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The main objectives of this study were (a) to examine food shopping, choices, and budgeting practices among the two major recently arrived refugee groups, those of Burmese and Iraqi origin, and (b) to compare pre-resettlement living conditions and access to food between these same two groups.

The study was approved by the IRB of the University of North Carolina at Greensboro. A case-study approach was used to carry out an in-depth investigation of food choices and shopping practices of eight newly arrived refugee families. Of the eight families, four were Iraqi refugees, while four were originally from Burma. Participating families were interviewed to collect socio-demographic and related information on pre-resettlement living conditions. Additionally, food receipts were collected from each family for one and a half to two months to determine which foods were purchased, the percentage of the food budget coming from Supplemental Nutrition Assistance Program (SNAP) benefits, and the types of stores visited. The receipt data were analyzed using descriptive frequencies.

Results indicated that refugees of Burmese origin spent on average 19 years living in rural refugee camps, while the Iraqi refugee families lived in urban centers in neighboring countries prior to resettlement for an average of four and a half years. The SNAP benefits represented the majority of the food budget for most families. Refugee families from Burma on average spent more of their food budget at ethnic stores compared to Iraqi families. Purchase of dairy foods and plant proteins was rare among

participants from Burma while animal protein accounted for 30 percent of their food budget. Iraqis spent 18 percent of their food budget on foods from the solid fats and added sugar category. In conclusion, nutrition education interventions with refugees should be tailored to families taking into account their pre-resettlement living situations and prior food access.

FOOD RECEIPTS ANALYSES: EXAMINING FOOD CHOICES AND SHOPPING PRACTICES OF NEWLY ARRIVED REFUGEE FAMILIES IN THE U.S.

by

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APPROVAL PAGE

This thesis, written by Suzanne Doad, has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

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CHAPTER I

INTRODUCTION

A refugee is a person who has had to flee one's homeland due to a well-founded fear of persecution for reasons such as race, religion, nationality, or a membership in a particular political group (1). One lasting solution for displaced people is resettlement into a host nation (2). Two such groups of refugees that have been resettled into the U.S. in large numbers in recent years include Iraqi refugees and refugees of Burmese origin. For the year 2012, over 66,000 refugees were resettled into the U.S., the top two groups being of Burmese and Iraqi origin, and these two groups continue to make up a significant proportion of those admitted into the U.S. as refugees (3).

One would expect that upon resettlement, the health and nutrition-related issues facing refugee populations would become resolved and that their health would generally improve as they receive better access to healthcare and foods afforded by the country into which they resettle. However, various studies involving refugees from multiple ethnic backgrounds have shown that this is not necessarily the case. Dietary acculturation, a phenomenon by which immigrants assume the dietary practices of the new home country (4), is seen amongst many refugee groups as they attempt to adapt to the new food environment (5, 6, 7, 8). It has been observed that upon resettlement, the intake of certain food items such as meat and other animal products (5, 6, 9, 10), snack foods (5, 6, 8), and sweets and sodas (5, 7) increases while at the same time consumption of vegetables and

plant proteins decreases (6, 8, 10). With increased access to relatively cheap high-calorie foods and decreased physical activity, conditions leading to chronic illness and disease such as obesity, hypertension, and type 2 diabetes become more prevalent post-resettlement. Among a group of 290 Iraqi refugees, prevalence of obesity, hypertension, and diabetes were higher one year post-resettlement than at baseline (11). In another study, refugees commented that they are rarely overweight when they resettle in the U.S., and that weight gain is common post-resettlement (12). In a study by Dharod et al., greater than two-thirds of Somali refugee participants were either overweight or obese (9). Ailments related to deficiencies in calories and micronutrients may become resolved with better access to food; however, some micronutrient deficiencies, such as iron deficiency anemia, persist even after resettlement (12).

These changes in dietary choices and health status have partially been attributed to limited familiarity with the new food environment encountered upon resettlement, which creates further complications for refugee families. Supermarkets are overwhelmingly large compared to the shops where refugees are accustomed to purchasing foods, with many unfamiliar foods often packaged in labeling that they cannot read. Refugees often report difficulty shopping, which can add to anxiety about food (7, 12, 13, 14, 15, 16). The inability to speak and understand English frustrates refugees' ability to communicate with store staff in the case that they need assistance locating preferred or familiar food items (7). Refugees must also learn how to use automated benefits transfer systems such as the Supplemental Nutrition Assistance Program (SNAP) in order to purchase foods and learn how to budget these benefits throughout the month

so as not to run out before the beginning of the next cycle, which has been frequently documented (6, 16, 17). Additionally, refugees also experience transportation barriers, as many do not have personal transportation for food shopping. The need to rely on public transportation or others may have an effect on where and how often refugees are able to shop (7, 15, 18).

Upon resettlement, some refugees are surprised to learn that they have diseases about which they had never even heard. Due to low occurrence of dietary-related chronic disease pre-resettlement, refugees may have a poor understanding of the relationship between health and diet (5). During in-depth interviews with refugees, one describes that diabetes and high blood pressure are common diagnoses after arriving in the U.S. (12). Health and nutrition education for refugees can be a powerful tool by which to alter the progression of chronic disease development in this population. It is important to understand how refugees adapt to their new food environment upon resettlement, including an understanding of how and where they shop and what types of foods they purchase and eat. This will aid researchers and those who work with this ever-growing population to be equipped to address these issues as soon as possible to help prevent chronic disease from adding to the burden already faced by refugees.

While there is evidence that the adoption of dietary patterns of high fat and sugar intake upon resettlement increases the risk for health issues, there is a lack of literature on food shopping and budgeting practices of refugees and how these practices are related to their pre-migration condition. For this study, a case study design was chosen to allow in-depth examination of the factors that contribute to refugee shopping practices and what

their food choices and budgeting practices are upon resettlement. The study involves two newly-arrived refugee groups (Burmese and Iraqis) to also investigate how pre-resettlement living conditions and number of years in refugee camps affect resettlement food choices and food budget management.

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CHAPTER II

LITERATURE REVIEW

Background on Refugee Resettlement

The U.S. Congress passed the Refugee Act of 1980 after thousands of Indochinese were resettled in 1975 under an ad hoc Refugee Task Force (1). This act utilized the United Nations definition of "refugee" and set standards for resettlement services for all refugees granted entry into the U.S. (1). The Refugee Act also authorized federal assistance for the resettlement of refugees (2). The President, in collaboration with Congress, sets an annual limit to determine how many refugees can be resettled into the U.S. (1). The resettlement process is a long process. As a first step, a referral is made to the U.S. Refugee Admissions Program (USRAP) through various channels that include the United Nations High Commissioner for Refugees (UNHCR), the U.S. Embassy, or an authorized non-governmental organization (NGO) (3). After the referral is made, a Resettlement Support Center (RSC) funded and managed by The Bureau of Population, Refugees, and Migration (BPRM) works and prepares the case for presentation to the U.S. Department of Homeland Security (DHS) (3). After the DHS clears the refugee(s) indicating no threat to homeland security, they are then supported by one of nine resettlement agencies (4). These agencies are responsible for helping refugees settle into the local community (3). The agencies then place the refugees in one of their affiliate offices where they are provided with housing, essential furnishings, food, clothing,

orientation, and assistance with access to other social, medical, and employment services during the first 30–90 days in the U.S. (4). Upon resettlement in the host country, it is the expectation that these refugees become economically self-sufficient within a few months, but for many this is not the case.

Between the years 2010–2014, on average 65,600 refugees of varying nationalities were resettled into the U.S. During this same time period, an average of 2,269 refugees were resettled in North Carolina. Over the past five years, the three major refugee groups resettled into the U.S. were (a) Burmese, (b) Bhutanese, and (c) Iraqi, while in North Carolina they were (a) Iraqi, (b) Burmese, and (c) Bhutanese (5).

Background on Iraqi Refugees

The history of Iraqi refugees can be attributed to many wars and conflicts. A major recent conflict has been the Iraq War, which began in 2003 and lasted until 2011. This war resulted in local conflict, which forced many Iraqi families to flee from their homeland. One distinction to note is that Iraqi refugees established themselves in urban areas, whereas the majority of refugees have the experience of living in refugee camps (6). The displacement of Iraqis slowed during the war as people felt safer after Saddam Hussein's regime fell; however, the number of refugees has started to increase since 2006 due to civil war and unrest in the country (7). By April 2007, it was estimated that over 4 million Iraqis were displaced around the world—approximately 1.9 million were internally displaced and over 2 million were displaced in the neighboring countries of Syria, Jordan, Egypt, Iran, Lebanon, and the Gulf States. The majority of the refugees were displaced into Syria (1.2 million) and Jordan (750,000) (7). While approximately 95

percent of displaced Iraqis are still in the Middle East (7), over 73,000 Iraqi refugees were admitted into the U.S. for resettlement between October 2006 and November 2012 (8). In 2012, North Carolina received 229 Iraqi refugees, of which 67 were resettled in Durham County (9).

Background of Refugees from Myanmar (Formerly Known as Burma)

The second refugee group in this study is from Myanmar, formerly known as Burma. Hence, the refugee group from Myanmar in South Asia are often referred to as Burmese refugees. Specifically, the families are of the ethnic minority Karen, which represents about 7 percent of the population of Burma (10). After the British left Burma in 1948, there was widespread political and ethnic conflict and unrest that has continued to this day. Since then, there have been mass killings, executions, destruction of property, forced labor, rape, and torture. The minority ethnic groups were forced to seek refuge in neighboring countries such as Thailand, Bangladesh, and Malaysia (10). Over the past three decades, nine refugee camps have been established along the Thai-Myanmar border, offering a place of refuge for nearly 120,000 refugees. The Thai government gave its approval for resettlement of refugees of Burmese origin in 2005; since then, more than 96,000 refugees have been resettled into developed countries such as the U.S., Canada, Australia, Japan, the Netherlands, and Finland (11). Since 2005, North Carolina has been a top 10 destination for refugees of Burmese origin resettled into the U.S. (9), with approximately 8,200 resettled. For the year 2012, the state received 798 refugees of Burmese origin, with 75 being resettled in Durham County (9).

Health Status of Refugees Post-resettlement

Increased rates of chronic diseases and their risk factors are seen among resettled refugees. Many studies report a positive association between Body Mass Index (BMI) of refugees with time post-resettlement (12, 13, 14, 15). Iraqi refugees who resettled in Michigan experienced a significant increase in BMI one year post-resettlement, with some in the overweight category becoming obese, and many in the normal weight category becoming overweight (12). Similar trends are also seen among refugees resettled into other industrialized nations. More recent immigrants to Canada had lower BMI and chronic conditions than those arriving earlier (14). Similarly, Sudanese refugees living in Australia experienced higher BMI when living there for more than five years than when they had lived there less than five years (15).

As expected, due to increase in BMI, the rate of chronic diseases seen among resettled refugees is higher. In a study conducted with Iraqi refugees (n=290), there was a significant increase in those who developed hypertension during the first year of post-resettlement, and 2.5 percent of the participants developed diabetes during the same timeframe after not having it at baseline (12). Physicians working with refugees believe that their diets influence the development of conditions of which they are unaware; refugees often report that they have conditions that they have never heard of before, such as diabetes and hypertension (13). Along with overnutrition, refugees often experience micronutrient deficiencies; hence, they are often in a state of dual burden of malnutrition. For instance, in a study by Rondinelli et al., health care workers providing care to refugees noted that iron deficiency anemia is common in refugee children, even after the

resettlement period (13). Based on the literature, it is postulated that several factors including (a) high levels of food insecurity; (b) poor dietary acculturation; (c) transportation barriers; and (d) language barriers increase the risk for dual burden of under- and overnutrition among refugees upon resettlement.

Food Insecurity

Food insecurity, defined as "limited or uncertain availability of nutritionally adequate and safe foods" (16), is linked to a variety of negative health outcomes, including overweight and obesity (17, 18, 19), metabolic syndrome (19), hypertension (20), and elevated cholesterol (19, 20). According to the U.S. Department of Agriculture Economic Research Service (USDA ERS), 14 percent of U.S. households experienced food insecurity during the year 2014, including 10.5 million with moderate food insecurity and 6.9 million facing a severe level food insecurity. The percentage of households experiencing food insecurity has remained unchanged in recent years (21). Rates of food insecurity have remained highest amongst families headed by single mothers, minority ethnic groups, and those making less than 1.85 times the poverty level (21). Additionally, research indicates that non-U.S.-born heads of household, including immigrants and refugees, are at a significantly high risk of experiencing food insecurity (22, 23, 24, 25, 26, 27, 28).

In a study conducted by Dharod et al., two-thirds of Somali refugee women reported food insecurity in their households, with almost a quarter reporting child hunger (22). Similarly, Nunnery et al. determined that food insecurity among a group of 33 Liberian refugees was 61 percent (28). Almost half of the Cambodian refugee women in

one study reported some degree of food insecurity nearly two decades post-resettlement (24). It has been found that those who are more recently resettled have even higher rates of food insecurity at more severe levels than their more-established counterparts (22, 25, 29, 30).

Due to poor employment opportunities, language barriers, and poor mental health status, most of the refugees in the U.S. live in a poor economic condition. Jobs available to refugees post-resettlement generally afford low wages, while many remain unemployed. The prevalence of part-time employment and low wage jobs usually means that a refugee family's monthly budget is very limited. Several studies have reported that the income for many of these families places them well below the poverty level (22, 23, 24, 25, 28, 31, 32, 33, 34). In many cases, refugee families have a limited personal food budget and have to rely on food assistance benefits such as the Supplemental Nutrition Assistance Program (SNAP) for their household food supply (22, 23, 25, 28, 29, 31, 32, 33, 34), while some refugees report that SNAP benefit money makes up the entirety of their monthly food budget. For example, 48 percent of the Liberian refugees in a study by Nunnery et al. reported no personal income, with 42 percent receiving SNAP benefits (28). Likewise, in a study conducted by Kiptinness et al., 14 percent of the Bhutanese refugee participants reported that there was no household income and almost half of the families relied solely on benefits for the food budget (34). Several refugee groups have reported running out of SNAP benefits before the end of the monthly cycle or having anxiety related to not having enough money to buy food for the whole month. Dharod et al. determined that 55 percent of Somali refugees participating in SNAP reported that the

money was gone witin 15-20 days (32). Another study conducted with West Africans determined that 52 percent of food stamp participants reported finishing their benefits before the end of the cycle, with these participants much more likely to experience food insecurity (25). In a study by Hadley et al., 57 percent of the refugees responded that they were worried about running out of food before getting more money, while 52 percent had previously run out of money to buy food (23). Through in-depth interviews with Liberian refugees and asylum seekers, researchers determined that refugees were experiencing food anxiety due to running out of food stamps before they were able to acquire more; 90 percent of food stamp participants reported finishing food stamp benefits before the end of the cycle (30).

Adding to this, budgeting skills are lacking among many refugee groups. In one study, refugee mothers did not know how to budget assistance money throughout the month, use coupons, buy foods on sale, or compare prices among different brands and stores (31). Hadley et al. reported that refugees would run out of SNAP benefits early in the month (25). Vietnamese Montagnard refugees reported that bank accounts in pre-resettlement were rare and that exchanging work or homegrown vegetables for food was common among those who did not have a farm (33). These same refugees reported that there was not a household budget before resettlement.

Poor Dietary Acculturation among Refugees

Dietary acculturation is a phenomenon by which immigrants assume the dietary practices of the new home country (35). Among refugees, it is seen that dietary acculturation after resettlement results in an increased intake of calories and highly

processed foods (14, 29, 31, 32, 36). Patil et al. determined that for Liberian and Somali refugees, the availability of calories from sugar and sweeteners jumped from 4 percent to 5.3 percent of calories per day pre-resettlement to 17.5 percent in the U.S. (29). In a study with Somali refugees, it was seen that indicators of acculturation (High English proficiency, living in the U.S. for more than 4 years) were associated with increased consumption of snack foods (32). The researchers of this study reported that the length of time post-resettlement was associated with higher intakes of sugar; the consumption of foods such as pizza, potato chips, and instant noodles were also reported to be greater (32). Another study reported similar increases in the consumption of processed foods; it was noted that when access to and affordability of these foods increased, consumption also increased (31). When asked what food items were consumed more frequently after resettling, these refugees reported soda, fruit drinks, dairy, and meat as the most common (31). Dietary acculturation adds to the negative health effects seen upon resettlement. In interviews with refugees of Bosnian, Cuban, and Iranian origin, 60 percent believed that they ate too many calories, 50 percent too many sweets, and 19 percent too much fat (36).

Along with calorie-dense foods such as sugar-sweetened beverages and snacks, increases in the consumption of meat and meat products are seen very commonly amongst resettled refugees. In studies conducted with Somali refugees in the U.S., it was determined that meat is a central component of the cultural diet, and that a meal was not complete unless meat was eaten (22, 32). It has been proposed that since access to meats in refugee camps is limited, it becomes a highly valued food upon resettlement (22). In a study with Montagnard refugees, the intake of meat doubled upon resettlement and it was

more common among those who experienced food shortage previously or prior to resettlement (33). The consumption of meat rises for many groups post-resettlement due to the fact that it is easily available and relatively cheaper than what it was before resettlement (31, 37). In a study conducted by Dharod et al., it was found that amongst Somali refugees, eggs were eaten at least once a day by 89 percent of participants, while meat was consumed at least once a day by 87 percent (22).

In addition to increased consumption of meat, there may also be a decrease in the consumption of plant-based foods such as fruits, vegetables, and legumes. Lowered consumption of plant proteins was seen among a group of Vietnamese refugees (33); similarly, in a study with Somali refugees in the U.S., the intake of leafy green vegetables and fruits decreased among those living in the U.S. for more than three years (32). In a study conducted by Dharod et al., refugees reported the traditional vegetables they were accustomed to growing themselves were costly at ethnic food markets and that meat was a better value (31). Echoing this sentiment, Bosnian refugees reported that the quality of their diets decreased due to the inability to grow their own vegetables, as the prices for vegetables in the U.S. are high (36). Management of a limited food budget forces refugees to make choices about what foods they can afford to eat. It may be perceived that fruits and vegetables do not satisfy hunger in the same way that calorie-dense animal products do, so that when funds are low due to limited food budgets, consumption of these foods may be decreased (22, 31, 33). Another factor that may possibly influence purchasing habits of refugees includes unfamiliarity with the types of fruits and

vegetables found in Western countries, which may cause them to purchase eggs and meat, to which they are accustomed (31, 33).

Language, Transportation, and Other Related Issues

Many studies have found that refugees self-report low to poor English proficiency upon resettlement in the U.S. (22, 25, 31, 32, 33). This in turn affects their employability and the types of jobs that they are able to assume, with most taking low-paying unskilled positions (13, 23, 29, 36), which further affects income. Refugees in one study reported that learning English was their top priority because it was hard to find jobs without knowing English (31). Researchers in another study proposed that being bilingual allows for better social mobility and equips them to be able to traverse their new environment (22). Additionally, as an acculturation indicator, low English proficiency has been found to be associated with higher food insecurity and/or severity of food insecurity (22, 23, 25, 30).

Language barriers have also been shown to frustrate the food procurement process in refugees (30). When shopping at supermarkets, refugees may be unable to ask for help in finding certain preferred foods, and many are not accustomed to the layout, variety, and types of foods found in American supermarkets. This can overwhelm the shopper, and may ultimately cause them to prefer to shop at smaller, ethnic grocery stores, where store clerks speak their language and offer cultural foods with which they are familiar (23, 24, 31, 34). It has been noted that many of the food items in the small ethnic stores are imported and are often more expensive than regular grocery stores (30).

Lack of personal transportation is another barrier refugees often face in accessing the types of foods that they want and in doing effective food shopping. If one must rely on public transportation, then one is limited to the shopping areas that are accessible by bus routes. Some refugees report that bus tickets are expensive and that the routes are complicated and time-consuming (37). It may also be difficult to transport groceries on a bus. These refugees and others reported relying on friends or family members for grocery shopping transportation (29, 34, 37). Refugees who rely on others for transportation for food shopping are not in control of when and for how long they are able to shop.

In a study conducted by Nunnery et al., one-third of the participants reported having no car or license. The refugees who relied upon others for transportation to the grocery store spent up to 40 percent more on groceries (28). Infrequent grocery shopping may cause refugees to spend more money in anticipation of not knowing when they will be able to shop next. This could cause refugees to spend a lot of money at one time, leaving them decreased funds with which to buy food later in the month.

Potential Role of Pre-resettlement Experiences and Living Conditions on Resettlement

In the dietary acculturation literature, it has been noted that the religion and cultural food habits and access to food in the native country affects changes or continuation of dietary habits upon migration (31). Overall, irrespective of the foreign-born or native-born population, it has been noted that past experiences related to food shortage and security affects current dietary choices. Refugees experience uprooting and temporary living condition of camps with limited access to food; however, research on

how that affects resettlement living and food choices is very limited. The distinction has been made that groups of refugees who have previously experienced more serious food deprivation or food insecurity have an increased preference for high-calorie foods upon resettlement when these types of foods become more plentiful. Cambodian refugees who reported more severe and longer duration of food deprivation were more likely to be obese or overweight and to include fatty meats in their diet post-resettlement (38). Additionally, some pre-resettlement conditions may aid in predicting the dietary patterns and subsequent health issues faced by refugees after resettlement. A study conducted with Montagnard refugees determined that pre-resettlement hunger significantly predicted the amount of meat that was consumed after resettlement (33). Interestingly, among adolescent sub-Saharan African migrants to Australia, higher BMIs were experienced when immigrating from villages or rural areas as opposed to immigrating from urban cities (39). The researchers in this study proposed that this may stem from an unfamiliarity with the food system and food options found in urban centers. Overall, in view of promoting nutrition education and healthy food habits among resettled refugees, it is vital to understand their current food choices and related issues. Refugees generally experience significant lifestyle changes upon resettlement, with past experiences of unstable living conditions. In such cases, it is critical to understand how pre-migration living experience and previous food access-related issues affect food choices upon resettlement.

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CHAPTER III

RESEARCH ARTICLE

Food Receipts Analyses: Examining Food Choices and Shopping Practices of Newly Arrived Refugee Families in the U.S.

Abstract

The main objectives of this study were (a) to examine food shopping, choices, and budgeting practices among the two major recently arrived refugee groups—those of Burmese and Iraqi origin; and (b) to compare pre-resettlement living conditions and access to food between these same two groups.

The study was approved by the IRB of the University of North Carolina at Greensboro. A case-study approach was used to carry out an in-depth investigation of food choices and shopping practices of eight newly-arrived refugee families. Of the eight families, four were Iraqi refugees, while four were originally from Burma. Participating families were interviewed to collect socio-demographic and related information on pre-resettlement living conditions. Additionally, food receipts were collected from each family for one and a half to two months to determine which foods were purchased, the percentage of the food budget coming from Supplemental Nutrition Assistance Program (SNAP) benefits, and the types of stores visited. The receipt data were analyzed using descriptive frequencies.

Results indicated that refugees of Burmese origin spent on average 19 years living in rural refugee camps, while the Iraqi refugee families lived in urban centers in neighboring countries prior to resettlement for an average of four and a half years. The SNAP benefits represented the majority of the food budget for most families. Refugee families from Burma on average spent more of their food budget at ethnic stores compared to Iraqi families. Purchase of dairy foods and plant proteins was rare among participants from Burma, while animal protein accounted for 30 percent of their food budget. Iraqis spent 18 percent of their food budget on foods from the solid fats and added sugar category. In conclusion, nutrition education interventions with refugees should be tailored to families, taking into account their pre-resettlement living situations and prior food access.

Introduction

According to the United Nations High Commissioner for Refugees (UNHCR), refugees are individuals who are unable to return to their homeland because of a well-founded fear of persecution for reasons such as race, religion, nationality, or a membership in a particular political group (1). For the year 2012, an estimated 10.5 million individuals were classified as refugees worldwide, not including 4.8 million Palestinian refugees (2, 3). The most recent statistics place the world's refugee population at 21.3 million, with conflicts in Somalia, Afghanistan, and Syria producing the most refugees (4). There are three possible "solutions" for refugees, which include repatriation, local integration, and resettlement (5). Under the resettlement solution, approximately 1% (~ 80,000) of the total refugee population resettles into developed countries such as the

U.S., Australia, and Canada (3). As a part of this resettlement program, each year an average of 60,000 refugees resettle in the U.S. In 2012, 66,292 refugees were resettled in the U.S., and those of Burmese and Iraqi origin were the top two groups, making up 47% of the total refugee population resettled during that year (6). Current data show that these two groups of refugees continue to represent a large portion of those admitted to the U.S. (3).

Upon resettlement in the U.S., refugees often experience the stress of adjusting to a new lifestyle, culture, and economy of a developed country. Especially, the initial resettlement period of the first few months is a time of significant transitions and widespread change for refugee families. Resettlement agencies supported by the U.S. State Department aid refugees during this transition period. The agencies assist refugees in finding housing and supplies, provide transportation for initial health care screenings, and offer programs such as job training and English language instruction. Additionally, refugees are eligible for the federal food assistance programs such as the Supplemental Nutrition Assistance Program (SNAP, formerly known as Food Stamps) up to the first eight months of resettlement in the U.S., after which they must reapply on a needs basis. This initial assistance and eligibility are provided with the goal that refugees become self-sufficient and 'successfully' integrate into the U.S. mainstream lifestyle. However, post-resettlement research and program evaluation results indicate that refugees in the U.S. tend to live in poor economic conditions (7, 8, 9, 10, 11, 12), experiencing high level of food insecurity (9, 10, 13, 14) and sub-optimal health status (7, 8, 9, 15, 16, 17, 18). Especially, refugees often experience dual nutritional health issues upon resettlement,

i.e., micronutrient deficiencies due to past poor living and food conditions of refugee camps while overnutrition issues such as hypertension, diabetes and weight gain by adapting to westernized food choices and lifestyle of the host country (7, 9, 11, 15, 16, 18, 19).

In examining food choices and dietary habits among refugees, studies indicate that factors such as language barriers, time constraints, transportation difficulties, costliness of food, and a lack of knowledge about indigenous food items affect dietary choices. It is also noted that refugees often experience a significant difference in food environment including food choices, shopping, and management practices upon resettlement. A previous study with Bhutanese refugees highlighted several differences when comparing previous and current food environments. For instance, they did not have refrigerators in a refugee camp and were not accustomed to stocking or buying food for weeks at a time. They primarily relied on monthly food rations distributed in camps and reported buying few food items such as oil, spices, and some beans once in a while from the small local stores. Additionally, it was noted that as in refugee camps, Bhutanese families preferred to buy a stock of rice and lentils (basic staple items) to prevent any food shortage experienced commonly in camps (12).

In a study with South Asian refugees in the southeast region of the U.S. (n= 42), it was found that pre-resettlement experiences of severe hunger predicted intake of meat upon resettlement. Those who experienced severe level of hunger prior to moving to U.S. were three times more likely to eat meat twice or more a day than their counterparts who did not experience severe hunger in the home country (11). In a study of 160 Cambodian

refugee women, 88 percent reported experiencing food deprivation before moving to the U.S. and a multivariate analysis indicated that pre-resettlement food deprivation predicted dietary habits in the U.S. among this group (20). Additionally, research examining causes of changes in dietary habits among refugees indicate that sociocultural beliefs often affect food choices. For instance, different refugee groups generally coming from developing countries consider meats, sodas, sweets, and snack items as "luxury" items, and due to easy access and comparatively lower prices, the intake of these items has also been shown to increase among refugees upon resettlement (8, 18, 20).

Studies document that refugees often experience poor health upon resettlement and that dietary acculturation occurs among many refugee groups. Although some studies have explored the process of dietary change or how and what different factors shape refugees' food habits and choices upon resettlement, there is a lack of comparative studies to understand intergroup differences and whether country of origin and pre-resettlement living conditions, urban vs. rural setting, affects food choices and budgeting practices among recently arrived refugees. Hence, the main objectives of this study were (a) to examine food shopping, choices, and budgeting practices among the two major recently arrived refugee groups—those of Burmese and Iraqi origin, and (b) to compare pre-resettlement living conditions and access to food between these same two major recently-arrived refugee groups.

Methods

This research is part of a larger study that was undertaken in order to examine various aspects of refugee resettlement in the U.S., including how refugees adapt to the

new food environment upon resettlement. It included direct observation of refugees' food shopping and extensive data collection for the refugee families involved between August 2011 and May 2013. This included participant medical records, food receipts collections, and an in-depth semi-structured interview which collected data on socio-demographics, benefits, services, and support received upon resettlement, and various data on pre- and post-resettlement factors related to food choices and shopping.

The Durham, North Carolina affiliate of the World Relief refugee resettlement agency was the partner for this research. Historically, the Raleigh-Durham area of North Carolina, along with the Greensboro triad and Charlotte metro regions, resettle the majority of refugees arriving in the state. In Durham specifically, over the last decade 1,758 refugees have been resettled. Refugees of Burmese and Iraqi origin have continued to represent a large portion of those resettled into the county, with 888 refugees resettling into Durham in the last decade, making this an important city for these two groups with growing populations of both ethnicities (6).

The study was conducted using a case-study design, which was approved by the Institutional Review Board at the University of North Carolina at Greensboro. The data collection for the study was conducted between August 2011 and May 2013. Data collection included approximately 90-minute semi-structured, in-depth interviews with the main meal preparers of the households and the collection of household food receipts for up to two continuous months.

Selection of families for this study was based on meeting the following criteria: (a) having arrived in the U.S. within the past four months; (b) arrived in the U.S. with a

refugee status under the resettlement program; and (c) originally of Burmese or Iraqi origin. The interviews were conducted with the main meal preparer of the recruited families. The research assistant was introduced to the refugees who met the study criteria by case workers at the local resettlement agency. With the aid of interpreters, the prospective participants or the main meal preparers of the households were explained the purpose and nature of the study. Upon indicating interest, the consent form was read to each participant and they were asked to sign it. Fourteen families agreed to participate in the study, of which eight had complete interview and receipt collection data which was to be used for the purposes of this analysis. Of these eight families, four were Iraqi refugees and four were refugees from Burma.

Semi-structured Interview

The interviews were conducted in the participants' homes and in their native languages (Arabic for Iraqis and Karen for those of Burmese origin) with the aid of trained bilingual interpreters who were community members. Each interview occurred at the end of the receipt-collection period and lasted approximately 90 minutes. Interviews were audio-recorded. During the interviews, the English-language questionnaire was interpreted to participants in their native languages and their responses were then summarized and interpreted back to English. Written notes were taken of the translated responses and were used for analyses.

The study interview guide was divided into two sections: (a) quantitative and (b) qualitative. The qualitative section included questions on socio-demographics to collect information on age, education, income, and related information. Additionally, this section

included an 18-item USDA food security scale to assess their current food security status. The qualitative section of the questionnaire inquired about participants' current shopping habits—where they shopped, how frequently they shopped in those locations, what their mode of transportation was, and why they chose to shop at those specific locations. Also included were questions comparing food shopping and meals in the U.S. to food procurement and meals pre-resettlement. This was followed by questions about the transition phase and services provided upon resettlement. In addition, open-ended questions were asked during the interview with prompts to collect in-depth information on past living conditions; questions were asked about where and how long participants lived as refugees, daily routines and occupations in the pre-resettlement location, form of housing, and access to electricity, sewage, and water.

This information gathered from the interviews was analyzed mainly to understand the previous or pre-migration living conditions, food access, and related issues. Interview notes were also used to examine the migration pattern (number of years living in camps, locations, number of different locations, if any). The notes taken during the interviews, with the help of the interpreters, were also used to assess food shopping practices including mode of transportation, frequency of food shopping, and locations where food shopping was performed.

Food Receipts Collection and Analysis

Upon agreement to participate in the study, the participants were instructed to begin collecting and saving their food receipts whenever they went grocery shopping. Receipts from restaurants and fast food establishments were not included. Food receipts

were collected for a period of one and a half to seven months for each participating family. The research assistant collected the receipts during weekly home visits and catalogued them for each of the families. Additionally, the receipt data were triangulated with direct observations at grocery stores by the research assistant and in-depth questions about food shopping habits during the semi-structured interview. In order to capture purchasing habits and usage of SNAP benefits during the initial resettlement period for each family, receipts collected during the first one and a half to two months were used in the analysis. Since some families collected receipts for longer periods of time, this helped to ensure a more uniform timeframe for comparison.

Data Analyses

For each participant, receipts were placed in chronological order according to the month and date of purchase. Subsequently, every receipt was examined and each food item categorized into one of the following groups: (a) fruits and vegetables (produce), (b) grains, (c) dairy, (d) animal protein, (e) plant protein, (f) oils, (g) water, and (h) foods high in solid fats and added sugars (SoFAS). Separate categories were created for miscellaneous items such as salt, other non-caloric beverages, and unknown purchases; however, these were not included in the analyses. Table 1 describes allocations to each category.

Also noted was the total amount of money spent on food and the method of payment for each incidence of purchase, i.e., SNAP Electronic Benefit Transfer (EBT) benefits vs. cash vs. gift card or credit card. The receipt data were then analyzed using descriptive frequencies to calculate the following information for each study group: (a)

average monthly food budget; (b) frequency of food shopping; (c) types of foods purchased by food groups; (d) proportion of food budget spent at ethnic food stores vs. regular stores; and (e) proportion of food budget coming from personal vs. SNAP money. The SPSS version 22.0 and MS Excel were used to enter and analyze the receipt data.

Table 1

Food Categories and Types of Food Items Included under Each Category

Food Category	Types of food items included
Fruits and Vegetables	All vegetable and fruit purchases; fresh, frozen, and canned, including 100% fruit juices with no added sugar
Grains	Grains and grain-based products (excluding pastries and sweets); flours, rice, bread, pasta, noodles and noodle products (ramen noodle soup)
Dairy	Milk and dairy products such as cheese and yogurt
Animal protein	Meats (beef, pork, lamb), poultry, fish/seafood, and eggs
Plant protein	Legumes (beans and lentils), nuts, seeds, peanut butter
Oils	Cooking oils such as canola, vegetable, peanut, olive, and palm
Water	Bottled water purchases

*Refers to foods high in solid fats and added sugars.

For each case, the percentage spent in each of the main food categories was calculated based on the average money spent (over one and half or two months) for each food group divided by the average of the total expenditures for that period. The food items that were not identified due to lack of details on the food receipt, were grouped under ‘unknowns.’ This category was more common for the food items purchased at the small ethnic stores.

Interview Data Analyses

The primary meal preparers participated in an interview following the receipt collection phase. Each interview was audio-recorded. During the interview, participants' responses were noted by the interviewer with the help of interpreters.

Quantitative interview data: Specifically, socio-demographic information such as household size, income, amount of SNAP received, and related information at the household level were entered and analyzed for each case.

Qualitative interview data: Interview notes were reviewed for common themes among the two refugee groups. The themes were organized under the final following three categories: (a) pre-resettlement living conditions, (b) pre-resettlement food choices and availability, and (c) current or post-resettlement food conditions and issues.

Results

Socio-demographics.

Refugee families of Burmese origin. For most of the families (three out of four) the family composition was husband, wife, and children. Size of the household ranged from two to five people, with an average of approximately four individuals comprising the family unit. Upon resettlement, it was common that only the younger children lived with the parents. Among all four of the families, the ages of the children ranged from 12 to 21, with five out of a total of six children living with these families below the age of 18. Additionally, in one family of four, an adolescent boy had a severe mental disability that prevented him from attending traditional school, and in a family of five, a daughter

around the age of 20 was in a wheelchair. The age of the participants ranged from 21 to 54 years.

Of the four families, three had personal income, ranging from $900 to approximately $1,300 a month with an average of $1,143. Two out of three of the families earning income also received Temporary Assistance for Needy Families (TANF) in the amounts of approximately $300 for the previous month. Refugee Cash Assistance (RCA) was received by the remaining participant at an amount of $181 a month. Among these families, the earning member was working either in landscaping or in advertising by holding promotional signs for a local store. In two families, the husband was the sole income earner; however, one mother was also earning money as a housekeeper, and another mother held promotional signs with her husband. Prior to resettlement in the U.S., it was determined that the income earners' main occupation was working as a day laborer in farms located near the refugee camps in which they were residing. The main occupation of the participants or main meal preparers of the household was housework.

None of the Burmese families reported having a car at the time of the interview. All of the interviewees self-reported their English proficiency as poor. Attendance at English as a Second Language (ESL) classes terminated early for all families due to time and transportation limitations. These families relied on their caseworkers for any outside communication including scheduling medical appointments, applying for SNAP benefits, reading mail, and opening a bank account. Additionally, Burmese families relied on their community members who were their predecessors for transportation and help communicating and interpretation. The participants themselves reported receiving less

than a high school equivalent education, with two participants reporting one year of schooling and the remaining two reporting seven years of schooling. Table 2 lists sociodemographic information by each participant and their family.

Iraqi refugee families. For Iraqi participants, the size of the household was four to five members. Family composition for three out of the four families consisted of husband, wife, and adult children. The remaining family was made up of a widowed mother and her adult children. The ages of the adult children from all Iraqi families ranged from 21 years to 32 years, while the age of the participants themselves ranged from 47 to 62.

Three of the four families had a household income, with an average of $697 a month. Two of these three families also reported receiving RCA in the amounts of $299 and $362 in the last month. One family of the four only received RCA in the amount of $417 a month. The main income earner was a male member of the family, i.e., husband or an adult son. Some of the participants had gained employment in housekeeping and food service, but lost the jobs shortly thereafter. At the time of the interview, none of the participants was employed. From the in-depth interview on pre-resettlement lifestyle, it was noted that Iraqi male adult members were businessmen by profession. One participant reported helping her husband with the business while another reported working in human resources prior to resettlement. The remaining two participants reported that their main activities pre-resettlement consisted of housework. Of the four families, only one owned a car.

Three out of four of the participants reported their English proficiency as either poor or fair, while one reported proficiency as very good. Sometimes, participants were able to rely on one or more of their adult children who had better English proficiency than themselves for communication. These families were less likely than the participants of Burmese origin to rely on other community members for transportation or communication with English-speakers. In terms of education, schooling was more formal for Iraqi family members. Three of the four participants reported completion of high school, with one completing a year of college. The remaining participant reported six years of formal schooling. More sociodemographic information for participants and their families is provided in Table 2.

Table 2

Socio-demographics, Food Shopping, and Budgeting of Recently Arrived Refugee Families in the U.S.

	Age of the interview participant	Household size	Number of children (< 18 years of age)	Household income (monthly)	Average monthly food budget	Proportion of food budget coming from SNAP benefits	Proportion of money spent at ethnic stores	Frequency of food shopping (Avg. times per week)
Burmese								
Case 1	47	4	2	$900	$516.72*	100%	45%	1.3
Case 2	54	4	1	$1,330	$492.36	62%	61%	2.6
Case 3	21	2	0	$0	$109.06*	90%	9%	1.5
Case 4	44	5	2	$1,200	$527.49	100%	86%	2.0
Iraqi								
Case 5	47	4	0	$700	$223.88*	16%	3%	1.7
Case 6	59	4	0	$650	$450.05	88%	8%	3.3
Case 7	62	5	0	$740	$315.80	86%	0%	3.6
Case 8	50	4	0	$0	$603.88	89%	17%	3.6

Household income: refers to money earned through employment; does not include benefits such as SNAP or Refugee Cash Assistance (RCA)
Average monthly food budget: refers to both personal money and SNAP benefit money
* 1.5 months of receipt data available.

Pre-resettlement living conditions and food choices.

Refugee families of Burmese origin. These study participants and their families resided in refugee camps in Thailand located in rural areas along the border with Myanmar prior to resettlement. They reported living in houses constructed of wood, bamboo, and thatch roofs, which they made themselves using materials provided by the TBBC (Thailand Burma Border Consortium). These homes had no electricity, running water, or sewage; treated drinking water was obtained from a pipe that carried water from a nearby pond or lake, and sewage was in the form of outhouses. On average, the participants and their families lived in the camps for 19 years prior to being resettled in the U.S. In camps, food was eaten two to three times a day with the main meal items being rice, beans, chilies, oil, and sugar. Refugees and their families relied heavily on rations for the bulk of their food. Participants reported that occasionally fish, and sometimes chicken or pork were eaten at meals, although this was only if there was money available to purchase these items, which was rare. Funds were usually low because the only work participants took part in was farming in nearby villages, which they had to sneak out of the camps to perform. One participant reported experiencing scarcity of food occasionally due to the ration of rice being depleted, which was the main meal component.

Iraqi refugee families. Prior to arriving in the U.S., the Iraqi families lived in urban centers in Jordan, Syria, and Iraq. They reported living in larger apartments and medium- to large-sized homes with access to sewage, plumbing, and electricity; however, electricity was reported to be expensive. In the majority of the cases, drinking water was

purchased in bulk quantities. The average amount of time in refugee living for these families was 4.5 years and the majority of the participants reported living with their spouse and children. Food habits were described as similar to those experienced in the U.S. in most cases; participants stated that it was common to eat three meals per day and that they ate the same foods pre-resettlement as they did post-resettlement, with main foods being rice, meat, vegetables, and sauce. The condition of food shortage was not common, but families indicated that the access to food was not consistent. These families were not living under the strict food ration with no source of income, but limited income did jeopardize their food situation and skipping meals or eating smaller meals was reported to occasionally occur.

Post-resettlement food conditions and issues.

Refugee families of Burmese origin. The participants explained that the types of foods eaten in the U.S. were similar to those in the camps, although most of them stated that they were able to eat more food here in the U.S. and that there is a greater variety of foods compared to the rations received and foods available in the camps. When describing foods commonly eaten here in the U.S., participants listed meat, fish, rice, vegetables, and curry. Overall, the participants believed that their food habits in the U.S. were healthy. It was noted that food from the markets in Burma was fresher and had more taste than those purchased in the U.S. The participants also noted the size difference between U.S. supermarkets and Burmese markets. In supermarkets, sometimes familiar items were in different packaging and shopping took longer because of the need to visit each section to find what was needed. Communication difficulty with store staff was

frequently mentioned. Some participants reported receiving shopping help and transportation from friends, relatives, or refugee agency volunteers. Another common form of transportation for grocery shopping was the bus. One participant noted that distance to shopping centers was an issue and the need to buy things that could be carried on the bus. Participants mentioned frequenting ethnic grocery stores to buy foods not found at regular grocery stores and that the owner of the Burmese market would sometimes provide transportation to the market for these shopping occasions.

Iraqi refugee families. Although three out of four Iraqi participants believed that there was a good variety of foods in the U.S., three indicated that some foods, such as vegetables, fruits, rice, fish, and poultry, were more expensive than those they purchased pre-resettlement (foods listed as more expensive depended on the participant). Also mentioned was the taste and freshness of the foods were not the same as before. They reported meat, rice, vegetables, and sauce to be the main meal components upon resettlement in the U.S. Three out of four of the families stated that they shopped at ethnic grocery stores once or twice a month in order to buy halal meats and other cultural foods. All participants believed their food habits post-resettlement to be healthy, listing high vegetable intake and low fat intake to be among their healthy practices. They also noted the differences between food shopping locations, with smaller, local markets specializing in certain food items being more common pre-resettlement. The participants were accustomed to bargaining for prices at these shops, whereas the prices in the U.S. are fixed.

Common shopping difficulties reported upon resettlement included language barriers between refugees with store staff, the overwhelming size of the stores, and transportation issues. Only one of the four Iraqi families reported having a car; some reported receiving transportation and shopping help from friends or family members who had already become established in the U.S., or volunteers from the refugee agency. Depending on the location of the stores, they could either walk or take the bus, although those who did reported that it was difficult to transport groceries when traveling in this manner.

Food receipts analysis.

Refugee families of Burmese origin. These participants had an average monthly food budget ranging from $55 to $130 per family member. On average, they went grocery shopping approximately two times per week, with the average amount of money spent at each shopping trip being $56.98. These participants most frequently named public transportation as the form of transportation for shopping, but occasionally they noted reliance upon friends, family members, and the owner of the Burmese market. As a group, the Burmese spent on average 50 percent of their monthly food budget at ethnic grocery stores, with the remaining purchases occurring at regular grocery stores. Benefits from SNAP made up 62–100 percent of the food budget for these participants, with the average proportion of the budget coming from SNAP as 88 percent. Shopping and budgeting data for each participant is shown in Table 2.

Table 3 shows the percentages of the food budget coming from different food group categories along with example foods from each food group. The proportions were

calculated with and without the unknown purchase variable, with the ranking of percentages from each food category remaining the same once the unknown variable was removed. Unidentifiable purchases were more common for participants of Burmese origin due to the frequency with which they shopped at ethnic grocery stores, some of which did not list individual food items on the receipts. Animal protein accounted for 30 percent of the food purchases, followed by produce at 15 percent. Furthermore, foods high in solid fats and added sugars averaged approximately 8 percent of the food budget, while purchases from the plant protein and dairy food groups were almost non-existent upon receipt analysis. For further detail on foods purchased, see Table 3.

Table 3

Percentage of Food Purchases Grouped by Food Category, with Unknown Purchases*

	Burmese		Iraqi	
Food Group	**Average Percent Spent**	**Example Foods from Category**	**Average Percent Spent**	**Example Foods from Category**
Beverages (non-caloric)	1%	Green tea, coffee, aloe vera juice	1%	Tea, coffee
Condiments	1%	Fish paste, soy sauce, sweet chili sauce, MSG	3%	Ketchup, mustard, bay leaves, cinnamon, black pepper
Dairy	0%	N/A	10%	Milk, yogurt, cheese
Grains	8%	Rice, instant noodles, bread	15%	Rice, bread, pasta, breakfast cereals
Oils	1%	Vegetable oil, peanut oil	2%	Olive oil, corn oil

Table 3

Cont.

	Burmese		Iraqi	
Food Group	**Average Percent Spent**	**Example Foods from Category**	**Average Percent Spent**	**Example Foods from Category**
Produce	15%	Long gourd, Chinese eggplant, cilantro, chili, oyster mushroom, bamboo shoots, onions, Taiwan cabbage, lychee, banana, mango, watermelon, grapes	20%	Parsley, lemons, cucumbers, onions, potatoes, tomatoes, bell peppers, zucchini, eggplant, grapes, apricots, oranges, apples
Animal protein	30%	Seafood, beef tongue, pork liver, hot dogs, chicken gizzards and hearts, chuck roast, eggs	17%	Seafood, chicken, ground beef, lamb, eggs
Plant protein	0%	N/A	5%	Chickpeas, kidney beans, lima beans, walnuts, almonds, pistachios
SoFAS	8%	Sodas, cookies, chips	18%	Sodas, pastries, ice cream, chips, cookies, frozen pizza
Water	1%	Bottled water	2%	Bottled water
Unknown	35%	---	7%	---
Total	100%		**100%**	

* The percentages for the food categories were calculated both with and without the unknown purchase variable; removal of the unknown variable did not change the rankings of the food categories.

Iraqi refugee families. Per person, Iraqi participants spent between $56 and $151 on their monthly food budget. They frequented grocery stores an average of three times per week, averaging $35.21 spent per trip. Public transportation was mentioned as a major form of shopping transportation for three out of four of the participants, with their other means of transportation including walking or receiving a ride from family or friends. The only participating family in the study with a car reported this method as their main transportation. Iraqis shopped more frequently at regular grocery stores (91 percent of the time), with the remaining 9 percent of the grocery shopping budget pertaining to ethnic stores. Three out of four participants used SNAP benefits for 86–89 percent of their average monthly food budgets, while SNAP benefits accounted for 16 percent of the budget for the remaining participant. Shopping and budgeting data for each participant are shown in Table 2.

Produce purchases accounted for 20 percent of the food budget for Iraqi families, followed by foods from the SoFAS category, which made up 18 percent of the food purchases. Animal protein and grains also constituted major portions of the food budget, accounting for 17 and 15 percent of purchases, respectively. For further detail on foods purchased, see Table 3.

Discussion

The results of this study will help to understand what pre- and post-resettlement factors, including pre-resettlement living conditions and food availability, might influence the diet quality and ultimately nutritional health of resettled refugees in the U.S. A conceptual model for how these factors, along with those previously determined in

literature, influence refugee food choices and budgeting habits was constructed and can be viewed as Figure 1 at the end of this chapter. The results of this study have practice and policy implications by providing evidence on the need for tailored nutrition education and topic areas to improve the outcomes of refugee resettlement program in the U.S.

The purpose of this study was to examine and compare the shopping patterns of refugees of Burmese and Iraqi origins and to determine if certain pre-resettlement factors, such as living conditions and food access, contributed to foods choices and dietary habits of the two groups. Results indicated that there were definite differences between the shopping habits and food choices of the two groups of families aligning closely with pre-resettlement living conditions and number of years in pre-resettlement living.

Recently-arrived refugees have very little means of supporting themselves financially. In order to help them become established, they receive monetary aid, such as Refugee Cash Assistance, Match Grants, and food support by means of SNAP benefits with the aid of refugee resettlement organizations. These forms of assistance are meant to help refugees during the initial resettlement period while they are learning work skills and awaiting job placement, with the expectation that they will become financially self-sufficient within a few months of post-resettlement. However, due to low English proficiency and job skills, self-sufficiency at six months may be an unrealistic expectation for many refugees and their families.

The newly-arrived refugees in this study relied heavily on these benefits. Notably, SNAP benefits comprised 88 percent of Burmese origin participants' monthly food budgets, whereas they accounted for 70 percent of the food budget of Iraqis. Resettlement

agency workers generally help refugees initially set up their SNAP benefit accounts, but they must reapply for them periodically. After aid from resettlement organizations ceases, refugees with low English language proficiency may have a difficult time reapplying for benefits. This means that a change in the availability of food stamps would have a drastic effect on the food choices and habits of refugees due to financial constraints that these families already face.

Pre-resettlement living conditions may very well have an influence on their food choices post-resettlement. For example, Iraqi refugees had a considerable portion of their food budget come from foods in the solid fats and added sugars category (18 percent vs. 8 percent for those of Burmese origin). Perhaps this was due to the fact that pre-resettlement, Iraqi participants were living in urban areas of Iraq, Jordan, and Syria, whereas the Burmese refugees were re-settled from rural camps in Thailand. Iraqi families may have had more prior exposure to the kinds of processed food found in the U.S., and therefore purchased more of it upon resettlement. It is concerning to see that purchases from the SoFAS food group are already high, considering that intake of these foods has been reported to increase with the number of years of post-resettlement (8, 11, 13, 21). Replacement of more nutrient-dense foods with foods from this category leads to an increase in total kilocalories consumed and a reduction in dietary vitamins, minerals, and fiber which are necessary for good health. Research has shown that this type of dietary acculturation by immigrants leads to an increase in chronic diseases such as type 2 diabetes, and risk factors for disease including obesity and high blood pressure (15, 19).

If consumption of foods high in fats and sugars continues at the same rate or increases, these refugees may be putting themselves at risk for obesity and chronic illness.

Prior to resettlement, the participants of Burmese origin reported limited access to animal protein such as meat and eggs. In a study analyzing the diets of refugees of Burmese origin living in a Thai refugee camp, it was reported that only 12 percent of dietary protein came from animal sources (22). Following receipt analysis in the current study, it was determined that 30 percent of the food budget was comprised of animal protein purchases, which increased substantially to 47 percent once the unknown purchase variable was removed. Purchases of plant proteins such as nuts and legumes were rare among this group. This level of animal protein purchase was not seen among the Iraqi participants in the study, who also reported greater access to animal protein in their diets prior to resettlement. An increase in consumption of animal protein (accompanied by a decrease in plant protein consumption) has been seen among resettled refugee communities in previous studies (11, 13). These foods were considered "high-status foods" and were rarely consumed pre-resettlement except during holidays and celebrations. It has also been reported by refugees that meats are more cost-effective upon resettlement due to comparatively higher prices for vegetables and also provide more hunger fulfilment (8, 9, 11). Additionally, bouts of hunger such as those experienced by refugees living in camps with limited access to foods other than rations may influence their food choices upon resettlement. Particularly among refugees of southeast Asian origin, reporting more severe and longer duration of food deprivation increased the likelihood of being obese or overweight and including fatty meats in their

diet post-resettlement (20). Due to these beliefs and a lack of knowledge about nutrition, it has been noted that refugees may have a difficult time linking the consumption of these valued foods with chronic disease and illness (8), noting a need for nutrition education with an emphasis on chronic disease prevention.

The families of Burmese origin in this study had very little to no purchases from the dairy food group, whereas the Iraqis had on average 10 percent of purchases come from this food group. An earlier study conducted by Banjong et al. at a Burmese refugee camp in Thailand determined that calcium was a nutrient of concern for those residing in the camp. On average, the intake for calcium among camp residents was 53.1 percent of the Recommended Dietary Allowance (RDA) for that nutrient. It was determined that the main source of calcium in the refugee diet consisted of fermented fish consumed whole with the bones (82.4 percent) (22). Dairy products, which contribute significantly to calcium intake, were not reported to be consumed in the camp, which is similar to what was seen among the families of Burmese origin in this study. It may be that the Burmese refugees did not consume dairy upon resettlement due to being unaccustomed to consuming it in the camps (lack of cattle for milking and refrigeration) or perhaps dairy is not a significant component of their diet. Perpetuation of low calcium intakes may put members of this community at risk for poor bone health in the future. An acceptable alternative to dairy and/or supplements may be needed for individuals from this refugee group in order to maintain proper bone health. These results help to inform topics that may need to be discussed in nutrition education with refugees from Burma.

The participants of Burmese origin spent a large portion of their food budget at ethnic grocery stores (50 percent), compared to Iraqis who on average spent 7 percent of their food budget at these stores. This could be due to a number of factors, including pre-resettlement food procurement processes, communication barriers with English-speaking store staff, and availability of cultural foods at stores. Having lived in rural refugee camps for an average of two decades before resettling in the U.S., the participants from Burma were not accustomed to shopping at larger grocery stores and relied heavily upon rations for food needs. Therefore, upon arrival in the U.S., shopping at supermarkets could have seemed a daunting task with many unfamiliar packaged foods labelled in a language that they could not read. Upon resettlement, they reported that store size was overwhelming and that they had difficulty communicating with store staff when they needed assistance. This is in accordance with a previous study in which researchers reported that the abundance of food choices seemed to cause stress among a group of refugees from Burma who were overwhelmed by food shopping in the U.S. (23). Frequenting ethnic stores might provide a more intimate setting for shopping as well as provide refugees with a sense of familiarity. Communication with store staff was also simplified when these participants were able to shop at the Burmese market. Shopping at ethnic stores also may have helped these participants find specific cultural foods since the availability and variety of these foods is greater at ethnic grocery stores than at Westernized supermarkets. Participants of Burmese origin may have frequented ethnic stores in order to purchase the types of meats and produce needed in order to make traditional dishes, whereas the Iraqis may have been able to find more of the components of their traditional

diets at supermarkets. Continued shopping at ethnic stores may increase the ability of refugee populations to maintain their cultural diets, which is significant because these traditional diets tend to be healthier than Western diets (13, 15). However, purchasing significant amounts of food from these stores could also put refugees at a greater risk for food insecurity due to higher prices of some food items. (8).

Another notable fact is that the participants from Burma shopped less frequently than the participants from Iraq, with the former shopping on average 1.9 times per week and the latter 3.1 times per week. They also tended to spend more money each time they shopped than Iraqi families, an average of $56.98 per trip as compared to $35.21. One possible reason for this observable difference could be pre-resettlement money management experiences. Iraqis, who were more used to the type of economic system found in the U.S. were better at budgeting, whereas the participants of Burmese origin were more accustomed to receiving food in the form of rations. An additional factor that may affect the frequency of food shopping is the mode of transportation. Refugee families continue to face transportation issues even after living in the U.S. for extended time periods (10, 13, 23), and many newly-arrived refugees rely heavily on others for transportation (10, 12). Only one of the Iraqi participants in the current study reported having a car while the other Iraqis and participants from Burma reported utilizing public transportation or relying on others for transportation to grocery stores. Transportation issues have been linked to food insecurity; in a previous study individuals without a driver's license reported spending 40 percent more on food (10). It has also been reported that those who rely on buses or others for transportation tend to be infrequent shoppers

who spend more money per trip (13). This puts them at risk for running out of funds for food during the last week of the month (24). Accordingly, there are budgeting implications that arise as a result of spending too much too soon for refugee groups. Guidance in food resource management is needed to help refugees maximize and stretch their use of limited benefits. See Figure 1 for the conceptual model that was developed as a result of this study, taking into account the variety of factors that may influence the food shopping and budgeting practices of recently resettled refugees in the U.S.

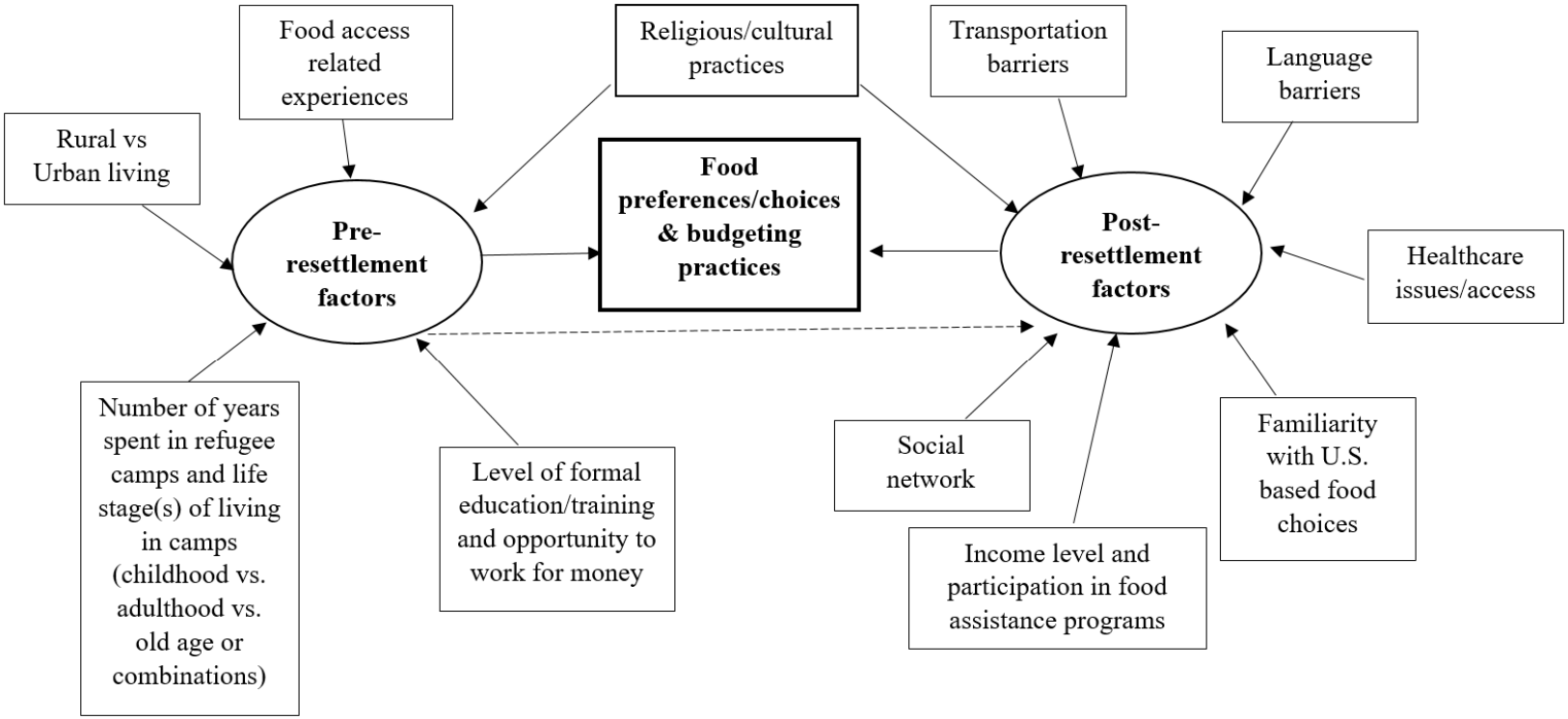

Figure 1. Model of Factors, Both Pre-resettlement and Post-resettlement, That May Influence the Food Choices and Budgeting Practices of Resettled Refugees.

Conclusion

Although this study was a case-study in nature and the sample size was small, reviewing the results provides insight into the dietary issues that may arise with newly-arrived refugees of the respective ethnicities. The results of this study illustrate that within the distinction of refugee there are varying populations, each with distinct cultural identities and food heritages, as well as pre-resettlement experiences that need to be taken into account when designing nutrition education and resource management interventions. Thus, there is no "one size fits all" approach to nutrition education among refugee groups, and programs must be tailored to meet their needs. Refugees have previously expressed a desire to learn how to eat healthily in the U.S. and have identified community health workers as potential sources for dietary information (23). Health promotion workshops with small group discussions and visual cues have been found to be helpful in opening conversations about nutrition topics (23). Creation of nutrition education materials based on focus groups including involved members of the target population who are well-versed in the issues that their community members face will help to ensure validation and acceptability among refugee populations (7).

Limitations

There are a few limitations to this study. First of all, the case study nature of this research lends to a small sample size (n=8). This makes generalizing the results to a broader population difficult among refugee groups and also within the populations of refugees of Iraqi and Burmese origin. The refugee families from Burma shopped at ethnic grocery stores frequently, accounting for 50% of their total shopping trips. This fact

complicates the findings because some of the ethnic grocery stores at which they shopped did not list individual food items by the name on the receipts, therefore making it difficult to determine which kinds of foods were being purchased. In illustration, a relatively sizable portion of the food purchases fell under the “unknown” category, which could have slightly skewed the percentage of purchases from other food categories. Even though participating families were reminded frequently to save their food receipts, it is possible that there were cases of missing receipts.

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