Food Sec. (2017) 9:163–179
DOI 10.1007/s12571-016-0637-z

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ORIGINAL PAPER

Potential determinants of food security among refugees in the U.S.: an examination of pre- and post- resettlement factors

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Received: 8 February 2015 / Accepted: 5 December 2016 / Published online: 7 February 2017
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Abstract The objectives of this paper are: 1) to examine the socio-demographic characteristics and prevalence of food insecurity in three groups of refugees resettled in the U.S.; 2) to describe themes that arose as potential determinants of food insecurity for refugees; and 3) to posit a conceptual model of the potential determinants of food insecurity for refugees and how they interrelate. This is a case study based on the analysis of three nutritional assessment studies conducted with Asian and African refugees (n = 97 combined). A mixed methods approach was adopted with a semi-structured interview questionnaire, containing both quantitative and open-ended qualitative questions. Interviews were conducted in-home by community interviewers. Seventy percent (n = 69) of the sample, which represented a group that has been resettled in the U.S. for an average of 8 years, experienced some level of food insecurity. Themes related to previous food shortage in refugee camps, health care costs, and remittance of resources to relatives back home emerged as factors impacting food security and demonstrating its lack for those who have been resettled for even as many as 8 years. Pre-resettlement factors and transnational remittance have been understudied as they relate to the food security status of resettled refugees. With greater investigation, the knowledge acquired of these factors could impact the way resettlement programs design education, training and counseling for refugees.

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Keywords Food insecurity · Refugee · Pre-resettlement · Post-resettlement · United States

Introduction

Food insecurity occurs when households do not have consistent access to sufficient amounts of nutritious, safe and culturally acceptable food to meet the needs of all the household members (Coleman-Jensen et al. 2015; FAO: Agricultural and Development Economics Division 2006). In experiencing food insecurity, adults of the households report a range of food related issues such as being unable to afford nutritious meals, anxiety about the adequacy of their food supply, cutting the size of meals and even skipping meals or not eating for an entire day. Food insecurity is divided into three levels of severity, starting from a mild level where the head of the household or caretaker reports "worry" over food affordability or future access to food. At a moderate level of food insecurity, households lack means to buy foods of higher nutritional quality. The most severe level of food insecurity represents food shortage and hunger, where adults and children in the household skip meals and/or cut portion sizes due to lack of resources to buy food (Coleman-Jensen et al. 2015). In 2014, 14% of all U.S. households or, 17.4 million people were experiencing some level of food insecurity at certain times in that year (Coleman-Jensen et al. 2015). Among households with children, approximately 19% of households were food insecure at some time during the year. Among these households, parents were able to protect and maintain normal meal patterns for their children, even when they themselves were food insecure. However, in approximately 10% of households with children (3.7 million households), even children experienced disrupted eating patterns and food insecurity (Coleman-Jensen et al. 2015).

In terms of risk factors, poverty or low-income is the most proximal and significant contributor of food insecurity. For instance, based on the 2014 United States Department of Agriculture (USDA) Food Security Report, it was found that 34% of low-income households were food insecure (2015). The Academy of Nutrition and Dietetics (AND) has stated that food insecurity is one of the major barriers to reducing health disparities in the U.S. (Holben 2010). In describing the relationship between the two, the AND noted that the coping strategies low-income households use in the process of avoiding severe levels of food insecurity or hunger, puts them at a higher risk of poor health. Food insecurity is associated with higher body weight, chronic diseases, and nutritionally poor diets, especially among adult caretakers of the household (Dinour et al. 2007; Larson and Story 2011). Low-income households rely heavily on cheap calorie dense foods, eat a less varied diet and prefer filling staple food items over fruits and vegetables, putting them at a higher risk of gaining excess weight (Darmon and Drewnowski 2015). It has been postulated that food insecure households often experience a cycle of feast and famine, overeating when food assistance benefits come in (Dinour et al. 2007). This excess intake is a strategy to compensate for upcoming food shortage generally occurring in the last weeks of monthly food assistance.

In further investigation of predictors of food insecurity, it has been noted that immigrant households or households headed by non U.S. born caretakers are more likely to have low-income and are at significantly higher risk of experiencing food insecurity than native or U.S. born caretakers (Coleman-Jensen et al. 2011). The increased risk of food insecurity among immigrants has been associated with several social, personal and environmental barriers such as language barriers, poor access to food assistance programs, limited access to higher paying jobs, lack of medical insurance, and limited social networks (Coleman-Jensen et al. 2016; IOM, Institute of Medicine 2011). In a large food insecurity study by Cook et al. (2013), food insecurity was almost double in non U.S. born (23.7%) versus U.S. born mothers (12.7%). A study with migrant Mexican farm workers showed that non-economic factors, such as poor English proficiency and inability to participate in food assistance programs restricted their ability to have consistent access to good quality food or food security (Quandt et al. 2004). A recent Food Research & Action Center (FRAC) report indicated that migrant workers are much more likely to experience food insecurity than non-migrants, with rates ranging from 50 to 65% (FRAC 2016). The report further stated that migrant farm workers often experience poor living conditions, lack of access to stoves and refrigerators for appropriate food preparation and storage, transportation challenges, and limited access to grocery stores.

The U.S. has a long history of accepting immigrants, refugees and asylees for political, economic and other reasons (Office of Refugee Resettlement: History 2016). The U.S. accepts more refugees than any other developed country in the world and resettled nearly 70,000 individuals in 2015 (Zong and Batalova 2016). Refugees are individuals who are unable or unwilling to return to his or her home country because of a well-grounded fear of persecution or because the person's freedom or life would be threatened (UNHCR 2016). The United Nations High Commissioner for Refugees (UNHCR) has mandated the provision of international protection to refugees. Under this mandate, the UNHCR works toward providing one of three durable solutions for refugees. One of the solutions is to resettle selected refugees in developed countries such as the U.S. The resettlement program is the smallest of the three programs, or in other words, only approximately 1% of the total refugee population is resettled.

Similarly to newly resettled immigrants, refugees who resettle in the U.S. may be at risk of experiencing food insecurity due to language barriers and poor employment issues (Haldeman and Gruber 2008). However, it is important to note that refugees differ from immigrants in several ways. Firstly, unlike immigrants, refugees are resettled in the U.S. under special humanitarian concerns. Refugees are eligible to receive Medicaid, food assistance and limited case assistance in the initial short period of resettlement (8 months to one year) (RCUSA, 2016). Refugees may also have a history of persecution, and months to years of living in temporary living conditions such as in camps or border countries, and many have faced disintegration of social networks and family, related to civil instability.

Newly arrived refugees are postulated to be at a higher risk of experiencing food insecurity due to several reasons such as limited transportation, limited access to public food and medical assistance, and unfamiliarity with the new environment (Hadley et al. 2010). While there is no national level data repository on food insecurity among refugees, several small studies have been conducted to assess food insecurity among refugees resettled in developed countries (Anderson et al. 2014; Cook et al. 2013; Dharod et al. 2011; Hadley et al. 2010; Nunnery et al. 2014; Piwowarczyk et al. 2008). These studies show some level of variability, but all studies indicate that food insecurity is much higher among refugees compared to the national average of their respective countries. In a study by Hadley and Sellen (2006) in the northeast region of the U.S., 85% of the refugees reported food insecurity, a staggering comparison to the national average of 14% (Coleman-Jensen et al. 2011). The refugees in this study often had difficulty communicating with store staff and navigating food stores which was associated with high food insecurity.

Similarly, in a sample of Somali refugees in the U.S., two-thirds of households were food insecure (n = 195), and 26% reported child hunger (Nunnery et al. 2014). A qualitative study, examining refugee families in the U.S., found food shortage a very common issue and rent and paying bills were often considered priorities over food (Dharod et al. 2013). The study results indicated that a lack of medical insurance and unexpected medical expenses often aggravated food insecurity situations for caretakers and other family members (Dharod et al. 2013).

It is often implied that food insecurity improves for refugees over time as individuals and families begin moving to better apartments, purchase a car or gain access to transportation, become familiar with the food environment and gain better access to community resources such as local food assistance programs. However, food insecurity, including hunger, is common even among refugees living in the U.S. over longer periods of time. A study with a Liberian refugee group (Nunnery et al. 2014), found that of study participants living in the U.S. for an average of 12 years, 61% reported some level of food insecurity. In a study by Hadley et al., it was seen that food insecurity decreased with length of time in the U.S., however, food insecurity was still common and relatively high at 33% among those refugees who were living in the U.S. for more than three years (Hadley et al. 2007).

Before resettlement, refugees often flee and live in temporary living conditions in neighboring countries or in UNHCR camps for several years with poor access to education, healthcare, and other basic necessities for productive life. Upon resettlement, they often experience a significant difference in living style and they may be subject to expectations around technology oriented job skills, literacy and fluency in English. Under that situation, refugees often face the dual burden of dealing with past experiences and adapting to the lifestyle of a more developed country, increasing the likelihood of experiencing food insecurity. Research on refugee health status indicates that post traumatic stress disorders, depression and other mental issues due to previous experiences are very common among this population (Fazel et al. 2005). However, past life experiences are not often taken into account in understanding current food and health conditions of refugees in their new resettlement home. In our previous studies, results indicated that refugee families struggled to navigate grocery stores in the U.S. and reported several differences in food environments between past and current living (Dharod et al. 2013a; Dharod 2015; Nunnery et al. 2014).

To ensure a more holistic approach in promoting health and well-being of resettled refugees living in developed countries such as the U.S., it is critical to understand not only current living conditions, but also pre-resettlement issues among different groups of refugees. This is necessary for the full understanding of the types (and temporal nature) of potential pre and post resettlement determinants impacting food insecurity. Refugees come from unique experiences of instability. However, they also have unique backgrounds and characteristics (i.e. level of education or living in refugee camps) that could be protective or mediate the negative effects of said instability. There may be factors or characteristics that protect or hinder one group compared to another. It is imperative to explore the factors and characteristics that contextualize the experience of food insecurity to determine what puts refugees at risk or what protects them from food insecurity after resettlement. Therefore, the objectives of this paper are to compare three different groups of refugees to: 1) examine the socio-demographic characteristics and prevalence of food insecurity; 2) describe prevailing themes that arose as potential determinants of food insecurity; and 3) posit a conceptual model that seeks to elucidate potential pre- and post-resettlement determinants of food insecurity for refugees. The three refugee groups were selected based on funding, feasibility of recruiting bilingual or multilingual interpreters and lastly, groups were selected to mimic refugee trends of longer resettled groups that were resettled in the late 1990s and early 2000s in this geographic region of the U.S.

The samples in these studies were restricted to women caregivers in the household. Research with low-income women indicates that women generally play a lead role in food budgeting and management, which may make them more highly vulnerable to negative consequences of food insecurity (Olson 2010; Olson and Strawderman 2008). Women are often the first member of the family to modify their dietary intake to spare other family members, especially children from experiencing food shortage. Since women or mothers are mainly involved in food preparation and feeding children, mothers are often interviewed regarding household food insecurity. Both nationally and internationally, focus has been on women in assessing and improving household level food insecurity (Kennedy and Peters 1992; Mallick and Rafi 2010; Spieldoch 2011; Wilde and Peterman 2006).

Methods

The results of this research represent a case study based analysis of the combined findings of three smaller semi-qualitative health and nutrition assessment studies conducted with Asian and African refugees. All of these studies employed a mixed methods approach utilizing a semi-structured interview questionnaire with both quantitative questions (i.e. monthly income, Food Security Scale) and open-ended qualitative questions with probes (i.e.What are some issues you face or have faced related to food shopping here in the U.S.?). All three studies were approved by the Institutional Review Board (IRB) at the University of North Carolina at Greensboro and conducted over a two year period from March 2010 to November 2012.

Study sample and recruitment

The combined total sample (n = 97) included refugee women from three different origins: a) Liberian (n = 33); b) Sudanese (n = 22); c) Montagnards (a group from the central highlands of Vietnam) (n = 42). Women were recruited if they met the following selection criteria: (1) came to the U.S. under refugee status or under the family reunification program; (2) 18 years of age or older; (3) the main meal preparer of their household, and; (4) had children younger than 18 years of age (dependent minors) (see Appendix). All participants had been resettled and were currently residing in one county in the Southeastern United States. This particular county is a large, long established resettlement community.

The following recruitment protocol was utilized for all three groups. Recruitment was conducted by community interviewers (also called community health workers) who were women of the same ethnic origin and living in the community of the study groups of interest. These community interviewers were familiar with the study area and fluent in English and their native languages. Community interviewers were then trained to conduct interviews and follow IRB protocol. Participants were recruited using snowball sampling techniques such as networking, telephone invitations, and referrals as there was no single comprehensive database to locate refugee groups living in the study area.

Interviews and the semi-structured interview questionnaire

All interviews were conducted by the community interviewer in the presence of a research team member. Upon indicating interest and agreeing to participate, written consent was obtained from the participant. Each interview was carried out at the participant's home and lasted for approximately 90 min. All Liberian interviews were carried out in English, while the remaining interviews were carried out in native languages such as Arabic (Sudanese group), Rhade or Jarai (Montagnard group).

The semi-structured interview questionnaire included the following sections: 1) general experiences related to social and cultural changes during initial period of resettlement; 2) current lifestyle, food shopping and dietary habits; 3) pre-resettlement living conditions, health and food environment; 4) concerns and issues related to food and health in the U.S. Each section included approximately 4 to 5 major questions. The sections were included to capture the context of food insecurity for these refugees and provide open-ended structuring that would allow for the collection of details that might be missed in a structured close-ended questionnaire format. The interviewers used prompts to probe for additional information based on respondents' answers to the primary interview questions. A final section was included to collect socio-demographic information such as age, monthly household income, food security status, and participation in Supplemental Nutrition Assistance Program (SNAP), a program that provides a monthly financial benefit (cash value) for the purchase of any food or beverage items. SNAP program benefits were formerly referred to as food stamps. The 18-item USDA Food Security Survey Module was used to assess the food security status.

Analyses of quantitative data

SPSS version 21.0 was used to analyze all quantitative data, including socio-demographics and food security scores. Descriptive frequencies were carried out to determine socio-demographic characteristics of different refugee groups e.g. education level, income, employment status and number of years in the U.S. Food security status was coded and scored according to guidelines in the USDA Guide to Measuring Food Security (Bickel et al. 2000).

Analyses of qualitative data

During the interviews, qualitative data were collected and organized under the two main themes: 1) differences in current and past living conditions and; 2) differences in current and past food choices. Qualitative data provided a more complete and nuanced picture of what was seen in the quantitative data. For the qualitative data, all sections of the interviews were audio recorded, except interviews with the Sudanese refugee group. For the Sudanese group, several participants requested not to record their interviews and the community interviewers suggested that recording might deter other women from fully participating in the interview. The decision was made to discontinue the option of recording for this group from the third interview on. The qualitative sections that were recorded were then transcribed verbatim. Transcripts with Montagnard participants were translated into English for the final analysis. In the case of Sudanese interviews, the interviewer translated the responses in English, which were hand recorded by the principal investigator. For the other groups, in addition to transcripts, observational field notes, taken during interviews, were included in the analysis. The analysis process involved reviewing, comparing, labeling, and categorizing the data into common themes relating to situations that could lead to poor access to nutritious and healthy food, or in other words, food insecurity upon resettlement. The researchers identified repeated observations in the data and coded those as major themes. After independent categorization, the researchers compared their respective themes based on the review of all the interview transcripts and notes. Themes that were identified by both reviewers were included in the final results. In the case of any discrepancies, transcriptions were revisited and

discussed before including or excluding a particular theme from the final list. For this paper, the themes have been organized into a conceptual model explaining the situations or conditions (potential, pre and post-resettlement determinants) that might put refugees at high risk of food insecurity upon resettlement. Once analysis was completed, qualitative results were shared with the community interviewers to validate the interpretation of the data. Community interviewers, as representatives of the study groups of interest who bridged the research team to the community, were seen as valuable resources in evaluation of the findings. All identified themes were approved by the interviewers before inclusion in the model. Interviewers also provided additional information and offered explanations on their perception of the pathways and how certain factors could ultimately affect food security of refugee families in the U.S.

Results

Quantitative results

Table 1 provides socio-demographic profiles and food security status of participants. On average, 70% experienced some level of food insecurity. In comparison, food insecurity was significantly higher among Liberians (79%) and Montagnards (81%), compare to Sudanese group (39%, $P = .001$) The socio-demographic profile indicated that on average, participants were living in the U.S. for an average of 8 years, with Liberians living for approximately 12 years in the U.S. ($P = .000$). The mean household income from work or employment among the three groups was less than $1000 per month. The number of people living in households ranged from 2 to 11 with the number of children on average being 3. Over half (53%) of the participants were receiving benefits from the Supplemental Nutrition Assistance Program (SNAP), where the amount received ranged from $85 to $600 per month. Participation in the Special Nutrition Assistance Program for Women, Infants and Children (WIC) was also common: 43% reported receiving WIC vouchers for their children or for themselves or both. Nearly half had no formal education and two-thirds were unemployed; 49% reported that they did not drive or did not have a driver's license: this was more common among Montagnards ($P = .000$).

Based on the qualitative results, it was found that compromise on the quality of food and even hunger or the most severe level of food insecurity were common among participants. One Montagnard participant noted "eating only rice and some pickle on days when there is no money to buy meat or other food items". The qualitative results indicated that exchange of money, services and even food with friends or other community members, was common. During open ended discussion, one Sudanese woman reported that often her children "go to the neighbor's house", who are also their close relatives, "for dinner when there is shortage of money".

Major themes related to food insecurity from qualitative results

Five major themes emerged out of the qualitative analysis as potential pre and post resettlement determinants of food insecurity for these three groups. These were: 1) Cyclical insufficiency of resources; 2) Previous food shortage and related experiences; 3) Difficulty in navigating the U.S. food environment and assistance programs; 4) Remittance to family back home; and 5) Health care and other related costs upon resettlement.

Cyclical insufficiency of resources

A cyclical pattern of sufficient food at the beginning of the month or during the pay/food assistance period but shortage at the end of the month was common among all three groups. Participants often mentioned they relied on just a few core or staple foods during the last weeks of the monthly billing cycle. Participants reported skipping meals and eating foods such as rice and soy sauce, bread and hotdogs, boiled eggs, or instant noodles in the last weeks of the monthly cycle. Several said they often asked their children to eat breakfast and lunch at school since there was no food at home. Though not asked specifically, participants during discussion indicated that their children were enrolled in a reduced school and breakfast program. Participants often reported summer as a difficult time, since their children were out of school. They rarely used food banks, soup kitchens, or summer feeding programs. The two main strategies commonly mentioned were growing vegetables in the backyard and getting food from small ethnic stores on credit. Vegetable gardening was especially common among Montagnards. Women from the Montagnard group indicated a strong agricultural background, where 90% were involved in farming prior to coming to the U.S. This group mentioned that in the Highlands, they hardly purchased any food and mainly grew or gathered the food they ate such as bamboo, vegetables, and herbs. Only rice was purchased or bartered in exchange for day long farm work. Most participants reported that they now had vegetable and herb gardens in the U.S., especially, among those living in a house. The ability to garden was one of the primary reasons cited by Montagnards when they chose to live in a single family home versus an apartment. About one-third of Montagnard women lived in apartment complexes. However, even for them, vegetable and herb gardening was common, though on a smaller scale. Those who were living in apartments, were mainly involved with container gardening, growing herbs and vegetables such as chillies, basil and tomatoes. More than half of the participants reported that they "desperately" or anxiously waited for the food assistance

Table 1 Socio-demographic characteristics and food insecurity levels among different groups of refugees resettled in the U.S ($n = 97$)

	Overall	Liberian ($n = 33$)	Sudanese ($n = 22$)	Montagnards ($n = 42$)
	Mean ± SD			
Monthly household income[a]	790 ± 631.60	903 ± 861.03	1011 ± 537.22	650 ± 365.39
Household size*	5 ± 1.80	4 ± .26	5 ± .37	6 ± .28
Number of children*	3 ± 1.80	3 ± .23	3 ± .36	4 ± .29
Number of years in the U.S.***	8 ± 5.32	12 ± 1.10	6 ± .84	6 ± .50
	n (%)			
Age				
20–29 years	23 (24%)	7 (21%)	7 (32%)	9 (21%)
30–40 years	35 (36%)	12 (36%)	12 (54%)	11 (26%)
41–50 years	31 (32%)	11 (33%)	3 (14%)	17 (40%)
>50 years	8 (8%)	3 (10%)	--	5 (12%)
Received some formal education[b]***	53 (55%)	29 (88%)	8 (36%)	16(39%)
Employed[c]	30 (31%)	17 (51%)	3 (14%)	10 (24%)
Have a driver's license***	47 (49%)	20 (61%)	16 (76%)	11 (26%)
Have a medical insurance (public or private)*	37 (38%)	13 (39%)	14 (64%)	10 (24%)
Receiving SNAP	51 (53%)	14 (42%)	10 (45%)	27 (66%)
Receiving WIC[d]***	42 (43%)	10 (30%)	18 (82%)	14 (33%)
Experiencing food insecurity[e]**	69 (70%)	26 (79%)	9 (39%)	34(81%)

SNAP Supplemental Nutrition Assistance Program (formerly known as Food Stamps), *WIC* The Special Supplemental Nutrition Program for Women, Infants, and Children

*P = .003

**P = .001

***P = .000

[a] Total $n = 77$; Liberian $n = 30$; Sudanese $n = 9$ (most of the Sudanese participants reported 'don't know' or refused to answer the total household income); Montagnard $n = 38$

[b] Reported receiving some education back in their country;

[c] Participants employed included both part-time or full time;

[d] Reported receiving WIC for either themselves or for their children or both;

[e] n = 15 for Sudanese group, since remaining participants refused to answer the questions on food insecurity

benefit to kick in and/or to receive a paycheck, stating that food supplies were dwindling. Participants reported buying food in bulk, especially grain or staple items such as rice, and meat, during the week they receive their paycheck/food assistance. This was more commonly reported among Montagnards and Liberians than the Sudanese group. In addition to staple items, participants also indicated that they spent money purchasing snacks and sweets for children. Based on the participants' responses, it was found that more than half of the total monthly food budget was spent in the 'beginning of the month' or during the week they received the food assistance benefits. One Liberian participant reported that she used "70 - 80% of her monthly food assistance benefit in the first week itself and stored and prepared food from the supply for the rest of the month". Similarly, in relation to monthly management of food supplies, one Montagnard participant reported buying 2 to 3–20 lb bags of rice to ensure enough supply for the whole month for a family of four (2 adults and 2 children). Purchasing and drinking bottled water was a very common practice among all the three groups of participants. While not captured directly in interviews, research staff observed that participants did not trust tap water as a source of drinking water. They reported purchasing water bottles in bulk at the beginning of the month and rationing it until they received the next paycheck/food assistance benefit. So, participants reported that not only food but even water became scarce at the end of the month or when there was not enough money to buy more. Participants reported drastic reduction in the variety of their diet. One Montagnard participant mentioned that on some days she "made a vegetables and meat soup with rice or noodles" while some days her family was only able to afford to eat rice, pickled bamboo, and soy sauce.

Previous food shortage and related experiences

Results also indicated that food insecurity, including severe hunger and food shortage, was very common prior to moving to the U.S. among all three groups. Among the three groups,

Montagnards reported living in jungles in the highlands, instead of living in specific refugee camps. For Liberian women, most of them reported living in camps before coming to the U.S. Some of the women had come to the U.S. at an early age and had very faint memories of living in camps. In the case of Sudanese women, the responses were variable, with one-third reporting living in camps, while two-thirds reported living in neighboring countries such as Egypt. But, all of them reported experiencing some level of food insecurity and struggled with consistent access to sufficient amount of food prior to resettlement. For many participants, in all three groups, eating only once a day was common. Montagnards reported they did not have fixed meals every day, what and when they ate was dependent on when they had earned enough wages or credit to exchange for rice. Further questioning revealed that these experiences affected how they felt about food now and how they managed food in the U.S. or upon resettlement. For instance, one of the Liberian participants indicated that "eating once or twice a day is more normal" to her compared to the general trend of eating three meals per day among Americans. One Liberian participant reported cooking once in the evening, for dinner and kept leftovers (if any) for next day's morning meal. The connection between previous food shortages and current food habits was also noted among Sudanese participants. Half of the Sudanese women reported that they now eat more in the U.S. and often allowed their children to indulge in 'fancy' food as a compensation for the food shortage experiences they had had prior to resettlement.

The influence of previous food shortage was also reflected in food shopping and management practices. For instance, Montagnards repeatedly mentioned that rice was the number one item they would buy when they had money. The Sudanese bought pasta, rice and big bags of breads in order to ensure that enough of the 'main food' was available at any given time. Among all the three groups of participants, the notion of ensuring that there was staple or grain product in their homes was common. During discussions on current dietary patterns, participants often compared their situation with their past and felt that availability of food was not a big problem in the U.S. compared to the shortage they experienced prior to resettlement. At least at a macro level, participants felt that food shortage was not an issue upon resettlement. One Sudanese woman noted that grocery stores were always filled with food, unlike in her country where food supply was a problem and prices kept fluctuating due to war, famine and other issues. Prior to resettlement, the ability to purchase food was minimal or absent for the majority of the participants in all three groups. The majority of the participants, especially Liberians and Montagnards, reported that relying on natural resources, such as catching fish in a nearby stream, or picking bamboo and other vegetables from the jungle was very common. Due to lack of money and a source of income, reliance on local gardening, bartering work for food, and scavenging for food was often reported by the participants. During the interviews, all participants reported that consuming meat was rare prior to resettlement and a steady supply of food was uncommon.

Women in all three groups indicated that though food availability was currently not a problem in the U.S., economic means to buy the food continued to be an issue, even upon resettlement. In comparison, women in all three groups acknowledged that frequency of food shortage decreased significantly, but it was still an issue for them upon resettlement. One Liberian woman stated that her resettlement in the US was like "jumping from the fire (refugee camp) into the frying pan". Reiterating similar sentiments, a Sudanese woman indicated that, upon resettlement, the number of problems did not change, but their nature did. However, based on the responses, it was found that the intake of meat and processed packaged food, considered highly luxurious in their country, increased once in the U.S. By comparison, participants in all three groups reported that they missed some traditional food items such as certain types of fish and snails, and vegetables such as cassava leaves and herbs. They felt the quality of food, especially meat and vegetables, was not as good as they had had in their country, and many felt that its freshness deteriorated owing to processing and excessive storage.

Difficulty in navigating the U.S. food environment and assistance programs

During discussion on current food shopping practices, all participants reported shopping in both large grocery stores and small ethnic stores. In the small ethnic stores, they usually bought rice, sauces, meat, and traditional vegetables. In the large grocery store, the main items they bought were American food such as breakfast cereals, hot dogs and soda beverages for their children. When participants were specifically asked about food shopping and use of common cost-effective strategies such as use of store coupons, more than 80% of the participants reported using none. However, buying food in bulk was common among participants, such as buying meat in big packs and purchasing large bags of rice.

General issues reported with food shopping included language barriers, transportation issues, and an inability to do comparative shopping. They found the automated and literacy-demanding social service system of the U.S. difficult to navigate. Many reported that their food assistance had lapsed. Often, they were unable to renew with the food assistance programs such as SNAP due to their inability to fill out paperwork and lack of resources or support in navigating the application system. In order to qualify for SNAP, households must meet strict resource and income requirements. For a household of 3, gross monthly income cannot exceed $2177 which is equivalent

to 130% of the national poverty level. Families must pass these requirements by first filling out an application with all income, assets, household size, household expenses and employment information (families must be seeking work or in job training). Upon approval of the application, the family will then have to be interviewed and present citizenship/ green card or visa documents along with proof of all other income and expenses. Only after application approval and satisfactory review of documents at the interview will they receive SNAP funds (USDA 2016). SNAP funds use an Electronic Benefit Transfer (EBT) card with a credit/debit system that many participants were also unfamiliar with. Often older children helped parents calculate the total amount of shopping and the balance left. This difficulty in navigating SNAP applications and card usage may reflect the quantitative findings that only 53% of respondents receive SNAP, though most would qualify for it financially based on their income averaging less than $1000/month. Equal distribution of SNAP funds through the month was not common; participants reported buying a very large amount of food at the beginning of the month, using most of the funds the first time. Participants in all three groups often reported that instead of checking prices or getting the total or remaining balance on the EBT (SNAP assistance) card, they bought fixed amounts of certain foods every time. One Sudanese woman said she knew what she could buy or afford to buy with SNAP every month by the approved food list. Most foods are eligible unless they are ready prepared (i.e. prepared sandwiches), and alcohol and tobacco are prohibited. Participants reported buying only certain food items for every month: a bag of potatoes, onions, meat, milk and grains. Dividing and rationing the food assistance benefit and/or money throughout the month was not common, especially among Sudanese and Montagnard families. None of the Montagnard women reported using coupons or the sale paper to reduce food cost. About half of the participants reported buying food in bulk to save money. Some participants did not drive (also indicated in Table 1) and reported relying on other family members or friends to get a ride for grocery shopping. This trend was more common among older women (those older than 35 years of age in this sample) and indicated that they had little control over where and when they could go for food shopping.

Use of public transportation was not common among these participants due to fear of unfamiliarity and poor connection between neighborhood and food stores. Some participants also indicated a preference for small ethnic stores, not only because they sold traditional, familiar food items, but because the language barrier was not an issue and they could shop on their own or without the help of their children. In all three groups, familiarity with locally grown or readily available U.S. based fruits and vegetables was poor among older participants.

Remittance to family back home

Results also indicated the transnational nature of refugee families. Several participants had family members and siblings living overseas or in camps and were worried about them. In all three groups, sending money to family members living overseas or remittance was very common. This was a frequently mentioned concern related to food shortage or other issues. On further discussion of remittance, participants frequently mentioned that remittance and supporting their family in other countries or refugee camps was the best use of their money, since even a dollar (due to high exchange rate) would provide food or other things for a longer period of time for their family members than using that money in the U.S. Remittance was often collected by cutting their expenses, mainly on food rather than using leftover funds or savings. These funds were used to support parents, siblings, older children, or members of their community/tribe or village.

Health care costs

Health issues and associated costs were closely linked to food insecurity. As indicated in Table 1, most participants did not have health insurance and hence any health-related expenses in the household reduced the already limited food budget. Many also reported delaying or under-using prescribed medicines due to financial constraints. Paying medical bills or visiting emergency rooms affected their ability to spend money on food. One Liberian woman reported that she and her family did not have any choice but to eat less because they had no money to purchase food after paying rent, utilities, and extra medicine cost and installment payment to visit an emergency room for diabetes-related complications. Other health issues such as no public or private health insurance, poor support or guidance in navigating health care, and limited knowledge of effective management of chronic diseases and related conditions made participants even more vulnerable to food insecurity. Paying rent was their number one priority followed by fuel for the car, and health care or medicine costs. Only after those priorities were met, was food purchased. Among all three groups, there was limited knowledge of chronic diseases and appropriate medical management of associated symptoms. The concept of primary prevention was not common among this sample. Many Montagnard women reported that they or their family members were experiencing high blood pressure. But, on further discussion, it was noted that they had limited knowledge on the causes and effective dietary management of high blood pressure. One-third of the Montagnard women reported using emergency care and

struggling to pay for related expenses. Montagnard women reported that they struggled to understand how excess food and certain types of food can lead to health problems.

The interview results indicated that knowledge of chronic diseases and their prevention and management was limited among all three groups overall, and especially among Montagnard women. Maintaining a healthy body weight, physical activity and balanced diet were all new concepts for participants. Overall these results indicated a pattern of poor knowledge of primary prevention, leading to high likelihood of emergency room visits and associated health care expenses. Long term food insecurity while paying off emergency care expenses was common among the families.

Based on thematic analyses of the transcripts and field notes, a model was developed to describe why refugees might be at higher risk of experiencing poor economic conditions and food insecurity upon resettlement (Fig. 1). As indicated in Fig. 1, resettlement factors embedded within a refugees experiences, such as previous food shortage and limited formal education, may affect their ability to successfully integrate and adapt in developed countries such as the U.S. Past food shortage, poor physical and mental health, with limited opportunities for formal education and training, may ultimately impact the mother or caretaker's ability to address common barriers and issues they face in the U.S. Illiteracy and no formal education may inhibit their ability to learn a new language or English which in turn may impact other necessary skills such as acquiring a driver's license or filling out assistance forms. Additionally, previous unstable living conditions and lack of formal training, may affect refugees' ability to be competitive for high-paid, professional, and long-term jobs. This and other studies indicate that refugees' household income are generally very low and most or all are eligible for food assistance programs such as SNAP (Dharod et al. 2013; Hadley and Sellen 2006; Piwowarczyk et al. 2008). However, due to family disintegration and the bi-national nature of the families, most refugees feel responsible for providing financial support for other family members living overseas, reducing limited household and food budgets still further. Additionally, results of this study indicate that since refugees lack a credit history and need affordable housing, they are often resettled in poor and remote neighborhoods. Many refugees also struggle to get a driver's license, since this requires familiarity with the English language and literacy, which could, in turn, limit their ability to bargain or comparison shop at multiple stores. We posit that these combinations of pre and post resettlement factors hamper refugees' ability to effectively navigate social service and health programs, access different employment opportunities and promote good overall health status. These, in turn, are strong predictors of food insecurity. This model can used by community U.S. health organizations and programs that work to resettle refugees. Specifically, this model could inform how they could target orientation, training, and support for new arrivals. Understanding education level or previous work skills, for example, will impact the approach to job development and placement or it may highlight the need for reading and writing literacy. This model can further serve as an investigative framework to examine food insecurity as a temporal issue for refugees, specifically imploring other researchers to explore pre-resettlement conditions of food shortage, coping mechanisms, and how they evolve after resettlement.

Conclusions and implications

This study highlights that, regardless of their country of origin, refugees may be at higher risk of experiencing food insecurity upon resettlement because of the unique characteristics of their situation. Overall 70% of our participants reported some level of food insecurity, which is striking compared to the national rate of 14% in the U.S. population. However, we posit that those unique pre-resettlement situations and characteristics such as prior food shortage, limited education/job skills, poor mental/physical health may in part explain those high levels of food insecurity at an average of 8 years post-resettlement. Results of this study indicated that refugee women experienced significant financial constraints, poor access to social services, limited skills or awareness of cost-effective budgeting strategies and were often attempting to send money back home to relatives despite these constraints. We suggest that their pre-resettlement situations may be impacting their current financial situations and, thereby their food security status. It is possible that women with less formal education and those who may have lived in camps may face difficulty in adaptation to the U.S. social service system and workforce. These women often come with low levels of literacy which could severely limit them in several areas - their ability to read food product labels (make comparisons), fill out social service forms for SNAP, even pass a driving test. Most U.S. jobs also require a high school degree or general educational development certificate (GED) and this deficiency has probably limited employment for many of our participants, particularly those who were older with no education and limited literacy in their own native language. We also posit that these women may have experienced severe emotional stress and trauma which could have led them to anxiety and depression after resettlement. This conclusion is well supported in the literature and was reflected in discussions with the women we interviewed (Fazel et al. 2005).

Consequently, to address food insecurity among refugees, it is critical to understand these issues as proxies for temporal factors, specifically, as products of pre-resettlement situations. This study indicates that refugee women may lack work skills, experience, and sufficient literacy that could limit their ability

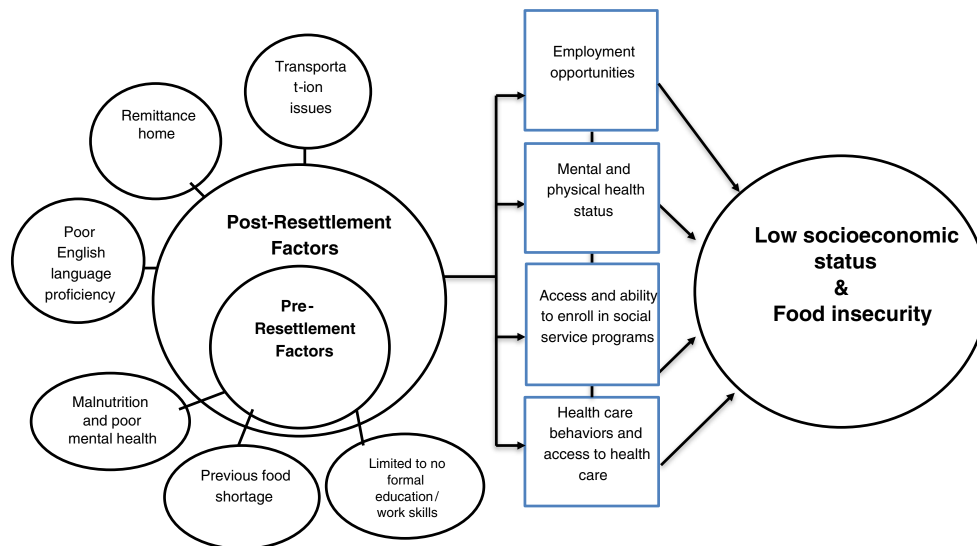

Fig. 1 Model of potential pre and post resettlement determinants and their relationship to food insecurity for refugees. Description: Refugees bring with them previous experiences of limited opportunities and unstable living conditions in resettlement and, in conjunction, they experience issues such as language barriers and the responsibility of supporting families or friends living in camps and/or other countries. This combination of embedded pre and post resettlement factors affect refugees' ability to seek employment, access social and health programs consequently increasing their risk of food insecurity. This model can be used by programs that help resettle refugees, providing them with information on how to design and implement orientation, training and support for new arrivals. The model can also be used as a temporally oriented investigative framework for researchers who examine food security for refugee groups resettling in the U.S.

to gain employment, acquire a driving license or access to transport, and most significantly limit their ability to navigate the social service systems to procure assistance. Only 31% of our sample was employed and 45% had no formal education, meaning that they had not completed any grade in school. Among these women, many could not even write their own names. This is a staggering consideration when we understand that education (a mostly pre-resettlement characteristic in our sample) and employment (post-resettlement characteristic) are strong predictors of food security (Pieters et al. 2013; Coleman-Jensen et al. 2015).

The results of this study also highlight the transnational nature of refugee families. Not only their own situation, but the condition of their family members living overseas might affect their anxiety related to food affordability and food budget. There have been limited studies examining the transnational nature of refugee families, but to our knowledge, there are none examining this factor in conjunction with pre-resettlement factors as they affect current food insecurity. This lack of scientific knowledge around the temporality of food security (pre and post migration) poses a great barrier in making progress in understanding the causes and consequences of food insecurity among refugees upon resettlement. Most of the research done among refugees in the U.S. related to food insecurity focuses on understanding the occurrence using standard, validated scales that focus on financial barriers. While these scales are strong and well validated they were originally developed to assess food insecurity among the native born U.S. population, and are not equipped to capture coping strategies or unique pre-arrival situations that could potentially pose a high risk of food insecurity among refugees. This paper represents a first step in moving our efforts toward assessment of pre-resettlement situations as a relational and temporal factor in food security post-resettlement and we have posited a model to describe this relationship.

There are a number of limitations to this study, especially related to sampling and the data collection process. Firstly, convenience sampling might pose a threat to external validity, however, the snowball sampling techniques offered the opportunity to reach minority populations who are not identified separately in the public records. The refugees in this region come through several resettlement agencies and there is no large, connected, or standard record repository of their names and current addresses that would aid in a random sampling technique. The sample in this study was limited to women and female caregivers of the household, which limits the generalizability of these results in comparison to male heads of house, single fathers or non-traditional family groups among refugees. However, we sought to capture a subset of the refugee population that may be at high risk of food insecurity as they are often the main meal preparers and caregivers of the household. Further studies examining food insecurity among males in the household are needed and these studies could further illuminate family dynamics in food insecurity research with refugees. The use of community interviewers provided many benefits. Interviewers, as members of the communities of interest,

served as vital gatekeepers in reaching study participants and building the trust and relationship between the research team and participants. However, there is a possibility of response bias due to participants' familiarity with the interviewer. Lastly, the data collection and analysis process involved several layers of translation and interpretation; during this process it is possible to lose connections between themes. However, to further progress the research in this area, models (e.g. Figure 1) can serve as foundations and tools in establishing pathways and their contribution towards food insecurity.

In summary, this study highlights the preliminary status of food insecurity research with refugees upon resettlement in the U.S. and underlines the need to further explore different direct and indirect causes of food insecurity among them, particularly pre-resettlement factors. Results from such studies would aid U.S. resettlement agencies and those that develop their overarching policies to design programs and policies targeted to improve the outcomes of resettlement programs. Specifically, these programs could offer more comprehensive education, literacy and job training and provide better access to much needed mental health care. Past experience can shape an individual and ultimately their current situation and we must look at food insecurity for refugees through this lens. This is key, since the number of people eligible for resettlement is ever increasing due to political and civil instability in many regions of the world making the need for strong and supportive resettlement programs and policies evermore critical.

Compliance with ethical standards

Conflict of interest statement The authors have no conflicts of interest to disclose.

Appendix

Food Access, Food Insecurity and Dietary Habits among Refugees in Guilford County

Semi-structured Interview Guide

The semi-structured interviews will be conducted with Liberian, Montagnard, or Sudanese women.

For an interview, recruit women that meet the following criteria:

- Is 18 years or older
- Has at least one child 12 years-old or younger
- Is the main meal preparer of the household
- Lives in Guilford County, NC

Interviewer: Ensure ALL the above criteria are met for an interview. If not, please thank the person and discontinue.

SCRIPT:

Hello. My name is.

We want to do an interview with you to understand your day to day activities, especially your food related activities such as food shopping, cooking methods and main dishes you cook at home.

Before I start with an interview, first, let's go through the consent process. We would like to have your written consent for this interview. As mentioned in the consent form, whatever information you share with us or discuss during an interview will not be shared with anyone.

Interviewer:
Go through the consent form.
Ask the participant to sign the two copies of the consent form.
Keep one copy and give another copy to the participant.

SCRIPT:

As mentioned in the consent form, I will tape record our conversation; this will help me to have an interactive conversation with you without worrying about missing information.

During the interview, if you have any questions at any time, please feel free to ask.

Also, as mentioned in the consent form, you can discontinue the interview if you feel uncomfortable or do not feel like participating in the interview.

I. SOCIO-DEMOGRAPHICS

Interview No.: ____
Start time: ________________ End time: ____________
Date: _______________

SCRIPT:

So, first I will start with some personal questions such as your age, education, monthly income and other things.

Interviewer: Besides recording, write down the responses in this section.

1. What is your full name? ____________________
2. What is your age? ____________ (*note down in years*)
3. Are you working:
   - Yes (3a, 3b & 3c)

◦ No (3d)

3a. If yes, is it part time or full time? __________

3b. If yes, where do you work? ______________

3c. If yes, what is your total monthly income including those of others in the household?_________

3d. If no, What is the total monthly income of all adults in the household?_______

4. What is your religion? ____________________
5. What is your marital status? (Circle the option)

1) Married
2) Single
3) Divorced
4) Have a partner
5) Other, ____________________

6. What about education; did you go to school:

◦ Yes (6a) ◦ No

6a. If yes, how many grades did you complete? _________

Or what is your last degree? ________________

7. Currently, are you taking any classes:

◦ Yes (explain)_________________________

◦ No

8. Do you have a car?

◦ Yes ◦ No

9. Do you have a driving license?

◦ Yes ◦ No

10. How many members live in this household (including both adults and children)? ________________
11. How many children do you have? _____________

a. What is the age of your children:

1st Child: ____________;

2nd Child: ____________;

3rd Child: ____________;

4th Child: ____________;

5th Child: ____________

b. Are you currently pregnant?

◦ Yes ◦ No

12. Do you get Food Stamps?

◦ Yes ◦ No

13. Do you get WIC vouchers?

◦ Yes ◦ No

14. Do you have health or medical insurance? (ex. Medicaid)

◦ Yes ◦ No

15. Do your children have health or medical insurance? (ex. Medicaid)

◦ Yes ◦ No

16. Where were you born (country of birth)?________
17. In which year did you come to the U.S.?________
18. What is your current immigration status? (Circle one)

Refugee

Asylee

Immigrant

Other

19. What was your immigration status when you first arrived here?_____________________________

a. Describe the process you had to go through for this_____________________________

20. What language(s) do you speak at home? ___________
21. What do you think about your English speaking skills? Is it very good, good, fair, poor or very poor *(Circle the option)*:

1. Very good 2. Good 3. Fair
4. Poor 5. Very poor

II. FOOD SHOPPING

SCRIPT: Now I would like to know about your food shopping habits.

22. First, can you tell me the name and location of all the stores and **places (including flea market/farmer's market, convenience/gas station or corner stores)** from where you buy food?

Interviewer: First list all the store names and location. Then for each store ask questions: C, D, E.

A. Name of the store	B. Location (address)	C. How frequently you go to this store Examples: everyday, once a week, twice a week, every two weeks, monthly,	D. How you go to this store (by car, bus, walking, getting a ride) Make sure: by car refers to "did you drive yourself or did someone take you to the store"	E. What food items you usually buy from this store and **WHY**

23. So to begin with, what you think of the lifestyle here in the U.S., how different or similar is it from your home country?

A. What things you like about U.S.?
B. What things you dislike about U.S.?

24. Now, specifically what you think about food stores or food shopping here in the U.S.?

A. How different or similar are the food stores in the U.S. compared to the food markets back in your country?
Prompts:

a. Size of the stores
b. Open market vs. covered stores
c. Distance to the stores
d. Corner stores or stores in neighborhood
e. Ability to bargain
f. Taste and freshness of the food
g. Food choices: more variety, less variety
h. Cost of food in the U.S. and back in your country. What food items are expensive here in the U.S., and what items were expensive in your home country?

25. Specially, when you go to the regular grocery store like Wal-Mart, how do you go about doing food shopping? Can you walk me through the whole thing or explain what you do once you are in the store?
Prompts:

a. Do you go to specific sections or do you look for new things?
b. How do you check prices?
c. Do you compare brands?
d. Do you make a list before you go to the store?
e. Do your friends/neighbors/husband or your children help you with the shopping?
f. Do you check the store flier?
g. Do you buy only the items that you know?
h. What do you do when you don't find the item that you are looking for?

26. Especially related to food shopping, what are some of the issues you face here in the U.S.?
Prompts:

a. Language issues
b. Store staff
c. Size of the store
d. Unfamiliar food choices
e. Distance

III. FOOD BUDGET & MANAGEMENT

27. Every month, approximately how much money do you spend on food (**not including food stamps**)?

A. (If they get food stamps) What about food stamps, how much do you get through food stamps?
B. Explain, how you use your food stamps? Do you use then all at once or in small amounts at a time?
C. What food items you usually buy with food stamps?

28. Do you ever worry that there might not be enough food for the whole family because of a tight budget or tight money situation?

A. If yes, how often do you feel that, and usually when do you feel that (beginning of the month/week, end of the month etc.)?
B. When the money situation is tight, how do you manage the food supply for the whole family?
C. What different things you do to stretch your food budget?
Prompts:

a. Gardening
b. Sign up for food stamps/WIC
c. Go to friends/neighbors for lunch or dinner
d. Borrow money from friends/relatives
e. Buy food on credit from small store owners
f. Other things

29. A. What food dishes do you cook everyday or most days of the week?

B. What food items are the main parts of the meal: meat, rice, curry, vegetables?
C. What oil or fat do you use in cooking?
D. What sauces and spices do you use in cooking?
E. Can you tell me the recipe of one of your main dishes (like a meat or vegetable dish)?
Prompt: What is the name of the dish, now first tell me all the ingredients and then tell me the steps.

Recipe Name and Ingredients list: ___________________
____

IV. DIFFERENCES IN LIFESTYLE AND EATING HABITS

SCRIPT: I will ask you a few questions about your lifestyle before coming to the U.S.

25. A. How old were you when you came to the U.S.

B. Where did you live or where were you before coming to the U.S. (Note down: Both, name of the town or city and name of the country)?
C. How long did you live in that place?
D. What was your day like back in _________ (town name)? OR what was your daily routine like in

____________ (town name), OR tell me all the activities or things you did from morning to night back in your country.

E. What were main daily activities: walking to market, school, housework, farm work etc.

F. Describe living conditions of that place or _________ (town name)

Prompts:

i. Rural vs. urban area
ii. Weather description
iii. Major occupation in that area
iv. What your family used to do: business; farm worker; fishing; teaching; factory worker
v. Houses: big vs. small
vi. Sources of drinking water
vii. Electricity
viii. Sewage/plumbing system

26. Tell me about your food habits back in your country OR before coming here?

Prompts:

a. What was the main food?
b. How many times did you use to eat per day?
c. What was the main meal?
d. Did you experience scarcity of food?
e. What drinks you used to have?
f. What dishes you used to cook commonly?
g. How common was it to skip meals because of no food?

27. So, in comparison to your previous food habits (back in your country or refugee camp) how similar or different are your current food habits?

Prompts:

a. What food habits are similar; why
b. What food habits are different; why
c. Do you eat the same food as you used to eat back in your country?
d. What food items do you miss the most?
e. What food items can you get easily here?
f. How often do you or your children eat fast food (ex. McDonalds, Wendys, etc.)?
g. How many times per week do you or someone in this household cook at home?

28. What do you think about your current eating habits?

Prompts:

a. Are they good, healthy, unhealthy? Why?
b. Do you have any health concerns? What are these?
c. How many times have you visited a doctor in the last year?
d. How many times have your children visited the doctor in the last year?

V. FOOD INSECURITY (validated USDA scale)

ADULT STAGE 1

HH2.Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for your household in the past month or in past 30 days.
The first statement is "We worried whether our food would run out before we got money to buy more." Was that often true, sometimes true, or never true for your household in the last 30 days?
[ ] Often true
[ ] Sometimes true
[ ] Never true
[ ] DK or Refused

HH3."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 your household in the last 30 days?
[ ] Often true
[ ] Sometimes true
[ ] Never true
[ ] DK or Refused

HH4."We couldn't afford to eat balanced meals." Was that often, sometimes, or never true for your household in the last 30 days? Give an example of balanced meal (such as: rice and meat, fish, chicken and vegetables stew).
[ ] Often true
[ ] Sometimes true
[ ] Never true
[ ] DK or Refused

***Screener for Stage 2 Adult-Referenced Questions:* If affirmative response (i.e., "often true" or "sometimes true") to one or more of Questions HH2-HH4, then continue to Adult Stage 2; otherwise, skip to Child Stage 1.**

ADULT STAGE 2

AD1.In the last 30 days, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?
[ ] Yes
[ ] No

[ ] DK

AD1a. [IF YES ABOVE, ASK]. In the last 30 days, how many days did this happen?
___ days
[ ] DK

AD2.In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money for food?
[ ] Yes
[ ] No
[ ] DK

AD3.In the last 30 days, were you ever hungry but didn't eat because there wasn't enough money for food?
[ ] Yes
[ ] No
[ ] DK

AD4.In the last 30 days, did you lose weight because there wasn't enough money for food?
[ ] Yes
[ ] No
[ ] DK

Screener for Stage 3 Adult-Referenced Questions: If affirmative response to one or more of questions AD1 through AD4, then continue to Adult Stage 3; Otherwise skip to Child Stage 1..

ADULT STAGE 3

AD5.In the last 30 days, 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
[ ] DK

AD5a. [IF YES ABOVE, ASK]. In the last 30 days, how many days did this happen?
_______ days
[ ] DK

Transition into Child-Referenced Questions:

Now I'm going to read you several statements that people have made about the food situation of their children. For these statements, please tell me whether the statement was OFTEN true, SOMETIMES true, or NEVER true in the last one month for (your child/children) living in the household who are under 18 years old.

CHILD STAGE 1

CH1.“We relied on only a few kinds of low-cost food to feed (our child/the children) because we were running out of money to buy food.” Was that often, sometimes, or never true for your household in the last 30 days?
[ ] Often true
[ ] Sometimes true
[ ] Never true
[ ] DK or Refused

CH2.“We couldn’t feed (our child/the children) a balanced meal, because we couldn’t afford that.” Was that often, sometimes, or never true for your household in the last 30 days? Give an example of balanced meal (such as: rice and meat, fish, chicken and vegetables stew).
[ ] Often true
[ ] Sometimes true
[ ] Never true
[ ] DK or Refused

CH3."(Our child was/The children were) not eating enough because we just couldn't afford enough food." Was that often, sometimes, or never true for your household in the last 30 days?
[ ] Often true
[ ] Sometimes true
[ ] Never true
[ ] DK or Refused

Screener for Stage 2 Child Referenced Questions: If affirmative response (i.e., "often true" or "sometimes true") to one or more of questions CH1-CH3, then continue to Child Stage 2; otherwise skip to End of Food Security Module

CHILD STAGE 2

CH4.In the last 30 days, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?
[ ] Yes
[ ] No
[ ] DK

CH5.In the last 30 days, did (your child/any of the children) ever skip meals because there wasn't enough money for food?
[ ] Yes
[ ] No
[ ] DK

CH5a. [IF YES ABOVE, ASK]. In the last 30 days, how many days did this happen?

_______ days
[ ] DK

CH6. In the last 30 days, (was your child/were the children) ever hungry but you just couldn't afford more food?
[ ] Yes
[ ] No
[ ] DK

CH7.In the last 30 days, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?
[ ] Yes
[ ] No
[ ] DK

END OF FOOD SECURITY MODULE

Thank you for your time and efforts. We really appreciate your input. Do you have any questions for me.

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