Inc., Cary, NC).

CHAPTER 4: The Food Resource Management Strategies and Shopping Behaviors Employed by Low-Income Adults in New Jersey.

ABSTRACT

Objective: To examine the food resource management (FRM) strategies that low-income adults identified those used by an to compare these practices to what has been taught and assessed in nutrition education programs aimed towards low-income individuals.

Design: Trained researchers collected the data in the form of semi-structured interviews.

Setting: Facilities in New Jersey that served low-income individuals i.e., Board of Social Services offices.

Participants: Low-income adults (n=201) who were primary food shoppers for their household, and spoke and understood English.

Main Outcome Measured: The FRM behaviors employed.

Analysis: Descriptive statistics were used to assess sociodemographic variables (i.e., age), shopping demographics (i.e., places where food was purchased), and frequencies of the FRM behaviors mentioned.

Results: Only eleven of the seventy FRM strategies identified as being employed by the study population are taught and/or evaluated in nutrition education programs.

Conclusions and Implications: Low-income adults employ numerous FRM strategies, many of which are not taught and evaluated in nutrition education programs. Further research needs to examine if the FRM practices taught, as well as those identified, assist low-income households in saving money and ultimately increase their food security.

Key Words: low-income, shopping behaviors, food security, nutrition assistance programs, nutrition education

INTRODUCTION

Food insecurity, the limited access to nutritionally adequate and safe foods, or the reduced or uncertain capacity to obtain acceptable foods in socially conventional ways, is a major public health concern.¹ The prevalence of U.S. food insecurity is 14.5%; 40.9% for low-income households living below the poverty level.¹ Food insecurity rates are even higher in households receiving nutrition and food assistance, such as those provided by the Supplemental Nutrition Assistance Program (SNAP) and The Special Supplemental Nutrition Assistance Program for Women, Infants and Children (WIC), where the rates are 49.9% and 39.5%, respectively.¹ Clearly, benefits alone do not effectively combat food insecurity. A combination of nutrition education and nutrition assistance may reduce food insecurity rates among low-income individuals.²

In an effort to assist low-income families in extending their food budgets, and ultimately increase their food security, national nutrition education programs such as the Expanded Food Nutrition Education Program (EFNEP) and the Supplemental Nutrition Assistance Program-Education (SNAP-Ed) include food resource management (FRM) education in their curricula.²⁻⁶ Food resource management (FRM) is defined as the efficient handling of all food resources,^{5,7} and not only includes shopping strategies such as comparing unit prices and using coupons, but also practices such as financial management, meal planning, and food storage to prevent food-spoilage and food-waste.^{5,6,8} Hersey et al.

mentioned that employing FRM skills can help low-income individuals extend their food budgets, and research conducted by Olson et al. supports the aforementioned, where study participants who practiced more FRM behaviors experienced greater food security.^{7,9}

A review of the literature identified seven nutrition education studies and/or programs targeting low-income individuals that included FRM education in their curricula.^{5,6,8,10-14} Those programs have reportedly taught a total of 15 FRM strategies. It is possible that there are many other FRM strategies practiced by people with limited incomes that have not been taught and evaluated. The goal of this study was to examine the FRM behaviors of low-income adults who were identified as “smart shoppers” practiced, and to compare the findings to what has reportedly been taught and assessed in nutrition education programs.

METHODS

Instrumentation

This was a descriptive study that employed face-to-face, semi-structured interviews with a convenience sample of low-income individuals. Since a thorough literature review revealed no surveys specific to the aim of this investigation, a survey was developed based on information gleaned from four studies,¹⁵⁻¹⁸ as well as the collective knowledge of the two lead researchers of this investigation, and New Jersey SNAP-Ed staff. Feedback was also garnered from colleagues for content. Thereafter, the survey was piloted with three people from the target population and additional changes were made to

enhance questions' clarity and improve the delivery of the final survey. This study was approved by Rutgers University's Institutional Review Board.

Setting

Research was conducted at facilities where members from the target population who did the major shopping for their households were accessible, i.e. SNAP offices, SNAP-Ed classes, job training facilities, WIC offices, and Board of Social Services offices.

Surveys were collected at sites throughout New Jersey in an attempt to garner a representative sample of the target population. Permission to conduct research at the aforementioned sites was obtained before data collection commenced.

Participation and Recruitment

Individuals were randomly approached and asked if they would like to participate in a survey that examined the behaviors used to help them save money when food purchasing was concerned. If they agreed, they were asked questions to ensure that they were: over 18 years of age, a major food shopper for their household, and able to speak and understand English.

Procedures

The graduate student spearheading this project, as well as nine trained researchers, conducted data collection. Training continued until the additional nine researchers were deemed competent. Researchers had a minimum of a Bachelor's degree in nutrition or a

nutrition-related field e.g. Community Health Education, and extensive experience working in low-income and underserved populations.

To uphold confidentiality and to prevent skewed responses based on participants' overhearing one another, surveys were conducted in rooms separate from the recruitment location, or out of earshot of those being recruited.

Incentives

Initially no incentives were offered; however, after approximately 50 surveys were completed, low-impact exercise DVDs were offered to garner participation more easily.

Data and Analysis

Descriptive statistics, i.e. frequencies and percents, were calculated for all survey measures by using SAS for Windows version 9.2 (SAS Institute Inc., Cary, NC).

RESULTS

Demographics

The study population was comprised of 201 people. The mean age was 36 ± 13 years. Participants' ages ranged from 18-72 years. Nearly half of the study population was African-American, and most were female parents ($n=114$; 57%). At least 83% of the population had an income that was at 185% of the poverty level or below (Table 4.1). Approximately half of the study population reported that they were food-insecure, and a

greater percentage of those who did not receive public assistance were food secure compared to those who did receive public assistance, 68.6% and 52.4% respectively.

Table 4.1: Participants' Demographic and Socioeconomic Characteristics (N=201)		
Characteristics	N	Percent
Gender		
Female	151	75.1%
Male	50	24.9%
Race		
African-American	91	45.5%
Caucasian	70	35.0%
Hispanic/Latino(a)	20	10.0%
Other	11	5.5%
Asian/Pacific Islander	9	3.0%
American Indian	2	1.0%
Parent		
Yes	129	64.2%
No	72	35.8%
WIC and/or SNAP Participation[*]		
Yes	166	82.6%
No	35	17.4%
Food Security Status^ψ		
Food Secure	111	55.2%
Food Insecure	90	44.8%
[*] The Special Supplemental Nutrition Assistance Program for Women, Infants, and Children (WIC), and The Supplemental Nutrition Assistance Program (SNAP) participation were assessed together. ^ψ Based on data from the Six Item Short Form of the Food Security Module		

Participants did most of their shopping at supermarkets, and also frequented discount stores and dollar stores that carried foods (Table 4.2). Many participants drove themselves to the store, however, nearly as many reported getting rides from someone else. The vast majority of the study population did their major food shopping at least once per month, which is when most of their households' monthly needs were purchased.

Table 4.2: Shopping Demographics of Participants (N=201)		
	n	Percent
Stores Frequented		
Supermarkets/Grocery Stores	195	97.0%
Discount Stores	150	74.6%
Dollar Stores	108	53.7%
Wholesale Stores	95	47.3%
Farmers Markets	92	45.8%
Bodega/Corner Stores	83	41.3%
Meat Markets	78	38.8%
Convenience Stores	63	31.3%
Drug Stores	48	23.9%
Meat Trucks	6	2.9%
Means of Transportation		
Drove	90	44.8%
Got a ride	76	37.8%
Walked	25	12.4%
Took the bus	6	3.0%
Took a taxi	3	1.5%
Biked	1	0.5%
Frequency of Major Monthly Shopping Trip		
Less than 1x per month	4	2.0%
1x per month	75	37.3%
2-3x per month	87	43.3%
1x week	31	15.4%
More than 2x per week	8	4.0%
Food Pantry Users	51	25.8%

FRM Behaviors or Practices Used

FRM Behaviors Employed Outside the Shopping Experience. Many FRM behaviors were named by participants as practices they employed in their attempts to be “smart shoppers” (Table 4.3). These included food management, shopping preparation, food acquisition, and financial management behaviors. The majority of these strategies pertained to food storage practices aimed towards increasing foods’ shelf lives and preventing their spoilage. The remaining practices included making foods from scratch rather than purchasing convenience foods, planning meals, and hiding foods.

Participants named eight behaviors they employed in preparation for their shopping trips (Table 4.3). Choice of store and transportation means of getting there were two areas of concern. Stores were often chosen based on “deals” that appeared in weekly fliers, or their notoriety for having low prices. They were also chosen based on if the items they sold were fresh, if the store carried foods of interests, and if the store accepted Electronic Benefits Transfer (EBT). Transportation means considered included: walking, driving, taking the bus, getting a ride, or taking a taxi; participants usually relied on the lowest cost transportation to get to the store.

Table 4.3: Food Resource Management Behaviors Practiced by Low-Income Individuals Outside the Shopping Experience

Food Management

- Cooking small portions in amounts family will eat to prevent waste
- Eating foods before they spoil
- Eating leftovers
- Freezing foods that will not be used right away
- Hiding foods so they will not be used unexpectedly, and their use can be regulated
- Making food from scratch, i.e., breads and cookies
- Planning meals
- Putting dates on frozen items
- Separating meats into smaller packages and freezing them
- Storing foods in a way that keeps them fresh i.e. refrigerate
- Storing foods “first in, first out” (FIFO), i.e., older foods in front of newer ones

Shopping Preparation

- Bringing reusable bags
- Checking store circulars for deals and to decide where to shop
- Eating before shopping to avoid shopping hungry which results in impulse buys
- Getting coupons from Sunday newspaper, internet, store-circular, etc.
- Identifying the lowest cost transportation option
- Making a grocery list
- Managing state of mind or choosing to shop when relaxed
- Planning to shop when prices are lowest
- Verifying foods on-hand

Food Acquisition

- Growing own vegetables
- Going fishing
- Getting foods from food pantries

Financial Management

- Creating a food budget
- Gambling to acquire money for food
- Saving receipts to compare spending overtime

Other reported shopping preparation behaviors included the preparation of a shopping list, which required a review of foods in the home, available coupons, and information gleaned from the store fliers. One participant went so far as to write the foods on her shopping list according to the store’s layout to prevent her from going down aisles where the foods she needed was not located and increasing the possibility of indulging in an

impulse purchase. Participants indicated that prior to shopping they ensured that they had reusable bags with them, for which they got a discount on their grocery bills. Participants also mentioned that they purchased more unnecessary items when they went to the store hungry; to avoid the aforementioned, they ate before going shopping. Finally, managing state of mind or choosing to shop when relaxed was mentioned by participants as a way they ensured their ability to prepare to “shop smart.” Participants indicated that if they were harried when they shopped, they tended to forget things or to make impulse purchases, so it was important to either plan to shop when they were relaxed and weren’t feeling rushed, or to invest in relaxing their state of mind before they went shopping. One woman even said she took baths before going shopping because soaking in the tub relaxed her.

Food from pantries figured in to the participants’ food acquisition plans. Not only did some participants take advantage of the free foods distributed by their local food pantry, some prioritized their grocery shopping plans based on items that they couldn’t get there. A couple participants fished and grew their own vegetables to reduce their food costs.

Participants employed only three other behaviors external to their shopping trips that were related to financial management. Some created a food budget, and some saved their shopping receipts to compare their spending over time. One participant reported that he gambled in order to obtain the money he needed to buy groceries for his household.

FRM Behaviors Employed While Food Shopping. Multiple shopping practices aimed at avoiding wasting money, food management, and resource management, were employed by participants while shopping (Table 4.4). The major themes of those behaviors included finding, looking for, and taking advantage of deals and specials, and purchasing low-cost options.

Eight behaviors were mentioned that participants employed to avoid wasting money. To control unnecessary purchases, one participant had a cart for “needs” and “wants,” which she used as the basis for ensuring she purchased more items from the “needs” cart. Participants also purchased produce in season, which is usually less expensive, and inspected their receipts before they left the store to check for mistakes in the grand total. Low-cost means of transporting groceries was a concern for one participant who took advantage of the free delivery service her local supermarket provided.

Purchasing store brands and managers specials were practices participants employed to purchase low-cost items. They also compared prices and unit costs, and got rain-checks for out-of-stock items that were on-sale. Some participants made sure to check the prices of foods stocked above and below eye-level, which are often lower cost. Additionally, participants took advantage of deals by shopping the perimeter of the store where sale items were said to be located. Buying in bulk was a strategy, used especially when items were on sale.

Discount savings cards were used and items were priced-matched to cut costs and expenses. Furthermore, coupons were applied and sometimes matched to sales for additional savings. One participant received instant savings by using a cell-phone app that helped her find deals and download coupons.

Participants intentionally employed practices that helped them have a lasting food supply. Those included buying foods that had a long shelf life, and foods that could be used in multiple meals. One participant had the butcher cut her meat in small and thin pieces so that she could get more portions.

Table 4.4: Food Resource Management Behaviors Practiced by Low-Income Individuals While Shopping

Avoid Wasting Money

- Buying produce that is in season
- Avoiding impulse purchases
- Checking receipt for mistakes
- Having a cart for “needs” and another for “wants”
- Limiting shopping to only those aisles required to get what is needed
- Reviewing cart/list to make sure everything was obtained/nothing was forgotten
- Using free supermarket delivery when available
- Using/sticking to a shopping list

Food Management

- Buying foods that can be used in multiple meals
- Buying foods with long shelf-lives
- Having butcher cut meat in needed portions/small pieces

Resource Management

- Buying in bulk
- Buying generic/store-brand items
- Buying managers specials
- Buying/checking the aisles for sale items
- Checking prices of foods stocked above and below eye level, often lower-cost
- Checking receipt to see how much was saved
- Comparing prices/unit prices
- Getting items price matched by providing evidence of a lower cost elsewhere
- Getting a rain-check
- Keeping coupons received at checkout
- Retrieving coupons from aisles in store
- Shopping the store’s perimeter to ensure all end-cap sale items are seen
- Sticking to budget
- Trying samples of new foods before purchasing to ensure the food is liked
- Using a calculator to keep track of expenditures
- Using a discount savings card
- Using cell phone apps to get and find deals
- Using coupons/only when it results in a good buy/paired with sales/when expiring
- Using an Electronic Benefits Transfer (EBT) card

FRM Behaviors Used by Parents to Reduce Their Child’s Influence on Food

Purchases. Many of the FRM behaviors identified in this study were unique to those participants who took their children along on shopping trips (n=127). They employed some of the behaviors before embarking on their shopping trip, and others while

shopping, to decrease their child(ren)'s effect on food purchases (Table 4.5). Behaviors primarily focused on deterring the child(ren) from asking for items, and included refusal strategies that were used when the child(ren) asked for things that weren't an intended purchase.

Before shopping, parents fed their kids and/or packed snacks to bring along to reduce the likelihood of having to buy foods for them to eat. Parents also brought along toys, books, and cellphones to divert their child(ren)'s attention. Some parents performed negotiations with their child(ren) before going to the store by either giving them a selection of things to choose from or telling them the quantity of items they would be permitted to have. Parents also mentioned that bringing their child(ren) on the shopping trip would result in too much of an escalated grocery bill and left them at home when they could.

Once at the store, participants utilized various additional strategies to prevent unnecessary spending. The snacks and treat aisles were avoided. Many parents distracted their child(ren) by playing games with them, and giving them responsibilities such as retrieving items off of the shopping list and pushing the shopping cart. Additionally, the shopping trip was sometimes used as a learning experience; younger children were taught letters, colors, and shapes, and older children were taught how to read food labels and bargain shop. One mother mentioned that she took advantage of the free childcare services that her local supermarket offered for shoppers, so that her child wouldn't be present during the shopping trip and ask for goodies.

Table 4.5. Food Resource Management Behaviors Used by Parents to Reduce Their Child(ren)'s Influence on Food Purchases

Behaviors Employed in Preparation for Shopping

- Bringing snacks along so that they will not ask for food while in the store
- Bringing things to keep child occupied
- Feeding child before going to the store
- Leaving child at home
- Making agreements with children beforehand to limit purchases i.e. telling child what they would be allowed to get and the quantity

Behaviors Employed While Shopping

- Avoiding the snack/toys aisles
- Distracting child by giving them responsibilities, playing games with them, or using the shopping trip as a learning experience
- Refusing to honor child's requests, i.e. saying no, ignoring them, walking past the item of interest, not going down that aisle again, telling them that they don't need it, telling them that they don't deserve it because they misbehaved
- Keeping child in the cart, if small
- Keeping child in sight so that they cannot sneak items into the cart
- Negotiating with child when they want expensive items or many items, i.e. finding a cheaper alternative for the item they want, giving them choices that they can choose from, telling them they can get it if they have enough money leftover
- Putting things snuck into the cart by the child back on the store's shelf
- Telling child that they can't afford the item(s)
- Using babysitting resources available in-store for shoppers so that child would not be present during shopping trip as ask for things

Parents employed a different set of strategies when the behaviors they used to distract their child(ren) weren't effective. Some just said "no" when their child(ren) asked them to purchase unnecessary items, while others explained to their child(ren) that their wants couldn't be purchased due to financial constraints. Additionally, participants looked for lower cost alternatives for the things their child(ren) wanted, or used a more passive aggressive approach, e.g., ignoring them. In response to children's requests, some participants told their children they were not deserving because they misbehaved, or they postponed the purchase of the item(s) indefinitely. To avoid answering to her child's

request, one mother indicated that she played with her child's psyche by telling the child the item requested was "nasty."

Most Commonly Mentioned FRM Behaviors. Although this was a qualitative investigation, and caution must be taken in numerically interpreting responses, behaviors that were mentioned by more than 10% (n=20) of the study population are listed in Table 4.6. Notably only checking the store circulars for deals, comparing prices, getting/using coupons, and making a grocery list were mentioned by approximately half of the study population.

Table 4.6: Food Resource Management Behaviors that were Most Commonly Mentioned by Study Population (N=201)	
Behavior	Percent of the Population that Mentioned Behavior
Getting coupons	61.7%
* Making a grocery list	53.7%
Checking store circulars for deals	53.2%
Buying foods on sale	49.8%
* Comparing prices	44.3%
* Sticking to grocery list while shopping	34.3%
Verifying foods on-hand	30.9%
* Creating a food budget	28.9%
* Storing foods in a way that keeps them fresh	28.3%
Checking store circulars to decide where to shop	25.4%
* Freezing foods that will not be used right away	24.8%
* Sticking to a budget while shopping	22.4%
Separating meats into smaller packages and freezing	20.4%
Avoiding impulse buying	18.4%
Eating foods before they spoil	17.4%
Buying in bulk	16.4%
Using discount savings card	15.0%
* Planning meals	14.4%
Checking receipt for mistakes	13.4%
Matching coupons to sales	12.9%
Checking receipt for savings	12.4%
Buying generic items	12.4%
Using coupons only when it results in a good buy	11.0%
*Indicates behavior has been noted in publications as those taught in nutrition education programs offered to low-income individuals	

Additionally, two behaviors regarding tips for shopping with children were mentioned by more than 10% of the 127 parents in the study, i.e., saying “no” when child(ren) asks for things (16.5%) and making compromises with child(ren), e.g., for less expensive items or regarding the number of purchases they could direct (10.2%). Neither of these behaviors have been published as behaviors taught in nutrition education classes.

DISCUSSION

This study illustrated that low-income adults in New Jersey report a substantial number of varied behaviors to manage their food resources. Practices are performed both at home and at the store, and some are specific to those who have children. This study also reinforced findings from previous work, but additionally identified FRM practices used by low-income individuals that do not appear in the literature.^{5-8,10-12,15-20}

This study identified 70 behaviors that are being used as FRM practices, whereas only 16 FRM behaviors were identified in the literature as those taught and/or assessed in nutrition education programs (Table 4.7). While the adoption of these behaviors after education has in some cases been assessed, neither the actual monetary savings that result from employing them nor their impact on food security has been evaluated. Five of the 16 FRM behaviors that were identified as those taught and/or assessed in nutrition education programs, i.e., assessing available resources for food, not succumbing to food advertising, not thawing foods at room temperature, preserving foods, and trying new low-cost recipes, were not mentioned by participants as strategies they used. This is likely the result of either the participants not engaging in these behaviors, or their failure to recognize them as FRM behaviors.

Table 4.7 Food Resource Management Behaviors Identified in the Literature as Having Been Taught and/or Evaluated in Nutrition Education Interventions

Food Resource Management Behavior	Programs in Which Published Literature Indicates The Behavior Has Been Taught and/or Assessed as a Food Resource Management Practice		
	EFNEP	SNAP-Ed	Other Nutrition Education Program for Low-Income Adults
Assessing available resources for food e.g., time, kitchen equipment ¹³		X	
* ^Φ Building and use of a personal storage system ¹³		X	
* Comparing unit prices ^{5,6,10-12,13}	X	X	X
* Comparing the cost of foods at different food outlets ¹³		X	
* Creating a budget ^{6,13}	X	X	
* ^Φ Increasing food access options, e.g., hunting, fishing, or gardening ¹³		X	
* Keeping track of past expenditures ¹⁰			X
* Making foods from scratch ^{5,8,13}	X	X	
* Not leaving foods unrefrigerated to prevent food waste ^{5,6,8,10}	X	X	X
Not succumbing to food advertising ⁸	X		
Not thawing foods at room temperature ^{5,6,8,10}	X	X	X
* Planning meals ^{5,6,8,13}	X	X	
^Φ Preserving foods, e.g., canning, etc. ¹³		X	
* Shopping with a grocery list ^{5,6,8,10,13}	X	X	X
* ^Φ Storing foods/leftovers for later use ¹³	X	X	
Trying low-cost recipes ¹³		X	
*Indicates behavior was identified as a food resource management practice by members of the study population			
^Φ Indicates behavior has not been evaluated for behavior change post implementation			

Notably, the in-depth literature review done for this investigation failed to reveal any of the 14 behaviors used by parents to reduce their child(ren)'s undue influence on food purchases (Table 4.5). This is surprising in that both EFNEP and SNAP-Ed identify parents as a primary target audience,^{2,3} and it has been recognized in the literature that parents who bring their kids along on their shopping trips are more likely to experience an increased grocery bill.^{15,2} Also, studies have shown that the prevalence of food insecurity is higher in households with children compared to households without children,^{1,22} so these FRM skills may be particularly beneficial for households with children.

The refusal strategies used by parents when shopping with their children that were noted in this investigation were similar to the ones discovered in an anthropological investigation conducted by O'Dougherty et al. that examined the decision making process of adults shoppers around food purchases when young children accompanied them.²¹ In both studies, simply saying "no", ignoring the child(ren)'s desires, and distracting the child(ren) were the top strategies used to respond to their request(s).²¹ Also both studies found that some parents used the shopping trip as a learning opportunity for their child(ren).²¹ Children were taught the names of foods and read/spelled names on packages, and counted them.²¹ This tactic not only preoccupied children to reduce their requests, but also provided valuable teaching opportunities, and parent-child interactions. Both this investigation, as well as O'Dougherty et al. recognized parent initiated compromises as a means of controlling children's influence over purchases.²¹

The provision of education to assist parents in reducing their food costs while shopping with their child(ren) represents a large gap in nutrition education, specifically in national nutrition education programs, i.e., SNAP-Ed and EFNEP.

Unfortunately, two of the behaviors identified in this investigation were questionable. One was the use of gambling to acquire food money, the other was the use of food as a reward when children were concerned. The former strategy was used by one member of the study population, and has also been previously reported as a strategy used by low-income individuals.^{17,18} Although it is outside the purview of nutrition education programs to address this strategy, it should be considered. Foods were used as both positive and negative reinforcement with children. A few participants mentioned that they bought items for their child(ren) at the grocery store if they behaved or did well in school; others indicated that they did not buy items for their child(ren) because they were undeserving due to their failure to behave. This strategy is widely used, yet researchers have warned that using food as a reward promotes obesity, and that it alters food preferences in a manner that results in negative effects on dietary quality.²³⁻²⁷ Nutrition educators should make parents aware of the potentially adverse consequences associated with this practice.

Olson et al. showed that food and financial skills, such as the ability to manage bills and the ability to stretch groceries to the end of the month, were associated with increased food security in low-income families.⁹ Out of that study sample, 72% were classified as employing the highest skill level regarding these FRM behaviors, and 10% was classified

as employing the lowest FRM skill level.⁹ The rates of food insecurity were 42% versus 83% in the different groups respectively, illustrating that FRM skills are associated with household food security status.⁹ Olson's work supports the premise that teaching low-income individuals FRM strategies may impact their access to foods and ultimately improve their food security. It would be valuable to see this type of study repeated, with the assessment of the FRM behaviors identified in this study included.

Since this investigation was done using face-to-face survey interviews, social desirability may have caused participants to mention more strategies than they actually employ, as well as strategies they do not employ. Study incentives were not initially given when data collection began; this likely resulted in a smaller sample than would have otherwise been obtained and prevents study results from being generalized. Further, because the survey took between 10-20 minutes to administer, response burden may have contributed to the fact that approximately 20 participants started the survey but did not complete it, which resulted in a smaller study sample. Although the interview team was trained prior to being granted permission to independently administer surveys, during data analysis the number of missing values found illustrated that more in-depth training should have been conducted. Finally, also during data analysis, it was noted that the research team should have been trained to probe more in order to better clarify open-ended responses.

IMPLICATIONS FOR RESEARCH AND PRACTICE

In conclusion, this study illustrates that low-income adults in New Jersey employ a variety of FRM strategies. An overwhelming number of the strategies are not being taught and evaluated in nutrition education currently. The comparison of the behaviors identified in this investigation to those appearing in the literature suggests that the study of FRM practices and the results of FRM education represent research gaps. Research is needed to examine the relative contribution of these FRM behaviors in assisting low-income households in saving money and increasing their food security. However, it is likely that rigorous research of this type will take considerable time and effort, so in the interim it would be advisable for nutrition educators to review the FRM behaviors identified in this work, and include those that they feel will be beneficial to their clientele in their educational endeavors. This is likely to be particularly important in regards to assisting parents in reducing costs associated with taking their child(ren) shopping.

Out of the 70 behaviors mentioned, only four were mentioned by approximately half of the study population as FRM behaviors they employed (Table 4.6), this suggests that FRM education is needed. However, since half the target population seem to recognize buying foods on sale, checking the store circulars for deals, getting/using coupons, and making a grocery list as FRM behaviors, a number that may likely increase if asked quantitatively, perhaps these are behaviors that should not be highlighted as much in FRM nutrition education aimed at low-income individuals. Researchers should A combination of FRM nutrition education and nutrition assistance may decrease the high rates of food insecurity among people with limited incomes.

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CHAPTER 5: CONCLUSION

Food insecurity is a major public health issue, especially among low-income households,¹ as such, the utilization of food resource management (FRM) skills is specifically important for low-income individuals as it may increase their food security.^{5,9} Prior to this investigation, no work has been done to catalogue the FRM practices used by low-income individuals.

This investigation uniquely contributes to the existing literature by culturally relevant FRM strategies that could be adopted into existing nutrition education programs aimed at low-income individuals and guidance for the development of new FRM curricula. Further, since this investigation is the first of its kind, it contributes to the small body of research on the topic of FRM practices used by low-income individuals.

This investigation was part of a larger study conducted by the author of this thesis in which questions were asked to examine participants' degree of perceived importance in employing FRM skills, and their degree of perceived confidence in utilizing FRM skills. Questions with Likert-type responses, on a 5-point scale were used to assess the aforementioned. The mean rank of 4.84 ± 0.6 on a scale of 1 (not important) to 5 (very important) illustrated that the majority of participants believed utilizing FRM skills is important. Participants also seemed to be very confident in practicing FRM behaviors, as their mean rank on a scale of 1 (not confident) to 5 (very confident), was 4.0 ± 1.1 . This

assumption is reinforced in that when asked who the “smartest” shopper they knew was, 44.5% (n=89) believed that they were the “smartest” shopper they knew.

In conclusion, low-income adults employ far more FRM behaviors in their attempts to shop “smart”, than those taught and assessed in nutrition education programs aimed at low-income individuals. To decrease the gap in the FRM behaviors being taught in comparison to the many that may be of value to this audience, nutrition educators should consider teaching the FRM behaviors identified in this work that they feel would be beneficial to their target population. Further research should be conducted to investigate the impact of FRM practices on household savings and food security when various practices/combination of practices are utilized. Employing FRM skills has been linked to increased food security;⁹ in an effort to improve national food security, perhaps more FRM practices should be taught in nutrition education.

APPENDIX I: Questions Used to Assess the Food Security Status of Households

1. “We worried whether our food would run out before we got money to buy more.” Was that often, sometimes, or never true for you in the last 12 months?
2. “The food that we bought just didn’t last and we didn’t have money to get more.” Was that often, sometimes, or never true for you in the last 12 months?
3. “We couldn’t afford to eat balanced meals.” Was that often, sometimes, or never true for you in the last 12 months?
4. In the last 12 months, did you or other adults in the household ever cut the size of your meals or skip meals because there wasn’t enough money for food? (Yes/No)
5. (If yes to question 4) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?
6. In the last 12 months, did you ever eat less than you felt you should because there wasn’t enough money for food? (Yes/No)
7. In the last 12 months, were you ever hungry, but didn’t eat, because there wasn’t enough money for food? (Yes/No)

8. In the last 12 months, did you lose weight because there wasn't enough money for food? (Yes/No)

9. In the last 12 months did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food? (Yes/No)

10. (If yes to question 9) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

(Questions 11-18 were asked only if the household included children age 0-17)

11. "We relied on only a few kinds of low-cost food to feed our children because we were running out of money to buy food." Was that often, sometimes, or never true for you in the last 12 months?

12. "We couldn't feed our children a balanced meal, because we couldn't afford that." Was that often, sometimes, or never true for you in the last 12 months?

13. "The children were not eating enough because we just couldn't afford enough food." Was that often, sometimes, or never true for you in the last 12 months?

14. In the last 12 months, did you ever cut the size of any of the children's meals because there wasn't enough money for food? (Yes/No)

15. In the last 12 months, were the children ever hungry but you just couldn't afford more food? (Yes/No)

16. In the last 12 months, did any of the children ever skip a meal because there wasn't enough money for food? (Yes/No)

17. (If yes to question 16) How often did this happen—almost every month, some months but not every month, or in only 1 or 2 months?

18. In the last 12 months did any of the children ever not eat for a whole day because there wasn't enough money for food? (Yes/No)

APPENDIX II: Search Terms and Databases Used to Find Literature on Food Resource Management Interventions Aimed at Low-Income Individuals

Databases Searched:

- Agricola
- CINAHL
- Science Direct
- Pub Med

Search Terms Used:

Low-income OR limited resource OR SNAP-Ed, OR, SNAP, OR, FSNE, OR WIC, OR
EFNEP, OR hunger, OR low-income: AND

- budget food
- EFNEP intervention
- food resource management
- food shop* intervention
- FSNE intervention
- grocery intervention
- grocery store tour
- sav* money while shopping
- save money while shop*
- savvy shop*
- shop* intervention

- shop* tour
- smart Shop*
- smart shop* intervention
- SNAP intervention
- SNAP-Ed intervention
- WIC intervention

Key

EFNEP-Expanded Food and Nutrition Education Program

FSNE-Food Stamp Nutrition Education

SNAP- Supplemental Nutrition Assistance Program

SNAP-Ed- Supplemental Nutrition Assistance Program-Education

WIC- The Special Supplemental Nutrition Assistance Program for Women, Infants, and Children

**APPENDIX III: Food Resource Management Survey That was Developed and Used
for This Research.**

STAFF ID #: _____ **Participant ID#** _____ **Date** _____

1. Age: _____

2. Gender: ☐ Male ☐ Female

3. Are you: ☐ Hispanic ☐ Non-Hispanic

4. What group do you most closely identify yourself with?

☐ American Indian ☐ Asian/Pacific Islander ☐ Black (non-Hispanic)
☐ Hispanic/Latino(a) ☐ White (non-Hispanic) ☐ Other: _____

5. What is the last grade you completed in school?

☐ Less than High School ☐ High School Diploma/GED ☐ Some College ☐ 2-Year
 College Degree ☐ 4-Year College Degree (BA, BS) ☐ Master's Degree ☐ Doctoral Degree
☐ Professional Degree (MD, JD).

6. Do you have children that you either take shopping with you or find care for when you go shopping? ☐ Yes ☐ No ☐ I go shopping when they are at school/not around

If yes:

6a. How often do you take your child/children shopping with you?

☐ Never ☐ Once in a while ☐ Sometimes ☐ Almost always ☐ Always

6b. **If they take their kids shopping with them:** What are things you do to keep your children from talking you into buying things you did not plan to buy? (**Write answer below**)

--

6c. How old are your child(ren)? _____

7. At which of the following locations do you shop for food? (**check all that apply**):

<input type="checkbox"/> Retail grocery stores/supermarkets	<input type="checkbox"/> Corner stores/bodegas
<input type="checkbox"/> Meat markets	<input type="checkbox"/> Convenience stores (like 7 Eleven)
<input type="checkbox"/> Discount stores (like Target or Walmart)	<input type="checkbox"/> Dollar Stores
<input type="checkbox"/> Wholesale stores (like Costco or BJ's)	<input type="checkbox"/> Drug stores
<input type="checkbox"/> Meat trucks	<input type="checkbox"/> Farmer's markets

8. At which type of location do you buy **most** of your food? (**check only 1**):

<input type="checkbox"/> Retail grocery stores/supermarkets	<input type="checkbox"/> Corner stores/bodegas
<input type="checkbox"/> Meat markets	<input type="checkbox"/> Convenience stores (like 7 Eleven)

<input type="checkbox"/> Discount stores (like Target or Walmart)	<input type="checkbox"/> Dollar Stores
<input type="checkbox"/> Wholesale stores (like Costco or BJ's)	<input type="checkbox"/> Drug stores
<input type="checkbox"/> Meat trucks	<input type="checkbox"/> Farmer's markets

9. When you are deciding where to shop for food which of the following do you consider?
(**check all that apply**):

<input type="checkbox"/> How far it is to get there	<input type="checkbox"/> If the meat is fresh
<input type="checkbox"/> If it is on a bus line	<input type="checkbox"/> If the produce is fresh
<input type="checkbox"/> If I can walk to it	<input type="checkbox"/> If the prices are good
<input type="checkbox"/> How much it will cost to go there in a taxi	<input type="checkbox"/> If I can buy things in bulk there
<input type="checkbox"/> If I can ride my bike to it	<input type="checkbox"/> If the store will let me use my EBT card
<input type="checkbox"/> If I have a friend or family member who will take me there	<input type="checkbox"/> If the store carries the foods I want

10. Of the following choices, what are the 3 most important reasons you choose to shop at particular store? (**check only 3**):

<input type="checkbox"/> How far it is to get there	<input type="checkbox"/> If the meat is fresh
<input type="checkbox"/> If it is on a bus line	<input type="checkbox"/> If the produce is fresh
<input type="checkbox"/> If I can walk to it	<input type="checkbox"/> If the prices are good
<input type="checkbox"/> How much it will cost to go there in a taxi	<input type="checkbox"/> If I can buy things in bulk there
<input type="checkbox"/> If I can ride my bike to it	<input type="checkbox"/> If the store will let me use my EBT card
<input type="checkbox"/> If I have a friend or family member who will take me there	<input type="checkbox"/> If the store carries the foods I want

11. Does transportation affect how often you shop for food? ☐Yes ☐No

12. How do you get to the store to buy most of your food? (**check only 1**):

- ☐ Walking
☐ Taking a taxi
☐ Biking
☐ Taking my car
☐ Getting a ride from a friend or family member
☐ Taking the bus
☐ Other _____

13. Which of the following do you use to buy food? (**check all that apply**):

- ☐ Food Stamps/SNAP/EBT ☐ WIC Vouchers ☐ Both Food Stamps/SNAP/EBT & WIC Vouchers ☐ N/A

13a. **If EBT is used:**

About how long do your EBT/SNAP benefits last: ☐1 week ☐2 weeks ☐3 weeks ☐All month

14. How many times last month did you get food from a food pantry:

- ☐ not at all ☐ 1 time ☐ 2 times ☐ 3 times ☐ 4 times ☐ more than 4 times

15. How often do you do your major food shopping?

- ☐ less than 1time a month ☐ 1x/month ☐ 2-3x/month ☐ 1x/week ☐ 2 plus times/week

16. Of the following, which describes how you shop? (**Check all that apply**):

- ☐ Choosing meats first and deciding what other foods go best with it
- ☐ Choosing foods I cannot get with my WIC coupons
- ☐ Choosing foods I cannot get at the food pantry
- ☐ If they are quick and easy to make
- ☐ How healthy they are
- ☐ Their cost

Say: When people “shop smart” for food they are able to get the most for their money. They **also** do things before and after they shop to make sure their grocery money is not wasted. Who is the smartest shopper you know (**the participant may name self**)? (**RESPONSE**)

17) Are there things that (**INSERT NAME FROM ABOVE**) does before he/she shops that make him/her a smart shopper? If so, what are they? **After responses:** a) What about at the store?

After responses: b) How about after he/she shops?

<p><u>Before Shopping</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Plans meals/ meals for the week <input type="checkbox"/> Checks to see what is already on hand <input type="checkbox"/> Checks circular for good buys <input type="checkbox"/> Checks circulars to decide where to shop <input type="checkbox"/> Eats/feeds kids before shopping <input type="checkbox"/> Leaves kids at home <p><u>Shopping Lists</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Makes a list <input type="checkbox"/> Sticks to the list <input type="checkbox"/> Lists foods on list according to aisles <p><u>Budgets</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Sets a budget <input type="checkbox"/> Sticks to a budget <p><u>After Shopping</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Check for coupons received at the check-out <input type="checkbox"/> Puts coupons in a safe place <input type="checkbox"/> Checks receipt to see how much was saved 	<p><u>Coupons</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Looks for/uses coupons <p>(ASK WHERE)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Internet <input type="checkbox"/> Mailings to home <input type="checkbox"/> Sunday paper <input type="checkbox"/> Other: _____ <input type="checkbox"/> Matches coupons with what is on sale for the week <p><u>At the Store</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Buys foods on sale <input type="checkbox"/> Buys generics <input type="checkbox"/> Buys in bulk <input type="checkbox"/> Buys manager’s specials (foods about to expire) <input type="checkbox"/> Avoids impulse purchases <input type="checkbox"/> Checks prices of foods above/below eye level <input type="checkbox"/> Compares brand name to generic prices <input type="checkbox"/> Compares prices <input type="checkbox"/> Compares unit prices <input type="checkbox"/> Gets rain checks for sale items that were sold out <input type="checkbox"/> Only shops in aisles necessary to get what is needed <input type="checkbox"/> Shops the perimeter of the store <input type="checkbox"/> Uses coupons only when they will result in a good buy <input type="checkbox"/> Uses a calculator to keep track of expenditures
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<input type="checkbox"/> Check receipts for mistakes <input type="checkbox"/> Puts foods away right away to keep them fresh <input type="checkbox"/> Stores foods in FIFO fashion <input type="checkbox"/> Separate foods into smaller packages <input type="checkbox"/> Freezes foods that will not be used right away <input type="checkbox"/> Eats foods before it spoils	<input type="checkbox"/> Uses/gets a store discount saving card (With Kids) <input type="checkbox"/> Avoids treat sections <input type="checkbox"/> Kept in sight <input type="checkbox"/> Brings toys for <input type="checkbox"/> Plays games with <input type="checkbox"/> Gives responsibilities
<input type="checkbox"/> <u>Other:</u>	

18. We all try to shop smart, but sometimes things get in the way. If you are a great shopper, this may only happen very rarely, but it happens to EVERYONE sometimes. On these occasions, what gets in your way?

19. On a scale from 1-5, where 1 is not important and 5 is very important, how important do you think it is to be a smart shopper?

1. ☐ Not important 2. ☐ Somewhat important 3. ☐ Neither important or unimportant
 4. ☐ Important 5. ☐ Very Important

20. On a scale from 1-5, where 1 means not confident and 5 means very confident, how confident are you in your ability to prepare for your shopping trips as a “smart shopper”?

1. ☐ Not confident 2. ☐ Somewhat confident 3. ☐ Neither confident nor not confident 4. ☐ Confident 5. ☐ Very confident

21. On a scale from 1-5, where 1 is not confident and 5 is confident, how confident are you in your ability to “shop smart”?

1. ☐ Not confident 2. ☐ Somewhat confident 3. ☐ Neither confident nor not confident 4. ☐ Confident 5. ☐ Very confident

22. Would you say you use coupons:

- ☐ Never ☐ Once in a while ☐ Sometimes ☐ Often ☐ Almost Always ☐ Always

If answered “never” skip to question 23.

22a. Before you go food shopping how often, do you check store ads and match coupons to things that are on sale:

- ☐ Never ☐ Once in a while ☐ Sometimes ☐ Often ☐ Almost Always ☐ Always

22b. How often do you look for coupons online, or the Sunday newspaper, etc.:

☐Never ☐Once in a while ☐Sometimes ☐Often ☐Almost Always ☐Always

22c. How often do you use store coupons coupled with coupons you find elsewhere (online, Sunday newspaper etc) for the same item:

☐Never ☐Once in a while ☐Sometimes ☐Often ☐Almost Always ☐Always

22d. How often do you keep your coupons in a coupon organizer so you can easily find them when you need them:

☐Never ☐Once in a while ☐Sometimes ☐Often ☐Almost Always ☐Always

23. How often do you use coupon blogs to find the best deals on food items:

☐Never ☐Once in a while ☐Sometimes ☐Often ☐Almost Always ☐Always

24. How often do you shop at stores that double coupons:

☐Yes ☐No

25. How often do you check store's weekly ads for things that are on sale:

☐Never ☐Once in a while ☐Sometimes ☐Often ☐Almost Always ☐Always

26. How often do you make a shopping list before you go shopping:

☐Never ☐Once in a while ☐Sometimes ☐Often ☐Almost Always ☐Always

27. How often do you plan your meals for the week before you go shopping:

☐Never ☐Once in a while ☐Sometimes ☐Often ☐Almost Always ☐Always

28. When you go food shopping, how often do you buy things that you did not plan on buying?

☐Never ☐Once in a while ☐Sometimes ☐Often ☐Almost Always ☐Always

29. Do you know what a unit price is?

☐Yes ☐No

IF NO, skip to 32

30. Do you know where to find a unit price?

☐Yes ☐No

31. When you go food shopping, do you compare unit prices?

☐Yes ☐No

As you answer the rest of the questions think only about the past year.

32. In response to this statement, "The food that I bought just didn't last, and I didn't have money to get more," which response best describes your situation:

- ☐ Often true
- ☐ Sometimes true
- ☐ Never true
- ☐ I do not know

33. In response to this statement, “I could not afford to eat balanced meals,” which response best describes your situation:

- ☐ Often true
- ☐ Sometimes true
- ☐ Never true
- ☐ I do not know

34. In response to this statement, “I (or another adult in my household) have had to cut the size of meals or skip meals because there wasn't enough money for food,” which response best describes your situation:

- ☐ Yes
- ☐ No
- ☐ I do not know

IF YES

34a. How often did this happen?

- ☐ Almost every month
- ☐ Some months but not every month
- ☐ Only 1 or 2 months
- ☐ I do not know

35. In response to this statement, “I (or others in my household) have had to eat less than we felt we should because there wasn't enough money for food,” which response best describes your situation:

- ☐ Yes
- ☐ No
- ☐ I do not know

36. In response to this statement, “I have been hungry but didn't eat because there wasn't enough money for food?,” which response best describes your situation:

- ☐ Yes
- ☐ No
- ☐ I do not know

37. I have one final unrelated question, but we want to know if internet education would be a good idea, do you regularly use the internet?

IF YES

37a. How do you access it (i.e., wireless/cable/DSL, etc.)?

37b. Where do you usually access the internet (i.e., at home, the library, at school, etc.)?

37c. Do you have a computer or a device that connects to the internet? YES NO

IF YES 37d. What kind of device (e.g., laptop, smartphone, desktop, etc.)?

APPENDIX IV: Research Site Authorization Form

MUST BE ON LETTERHEAD

I authorize Rutgers researchers from the Department of Nutritional Sciences to invite/recruit clients to engage in a survey about saving money while shopping for food. I understand that the purpose of this endeavor is to collect data to evaluate the things people do to save money while shopping for food. I understand that space will be needed to conduct the research and that to complete this research, researchers will recruit adults who meet the study criteria (i.e., over the age of 18, low income, who are primary food shoppers for their household, and who can understand English). I make this authorization on behalf of the site(s) listed below for which I am responsible. I have read a copy of the study protocol and am willing to allow surveys to be conducted at the location(s) specified.

I understand that if I have any questions about this research I can contact:

Charita Johnson
Phone: 732.932.3779
FAX: 732.932.5746
Email: Charitaj@eden.rutgers.edu

Dr. Debra Palmer
Phone: 732.932.9853
FAX: 732.932.5746
Email: dpalmer@njaes.rutgers.edu

Audrey Adler
Phone: 732-932-0532
FAX: 732.932.5746
Email: adler@njaes.rutgers.edu

Or write to any of the above at:
SNAP-Ed/EFNEP/Nutritional Sciences
11 Suydam St., 2nd Floor
New Brunswick, NJ 08901-2885

If any issues arise, I may also contact:

The Office of Research and Sponsored Programs
ASB III - 2nd Floor, 3 Rutgers Plaza
New Brunswick, NJ 08901
Main line: 848-932-0150

Site Name and Location:

Typed Name and Title of Authorizing Agent:

Signature of Authorizing Agent: _____

Date: _____

APPENDIX V: Script for Oral Assent Used for This Research

Good morning/afternoon, I am _____ from Rutgers. We would like to get to know how people save money when shopping for food and have created a survey to find out. By doing the survey you will really be helping us out by letting us know what information to include in educational material that discusses how to save money when food shopping. To complete the survey will take about 15 minutes of your time.

Are you interested in participating in this survey?

If no, thank them for their time

If yes proceed to read the screener questions

To see if you are qualified I am going to ask you a few questions:

1. Are you 18 years of age or older?
2. Do you do the major shopping in your household?
3. Can you understand English?

If no to any of the above questions, thank them for their time and say unfortunately we cannot have you participate in the survey.

If yes, continue reading below.

This research poses no risk to you. Your answers will be anonymous, which means that your name is not being written down or given to anyone. By answering the survey questions you will be agreeing to let us include your answers with everyone else's in the survey. You can choose not to answer any questions, or stop at anytime. All the answers we get from people who take the survey will be kept for 5 years and shredded and discarded later .

If you have any questions about this survey you can call Debra Palmer at (732) 932-9853. Any questions about your rights may be directed to the Institutional Review Board at Rutgers University at: 848-932-0150.

Here is a Participant Information Sheet that summarizes what I have just said. It has the contact information I just mentioned in case you have any questions later.

Before we begin, do you have any questions?

APPENDIX VI: Participant Information Sheet Used for This Research

You have agreed to answer some questions about saving money while food shopping. By answering the questions, you are helping Rutgers staff learn how to create the best lessons we can. To finish the survey will take about 15 minutes of your time.

This research poses no risk to you or harm to you. Your answers will be kept anonymous, that means your name will not written down or given to anyone. All your answers will be kept in a safe place and only seen by the researcher. After 5 years, the data will be destroyed. You can choose not to answer any questions, or stop at anytime.

If you have any questions about this survey you can call Debra Palmer at (732) 932-9853. Any questions about your rights may be directed to the Institutional Review Board at Rutgers University at: 848-932-0150.

If you have any questions about this survey you can call, email, or write to:

Dr. Debra Palmer
SNAP-Ed/EFNEP/Nutritional Science
11 Suydam St., 2nd Floor
New Brunswick, NJ 08901-2885
Phone: 732.932.9853
FAX: 732.932.5746
Email: dpalmer@njaes.rutgers.edu

Charita Johnson
SNAP-Ed/EFNEP/Nutritional Sciences
11 Suydam St., 2nd Floor
New Brunswick, NJ 08901-2885
Phone: 732-932-3779
Fax: 732-932-5746
Email: charitaj@eden.rutgers.edu

If you have any questions about your rights as a participant in this study, you can contact:

The Office of Research and Sponsored Programs
Rutgers University
ASB III - 2nd Floor, 3 Rutgers Plaza
New Brunswick, NJ 08901
Main line: 848-932-0150

Thank you for your time.

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